

The Concept of Quality Assurance in M-Commerce Applications in Arabic Societies

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Abstract

The consumer segment represents the most important part of electronic commerce (E-commerce) and mobile commerce (M-commerce). This paper details features of how this segment is approached, including low price, variety of choice offered, and easy-to-complete online transactions. Despite the increasing number of smartphone users, online trading is still limited in some Arab societies, such as the Gulf Cooperation Council (GCC), comparing to the size and strength of these countries' economies. According to Arab Portal Technical News, the United Arab Emirates and Saudi Arabia are among the top countries globally when it comes to the percentage of smartphone users. Many of M-commerce features' cannot be accepted and implemented to consumers if their trust falls below the required levels in measures of target audiences' confidence. Many previous studies have concentrated primarily on E-commerce in the study region, rather than the business aspects of M-commerce applications. However, identifying methods of increasing the levels of confidence and improvement in quality assurances in commercial smartphone applications can contribute to the design and building of appropriate applications that reflect, in particular, the needs of the Arabic segments of Middle Eastern populations. In total, 799 questionnaires were administered and collected from a variety of participants. Our study identified the primary factors that increase assurances in the M-commerce applications that are used on smartphones. Our findings demonstrate the importance of quality assurance in these countries.

Keywords: *Questionnaire Survey, GCC, M-commerce, Commercial Application, Quality Assurance*

1. Introduction

Mobile commerce (M-commerce) enables people to meet many of their needs merely by using their smartphones and other handheld devices [1]. Electronic sales, which currently constitute a growing pillar of support for the global economy, have increased significantly in current decade [2]. Therefore, many countries and companies have improved their M-commerce frameworks and are building infrastructure to prepare themselves to face the challenges in M-commerce field [3]. However, some difficulties should be taken into account regarding the activation of commercial applications [4]. These issues are often associated with traditional influences, and audiences who using the physical and traditional trading need to increase their trust in online

commerce [4]. Without these sociocultural considerations, M-commerce is unlikely to have the kind of impact it promises [5].

Many types of business models, such as e-auctions, third-party marketplaces, and e-malls, differ in terms of their level of functional integration and degree of innovation [1]. Therefore, many M-commerce features cannot be accepted and implemented if consumer trust falls below the required levels in measures of target audiences' confidence [4]. Many previous studies have concentrated primarily on E-commerce in the study region, rather than on the business aspects of M-commerce applications. However, identifying methods of increasing levels of confidence and quality assurances in commercial smartphone applications can contribute to designing and building appropriate applications that reflect, in particular, the needs of the Arabic segments of Middle East populations [6-7]. The traditions of Arabic societies play a key role in determining the basic requirements of quality assurances to Arabic societies. This core concept means that people feel safe, have a level of trust, and are, as such, ready to use the systems [7].

In addition to the above, traditions and community sales traditions affect these models. Consumers and vendors buy and sell differently due to their various traditional backgrounds, which are also reflected in their electronic processes [8]. Thus, a successful e-business model in one region will not necessarily thrive in another area, especially in countries that have different characteristics of thinking and basic needs [9]. Therefore, some researchers are interested in examining the possibility of applying M-commerce acceptance frameworks in different societies and exploring the difficulties and obstacles that lead to delays using the M-commerce acceptance frameworks [4],[8]. Moreover, researchers have attempted to provide the best practices and alternative solutions to enable the wide dissemination of M-commerce acceptance frameworks. We argue that without such considerations, M-commerce runs the risk of not being accepted in nations in which assurance and trust have not yet been established [5],[8].

A. Fundamental definitions and benefits

M-commerce is the business of buying and selling goods and services via smartphones and other handheld

devices [10]. M-commerce represents one of the main E-commerce sub-models owing to two main factors:

The growing demand for service applications that are compatible with smartphone operating systems (OS), such as Internet browsers

The ability to adopt and activate many security, trust, and organisational frameworks, which has helped face many E-commerce issues—such as protection and security within a wireless network environment—over a short period [1]. Many services also benefit by dealing with wireless services, which is one of the preferred methods of conducting digital commerce transactions, such as financial services, telecommunications, product purchasing services, and the provision of information services (e.g. news and financial reports) [1].

B. The aim and significance of the research

The first aim of this research is to discover what GCC citizens require in terms of application design for a specially aligned M-commerce applications experience that will facilitate its adoption. Second, similar to various studies that have been conducted in other countries, such as China, America, and Australia, it aims to investigate the best ways to design M-commerce applications that address the needs of consumers in GCC countries [9]. These studies have aimed to determine the assurance requirements of particular populations with regard to implementing M-commerce applications on smartphones. Such studies also offer benefits for the corporate sector, especially SMEs, by expanding their knowledge about vital components that might be helpful to be presenting through M-commerce applications [11]. Furthermore, knowledge of the fundamental needs of the GCC target segments would be beneficial to understanding the aspirations of the target audiences of M-commerce application in these countries. Additionally, the hope is for global companies to take advantage of assurance requirements to build a variety of smartphone applications, because these firms have contact with different communities and have different aspirations and needs [5]. An example of a website that was designed to accord with different societies is that of the McDonald's Corporation, whose content differs widely between the official site in America and those in other countries, such as China, India, South America, and Europe [5].

The results of this research can be applied to most countries in the Middle East to reach an optimal solution that accords with the overall requirements of the region. However, many aspects of the requirements of Arabic societies need to be studied in depth because of their specific community interests and main languages. For instance, Middle Eastern countries in which Arabic is not spoken, such as Iran and Turkey, have different requirements from Arabic-speaking countries. Moreover, the needs of the populace of large and developed cities and those of villages and remote areas differ in terms of the use of M-commerce

applications [11]. Therefore, one of the M-commerce advantages in this study in regard to KSA and the Middle East more generally is the increased confidence in and acceptance of the electronic systems field.

2. Literature Review

A. The importance of quality assurance in online systems

Generally, when considering quality assurance and its level of importance to electronic applications, it is important to understand some heterogeneous definitions that illustrate the breadth of the large-scale quality assurance, as well as its availability in electronic systems generally and its ability to work on smart handheld devices in particular [12]. Quality is defined by controlling actual results and comparing these with the expected ones [13]. Assurance is defined as the search for trends, patterns, and gaps to improve the key causes of the main problems that are identified, whether it is successful or unsuccessful [10], [13]. It is also beneficial to use similar data collected from various sources to narrow the scope of the current problem and identify possible solutions, as this makes necessary assurance requirements that represents the most important steps to be taken to ensure the online applications working appropriately [12].

Therefore, the sellers imagine that basic assurance in electronic purchases is limited to the quality of online purchasing products before their delivery to the customer [14]. It also includes the verification of information that should be provided via online requests through M-commerce, such as to ascertain online payment information, to track shipments, and to confirm the accuracy of an address [11]. When dealing with electronic applications and the various services that are included, the products are neither tangible nor visible; therefore, it is necessary to provide a quality assurance list outlining the quality assurance of the online applications to avoid the emergence of various issues on the part of consumers or applications' developers [8].

A number of studies have indicated that wide participation in online applications facilitates the identification of defects in the function process [11],[12]. The defect can be identified, and it does not occur throughout the entire process, even if it does not reach the final customer. Therefore, assurance is one of the initial solutions that helps to increase the chances of improving the applications and to reduce the number of applications' defects [12]. Helping to identify and improve the main quality assurance items leads to collecting all the require information about the target audience needs, and provides the audience with the right benefits that accord with their circumstances and requirements [8], [12].

B. The importance of necessary assurances in the M-commerce field

Necessary assurances are important in the M-commerce field because, as they help to increase trust and satisfaction between the sellers and buyers [15]. Confidence building requires considerable time and effort because of security concerns related to M-commerce requirements [16]. Therefore, necessary assurances can be identified and provided to reduce the confidence and trust issues when dealing with M-commerce applications [8]. Many studies have identified the requirements for necessary assurances that help increase confidence in M-commerce applications [15]. However, based on the literature review, few studies focus on the mechanisms that are used to identify the requirements that generate customer confidence in a smart mobile platform [16-17]. To fill the quality assurance requirements' gap in the literature, it is important to identify the requirements that affect the necessary assurances and which help to improve the acceptance and confidence level to deal with handling of mobile commerce platforms.

Necessary assurances have a positive and direct impact on customers' satisfaction and their confidence in M-commerce applications; therefore, a number of previous studies have identified various concepts related to increasing the acceptance of and loyalty to M-commerce [18], the factors affecting satisfaction in M-commerce [19], and the impact of tradition on satisfaction in M-commerce [19]. Other relevant studies on necessary assurances have highlighted that they are one of the key determinants of customer confidence in M-commerce [4]. Some other studies have focused on the importance of service quality, information quality, and interface quality, which are instrumental to the main concept of necessary assurance [19]. However, the exact dimensions of the application requirements for necessary assurances are not precisely defined, and their availability reflects better dealings for consumers and application developers within the M-commerce environment [16-17]. Therefore, the availability of necessary assurances in a unified theoretical framework help to directly enhance the consumer and seller roles to increase the level of trust and dealing confidence during commercial applications on smartphones [7].

C. The importance of assurance in the study field

SERVQUAL, which is one of the main models used to understand customers' perceptions of the quality of services, is of considerable interest to academic researchers and market practitioners. [20] noted that quality of service is a comparison between what a client feels and what is presented to him or her. To provide accurate results, the SERVQUAL approach has been developed based on 22 indicators that are used to measure service quality standards. These indicators are grouped as follows: tangibles, reliability, responsiveness, assurance, and empathy. They are used to deal with electronic systems and have been

validated empirically [20]. A number of studies have focused on the nature of M-commerce applications and on overcoming the numerous obstacles to the adoption of M-commerce through the use of smartphones. Thus, SERVQUAL can be extended to include many additional requirements on the online business side [20]. [20] study expanded the scope of assurance by including perceived value through measuring customer satisfaction in the context of mobile communications. [21] proposed five quality determinants and necessary assurances to increase the quality of service in electronic applications generally: website design, reliability, responsiveness, trust, and personalisation. Based on Lee and Lin's study, quality of service in regard to electronic applications has a significant impact on customer satisfaction. Furthermore, [18] study also noted that service quality is one of the main dimensions affecting customer satisfaction in E-commerce. In addition, the study suggested that SERVQUAL should be modified to measure the level of service quality and the relevant necessary assurances. [22] emphasised the importance to periodically reviewing SERVQUAL indicators and adding appropriate indicators to the SERVQUAL approach to improve customer satisfaction in the M-commerce environment via smart devices, as doing so will enhance customers' confidence in the M-commerce field [22].

D. Satisfaction with trust

Satisfaction is the result of the after-purchase evaluation and comparison process. An acceptable level of satisfaction is a natural reaction to the acceptance of specific transactions, which leads to trust and then to a positive behavioural intention towards dealing with a specific approach [16]. Additionally, customer expectations can be used as a fundamental phase for determining the level of satisfaction and confidence associated with M-commerce applications by judging the expected performance and the service provided by the seller to the buyer [12]. Customer expectations can be defined as beliefs that are developed during the consumer's life cycle based on the characteristics of a particular product or service prior to its purchase [12]. Thus, expectations and confidence can be increased when providing a positive experience to deal M-commerce application. Therefore, [17] suggest that increasing customer opportunities to deal with diverse and rich experiences helps to increase confidence, acceptance, and positive feedback, which will, in turn, increase future opportunities to deal with electronic or commercial systems in particular [17]. There is extensive research on the relationship between satisfaction and confidence in M-commerce, but the empirical studies in this field are limited when it comes to filling quality assurance requirements [7],[17]. The quality assurance requirements could increase the level of satisfaction, trust, and confidence when dealing with M-commerce in the literature; therefore, the

satisfaction aspect and its impact on confidence building in M-commerce are included in this study.

E. Trust in M-commerce

Trust is a phenomenon that has various complex requirements, and it has been studied widely in the context of M-commerce. A number of studies have argued that trust is an essential component of the success of M-commerce relationships because the customers' satisfaction is depending on their trust [16]. Some researchers have suggested that trust is one of the most important success factors in the online environment (e.g. [16-17]). While the trust construct is imperative, it needs to present and measure trust using various approaches to reflect the context for dealing with online commerce applications in a more specific [17]. According to [23], in M-commerce, trust can be divided into two categories: trust in mobile technology and trust in mobile vendors. By integrating these two categories, continuous trust with purchasing products through online vendors across smartphones, applications can be enhanced. Additionally, in regard to smartphone applications, [23] pointed to the importance of providing basic requirements, which primarily help to increase the consumer's level of confidence. An example of the main requirements is the importance of providing easy-to-use and effective applications processes that let the user to reuse the application continuously. In addition, [23] agreed that handheld devices are limited in terms of screen size and lower multimedia-processing capabilities, which could hinder increasing confidence in M-commerce. In general, the literature is not conclusive in terms of showing how to develop and maintain an integrated trust approach. Therefore, this study focuses on how service quality activates the process of necessary assurance and confidence-building in the M-commerce application field [16].

F. The benefit for increasing M-commerce acceptance level using necessary assurance

Several studies have examined the importance of participation and use in the steady increase in M-commerce as a result of the revolution of commercial smartphone applications as a feature of contemporary societies [11],[24]. This has facilitated the widespread use of smart devices in the current decade [25]. The increasing acceptance of mobile applications has been driven by the various requirements of mobile applications in general and commercial applications in particular [8]. The necessary assurance and trust tools focus on increasing consumer confidence and trust by providing price comparisons, using multimedia tools to display products and relevant specifications, and using various instant communication tools to answer any questions posed by end users in regard to the fully automated process [26]. Additionally, necessary assurance includes many requirements, such as the privacy required in commercial applications, security, available

communication, and communication and rights policy to deter criminals [17]. All M-commerce indicators help to increase the levels of satisfaction and trust between sales platforms and related business applications and customers. Thus, the importance of increasing the level of acceptance in commercial applications depending on the quality assurance requirements in the management of commercial applications, which have had a significant impact on increasing the level of acceptance, as indicated by many studies (e.g. [17],[26-29]).

G. The advantages of M-commerce when necessary assurance level is increased

Building strong relationships with customers and suppliers (e-loyalty) is one of the key aspects of the competition to attract customers to companies operating in the M-commerce field [11]. Thus, creating tools that help to build trust and increase acceptance between these two parties is the most important method of continuing operations, helping to maintain e-loyalty, and attracting new customers in e-business relationships [11],[28]. An increased number of new customers can be achieved through innovative and compelling strategies to ensure customers, stay in the current companies in the future under the spread of diverse offers from various companies [11]. Furthermore, a number of researchers believe that M-commerce applications should provide easy methods of reducing the difficulties facing M-commerce, achieving the requirements of the target segment that deals with commercial applications, achieving acceptable levels of security and privacy [28]. Also, other quality requirements is important such as increase the confidence and satisfaction for customers when they using online purchasing platforms to use M-commerce applications widely [11]. This increase could reflect positively on company revenues, which will, in turn, strengthen the economies of countries [23]. Additionally, a number of studies have identified a relationship between business activity type and the increased chances of acceptance of technical solutions, such as the availability of electronic payment methods that help to increase the flexibility that is mandated by the security requirements in M-commerce applications [8]. When Starbucks in the USA activated the electronic payment service and then determined that the nearest branch to the customer should receive his or her request, the number of electronic application transactions exceeded 26 million within 12 months [30]. Another example is eBay's mobile application, which reached US\$5 billion in 2011, and the payment method was PayPal, a sub-enterprise of eBay, which totalled US\$3.5 billion in the same period [9]. Thus, online commerce cannot be considered a phenomenon that is evolving gradually; in contrast, there is a rapidly growing demand for commercial applications that have the necessary assurances, in particular in areas such as safety, privacy, and

quality, which are highly important when dealing with M-commerce applications and consumers [8],[26].

3. Theoretical Framework

The focus of the theory of reasoned action (TRA), which was developed by Martin Fishbein and Icek Ajzen in 1967, is on persuasion via communication with the public. It aims to anticipate an individual's behaviour based on a predetermined relationship between attitudes with his or her behaviour [31]. Thus, the individual's decision to accept a particular behaviour depends on his or her expectation of the behavioural consequences, as well as his and her decision regarding the application of this behaviour. The TRA helps to provide the fundamental requirements that encourage to stimulate the individual to complete a specific behaviour, which are his or her desire to do so and his or her belief that engaging in a particular behaviour will lead to doing it regularly in the future [32]. Furthermore, according to the TRA, the purpose of behaviour depends on two fundamental aspects: attitude and subjective norms. Attitude is defined as the personal opinion of the individual whether his or her behaviour is positive or negative. Subjective norms represent the individual's view of a particular behaviour from society's perspective and based on its requirements, which places pressure on people in regard to whether to accept and deal with this particular behaviour or not [32]. The standards resulting from subjective norms and attitude help to determine the purpose of a behaviour and then its carry out. They also help to increase effort and previous experience, which play a significant role in accepting the personal act and its beneficiaries to develop the basic requirements of the particular behaviour or action [31]. Additionally, subjective norms and attitude help to strengthen and motivate individuals to accept their behaviour and then repeat it regularly in the future [31]. Some studies have shown that prior direct experience with a given activity leads to increased values regarding attitude and subjective norms and, thus, the acceptance or rejection of these behaviours over time [4].

The TRA has three main conditions that can affect the relationship between behavioural intention and behaviour. First, the measure of intention is compatible with its internal levels; therefore, the determinants used to predict a particular behaviour must be equality. Second, the degree to which the intention is directed is under the voluntary control of the individual, and there should be parallelism and equality between the acceptance or rejection of any specific voluntary behaviour. This is fundamental when dealing with people with a view to directing their behavioural intention. Third, sufficient time is required between the performance and the measurement of the behaviour; therefore, sufficient time must be taken between the intention to perform a specific behaviour and the performance of the behaviour

itself [32]. The TRA has been used in various empirical studies to determine consumer behaviour and to study high-risk behaviours, whereby it is believed that behavioural intention is an important determinant because of its central role in the theory. [31] indicate that the TRA may be appropriate for identifying requirements that help increase the level of behaviour to accept the computer use [31]. [31] noted that the TRA is used in adopting new technologies by anticipating people's behavioural intention to deal with electronic systems and their requirements, including the security perspective, with a view to increasing their acceptance level when it comes to dealing with M-commerce through smart mobile applications. The [4] study highlighted the importance of identifying key factors related to increasing consumer interest in M-commerce through perceived value, innovation, security perceptions and privacy, perceived benefit and cost, perceived compatibility and assimilation, subjective rules, and behavioural intentions [4]. [31] also indicated that the personal factors of acceptance or rejection when dealing with a particular system can differ, depending on behaviour; thus, the result is reflective of various factors in the TRA with a view to improving the predictive model [31]. Thus, the relevant personal requirements for determining standards in online shopping can be used to demonstrate the weight of factors in the TRA and how to measure their level of acceptance to increase the behavioural intention level in M-commerce to meet online-shopping personal requirements.

It is clear that fulfilling people's basic needs and promoting the achievement of societal requirements are a fundamental starting point in the development of e-markets [11]. Thus, the availability of objectives and strategies that help to promote this progress by exploring the characteristics of the consumer and identifying his or her requirements affect the acceptance of M-commerce. The current research focuses on usage requirements, which could help increase acceptance and usability levels, but it is limited in terms of its focus on the relationship between the intention to use and users' behavioural requirements to increase their levels of confidence and acceptance. Increasing customers' needs to use M-commerce applications includes focusing on consumer confidence and the role of the government in supporting communities' acceptance in developing countries, such as Saudi Arabia. The governmental role might be helpful initially and might have a significant impact on users' behavioural adoption, which is determined by the requirements of confidence in M-commerce, as well as their satisfaction at the launch stages of e-markets and commercial applications on smartphones [8]. Furthermore, user behaviours in the online market environment have changed significantly in the current decade in terms of the various type of sales on online shopping platforms, the multiplicity and spread of activities, and their acceptance by people [33]. Strong demand is

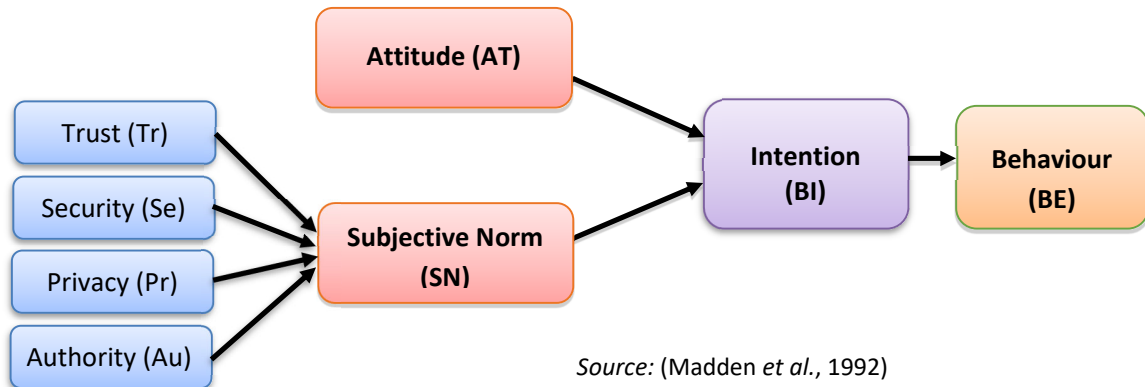
needed to meet the requirements of end-user confidence and trust in online markets platforms, because these are the dilemmas when it comes to increasing the acceptance and reliance levels in e-markets [17]. The proliferation of initiatives, incubators, and business accelerators, which represents an effective connection between the government and private sector in the Gulf region, provides the right environment in which to increase the chances of success in online trading in general and M-commerce in particular. In addition, the establishment of an E-commerce council in Saudi Arabia in early 2019 might help to gradually increase government support of online trading [34]. The rapid and widespread development of the commercial mobile application depends primarily on the target segment. Therefore, studying the trust and confidence requirements will help to increase the use of M-commerce applications and encourage the growth of the sector in the future [17].

When M-commerce appears, the user becomes aware of the importance of non-functional requirements, such as assurance and trust, which represent the intentional determinants of user behaviour that help spread the M-commerce approach through the use of smartphones and other smart devices [34]. Therefore, providing the main requirements will help to generate initial confidence and trust, which will increase the number of frequent users and those who recommend that others use M-commerce applications [16]. This requires the establishment of initial user confidence, for which it is necessary to know the requirements of the behavioural intention to increase confidence [18]. [15] noted the importance of identifying the requirements that affect consumer confidence in E-commerce. The most important of these requirements are perceived usefulness, structural security, and personal trust tendency, which significantly influence initial trust, which, in turn, also plays an important role in the adoption of the behaviour [15]. [17] noted the importance of added value in the trust requirements and business reputation perspectives, which are important to initial confidence. [16] indicated that highlighting the business type and company's objectives are essential for initial confidence in M-commerce [16]. However, the current research that focuses on the availability of personal standards and increased initial confidence is not rich enough in the M-commerce field.

This study focuses on identifying and supporting users' adoption in M-commerce, which represents the view of stronger party to accept the commercial applications through smart devices [11]. The strength of customer team to identify requirements that are explained by the behavioural intention that are needed to accept business behaviour on smartphone commercial applications [18]. Theoretical frameworks, such as the TRA, TPB, TAM, and UTAUT, are used to analyse materials that help to increase the level of perceived interest, ease of use, and personal standards, which have a positive impact on adoption

behaviour in M-commerce [7]. [15] pointed to the importance of privacy and its negative or positive impact on adoption in regard to M-commerce application requirements [15]. [16] examined the importance of consumer primary trust in M-commerce, and their study outcomes were requirement components, such as trust, security, privacy, and authority. Another study conducted by [6] examined the comparative advantage of smart business transactions. It focused on the importance of personal confidence and company reputation and their impact on the adoption of trust in business applications. Thus, user behaviour can provide the online system with the necessary personal information regarding the products or services that users enjoy. The trust also illustrates expected performance, which helps to provide information about the expected benefits for users when they use the system. A number of researchers have pointed out that perceived benefit is associated with primary trust and can affect behaviour adoption directly [15-16]. Therefore, providing the requirements for confidence in M-commerce commercial applications increases the chances that they will be used by the people. This is done by providing means to increase the user's confidence level, generating initial confidence in the system, and then increasing the trust role in the future [16]. Additionally, the assessment of reliability and trust requirements across M-commerce commercial applications helps users to make their usage more effective and enables a high degree of compatibility between the actual requirements and personal standards of the target segment [1]. These requirements might be beneficial in terms of increasing initial confidence and adoption behaviour to consumers by providing easier

Figure 1: Theory of Reasoned Action



Source: (Madden *et al.*, 1992)

requirements when using the system and by enhancing users' initial impressions, which prompts them to adopt the system gradually [28].

A number of studies have shown that trust is a personal signal of users and that it is related to their requirements, personal standards, and experiences of using technical devices, including smart handsets. These initial features are crucial to establishing primary trust [16]. Users' personalities can have a direct effect on their adoption behaviour [16]. Therefore, people with personality traits that lead them to build trust before use tend to focus on new information concerning the requirements that help motivate and activate behavioural intention before establishing initial confidence [7]. Additionally, customers feel that their privacy is threatened when they have to provide certain personal information or when they are not informed regarding what is required versus what is optional [28]. The required information is what the system needs for it to complete the online processes through mobile commercial applications, while optional information is sought by the system to enable contact to be made with the consumers in the future and build bridges and relationships with them [11]. Therefore, the customer privacy concerns could increase as their information becomes more and more controlled. In purchasing transactions that are carried out via mobile commercial applications, the user's mobile phone number and personal information, such as address, credit card details used to complete the online purchase, and other special information, depending on the application that is being used [28]. The user is concerned about providing this information automatically before he or she reaches an initial stage of confidence, which is the resistance point in the initial registration process [16]. This level of confidence increases or decreases according to the personal standards requirements. Additionally, a number of studies have shown that initial confidence has a positive effect on behavioural adoption [15-16]. When integrity emerges among end users' requirements for M-commerce applications, the system

should be stable and reliable, and it should ensure that its obligations are met, as people place their trust in a specific system which has a positive effect on adoption behaviour.

A. The TRA applied assurance concept in the M-commerce field

The TRA theoretical framework focuses on three key determinants in dealing with necessary assurances for using smartphones for online purchasing applications. The keys are to determine the standards and direction of behaviour; to identify personal standards, which increase the user's level of confidence; and to then use all of this information in commercial applications. These three keys can be presented in the TRA constructs of attitudes, subjective norms, behavioural intentions, and behavioural of users who dealing with M-commerce application (See Figure 1).

- **Attitudes (AT):** This depends on cumulative beliefs about specific behaviours, and by assessing individual beliefs, attitudes will be formed [31]. For example, people may have positive beliefs that online shopping itself is useful for them and has numerous positive features, such as the ability to save time and effort and to view competitors' prices. However, negative beliefs can have a negative effect when dealing with M-commerce and online shopping. For example, financial transactions may not be trustworthy, the quality of purchases cannot be checked before completing the online transaction, and some issues related to private and confidential information, which should be stored in a secure location in an encrypted format. Thus, when dealing with M-commerce, confidence is more important than purchasing-power issues and the increased availability of various options for the consumers. Therefore, to overcome obstacles to consumers' attitudes, it is critical focus more on the importance of trust than on the technology issues that have been identified and developed in previous research [1]. The cumulative beliefs used to assess

people's intended behaviour can be measured by several indicators: First, whether the service provided by mobile commercial applications is good value for money; second, if the price of products purchased through commercial applications is lower than the price in traditional shops. Third, the amount of time and effort spent completing business transactions can be reduced when using an online commercial application [16],[28].

- **Subjective norms (SN):** This aspect emphasises the balance between subjective norms, which are directly affected by individuals' social environments and, thus, affect their behavioural intentions [32]. While shopping online, people and their friends and colleagues who are interested in making online purchases encourage each other to do so, and this may help create a positive perception of a socially acceptable level for online commercial application behaviour [11]. In this part of the theoretical framework, positive or negative perceptions should be available in equal level to deal with commercial applications on smartphones because if the social environment surrounding the user is supportive, it might be coming to accept and deal with current and new technology that relevant to M-commerce [32]. In contrast, an individual who still prefers traditional shopping finds that the surrounding environment does not support the digital transformation and the use of electronic channels via M-commerce [17]. Thus, the perceptions and beliefs of those people have a negative effect on the subjective norm and, therefore, on behavioural intentions, to some extent. In this sense, the availability of technical assurance is necessary, and this helps to provide the underlying causes of the increase in positivity [13]. This leads to the importance of measuring the necessary assurances within subjective norms constructs, which are trust, security, privacy, and authority, as these increase the acceptance level when it comes to dealing with smartphone commercial applications [8]. These constructs can be measured based on the level of satisfaction with commercial applications where the necessary assurances are available. These assurances are the fundamental aspects upon which customers' expectations are based when it comes to the use of commercial applications [8]. Finally, it is important that the learning material in the commercial applications that increase users' awareness and their ability to face technical issues in online trading process, which lead to increase the quality and performance, also help to directly increase the level of acceptance for the targeted segment in regard to mobile commercial applications [12],[26].
- **Behavioural intentions (BI):** These consist of the outputs of attitudes and subjective norms. The attitudes are the weight of individual positive attitudes about the

ease of online shopping measured against the expected risks [31]. The subjective norms are affected by social acceptance and its results and it is a balance between the experiences and attitudes of friends [32]. Both the attitude side and the norm side eventually help to increase the intention to accept online shopping and increase the level of trust across the necessary assurance, leading to actual behaviour [32]. The measurement of the behavioural intention to accept M-commerce applications is based on a number of different factors, which help to increase the acceptance of the target audience when it comes to dealing with future M-commerce applications [33]. The construct of behavioural intentions is measured by five factors: the user encourage myself to use M-commerce applications and have the intention to use any commercial application, as long as the necessary assurances of quality and security are available; M-commerce applications can be used frequently for most daily activities in the future; I can increase my use of M-commerce applications instead of online e-procurement sites that work on smart devices in the future; I would like to enjoy using the capabilities and possibilities of M-commerce applications through smart devices; and, finally, commercial applications via smart devices are important to me, so I will recommend them to others periodically [7], [16].

- **Behavioural (BE):** The TRA has been used as a theoretical framework in many studies in B2C M-commerce, such as for buying based on previous consumer feedback and recommendations [35], linking intention to reuse and the use of E-commerce purchasing features [26], adopting M-commerce in Egypt [35]. Therefore, the adoption of Internet technology is strongly influenced by people's beliefs about technology and its effectiveness, and it is directly affected by the necessary assurance that helps to increase consumer confidence in M-commerce commercial applications [7]. The previous studies also demonstrate that TRA is applicable to E-commerce and is commonly used as a basic model of behavioural prediction with regard to technology adoption [17]. However, despite the limited number of studies that focus on determining the assurance requirements for increasing the level of consumer confidence in smart device commercial applications, this increasing level of confidence is one of the main drivers of consumer attitudes, which also helps to provide the basis for positive beliefs regarding the acceptance of commercial applications [35]. Additionally, the subjective norm that can be adopted by communities or in specific environments to deal with M-commerce plays a key role in helping to increase the acceptance of smart devices' commercial applications according to the requirements of the target audience in the e-

procurement process for commercial applications [4]. This research focuses on identifying the subjective norm criteria and behavioural concepts that help increase level of trust and behavioural intention based on the requirements of the TRA framework. Thus, the concepts that can be examined in this study are summarised into three basic aspects: First, no specific behaviour is predicted through commercial applications; therefore, these behaviours are equal with regard to being introduced and influenced to the target audience. Second, the degree to which any behaviour is implemented is subject to voluntary control; therefore, acceptance in regard to dealing with or rejecting the use of specific smart device applications is based on personal opinion. Finally, the time that elapses between behaviour performance and impact measurement should be reasonable and should be taken into account when measuring the impact of using commercial applications to change the behaviour of communities and when assessing behavioural concepts to accept M-commerce applications as one of the solutions to be used. These solutions should address the challenges to communities to increase the costs of traditional procurement in terms of the effect on time and money [4],[17].

▪ Framework hypothesis

Providing guarantees to customers significantly increases the maturity level of smartphone applications. Four main constructs are related to the TRA (attitudes, behavioural, behavioural intentions, and subjective norms), and another four are connected to the subjective norm construct (trust, security, privacy, and authority). These constructs represent the required concepts that are important to increasing the level of acceptance and end-user confidence regarding M-commerce.

Attitudes: Attitudes depend on specific beliefs. Therefore, positive beliefs have positive attitudes and vice versa. Consequently, the availability of positive and demand-driven attitudes in M-commerce applications will significantly increase the target segment's acceptance of M-commerce by providing the basic requirements that are the necessary assurances to increase the acceptance level of mobile commercial applications [16],[28]. Thus, the following hypothesis should be examined:

H1. Increased attitudes will have a positive effect on behavioural intentions and the relevant level of acceptance to use M-commerce application

Subjective Norm: Subjective norms are one of the fundamental aspects that are directly affected by the social environments of individuals and, therefore, affect their behavioural intentions [31]. Therefore, users of new technologies, especially commercial applications on smart devices, have positive perceptions about the use of electronic applications and, thus, encourage their peers and

friends to use them [13]. Their encouragement could provide the most important part of the theoretical framework and an appropriate way to increase the level of acceptance by identifying and examining the necessary assurances that will have a positive effect on the target audience and associated social environments [11]. In previous studies, the necessary technical assurance has been shown to be one of the pillars that help increase the positive level which help to increase the level of acceptance from target audience to use the M-commerce applications, and it has been divided into four factors. The measurement of the necessary assurance within the subjective norm boundaries may help to determine which assurance should be provided to reflect the core interests of the target segment and, thus, the level of satisfaction derived from using commercial applications via smartphones [12]. Accordingly, the hypothesis on the subjective norm aspect of the theoretical framework is as follows:

H2. Increasing the subjective norm will have a positive effect on behavioural intentions and the relevant level of acceptance of the use of M-commerce applications

Trust: The basic parameters for trust, selected to build confidence through M-commerce applications, which are measured across following factors, provide safe m-payment methods and increase customer awareness by briefly describing the main threats during using M-commerce applications [15], [15-16]. Therefore, in regard to this concept, the hypothesis is as follows:

H3. Increased trust will have a positive effect on the subjective norm and relevant level of acceptance of the use of M-commerce applications

Security: Security policy is evaluated via the m-shopping applications' presentation of pass certificates for tests run by OS systems, such as those of the Apple Store and Google Play [27]. The security aspect can be measured through the following factors, displaying the security certificates of websites and relevant application, presenting the security policy clearly, presenting the application's pass certification, and providing multiple passwords to save the client's information in the application [36]. Therefore, the hypothesis related to trust concept would be as follows:

H4. Increasing the security level in M-commerce applications will have a positive effect on the subjective norm and relevant level of acceptance if the use of M-commerce application

Privacy: the privacy in the M-commerce application is centred on the concern that information that is entered into the mobile application should not be handled by anyone, with the exception of the company's authorised representatives or entities who have authorisation from the client [28]. This part is measured by following factors, showing customers an agreement that include their

information that was recorded on the application is confidential, displays a privacy policy, and ensures that customer data are not monitored nor saved via temporary files, such as cookies [28]. The hypothesis related to this concept is the following:

H5. Increasing the privacy level in M-commerce applications will have a positive effect on subjective norms and a relevant level of acceptance of the use of M-commerce applications

Authority: It is enhanced when basic contact information about the company is provided. It represents back-office address information that looks after and seeks to accomplish the mobile application requests if necessary [37]. This concept is measured through the provision of information about the company or employees who can communicate with customers, implement copyright policies to deter criminals from setting up imitation applications and deceiving customers into using them, and increase the credibility of the application's content by providing alternative supporting sources, such as a company website, e-mail address, SMS facilities, and so on [33-34]. This leads to the following hypothesis:

H6. Increasing the authority of the application in the M-commerce application will have a positive effect on the subjective norm and a relevant level of acceptance of the use of M-commerce applications

Behavioural intentions: Behavioural intentions show the importance of increasing the level of progress and acceptance with regard to dealing with new systems or modern approaches to the current systems [31]. Therefore, the assurance requirements for smart device commercial applications need to be studied to help increase acceptance and actual repeatable use; therefore, positive behavioural intention is affected by the direct provision of assurance requirements for the acceptance and use of M-commerce applications [7],[17]. While behavioural intentions are directly related to subjective norms and attitudes, attitudes are based on fixed beliefs, and subjective norms are focused on the necessary assurance of the target audience beliefs about the importance of M-commerce commercial applications [35]. Thus, the target audience is expected to be positively or negatively influenced by their attitudes towards the approach of dealing with M-commerce, as well as the subjective norm associated with the level of applied assurance requirements in M-commerce [4],[17]. The hypothesis related to this construct is as follows:

H7. Increasing behavioural intentions will have a positive effect on the behaviour and relevant level of acceptance of the use of M-commerce applications

1. Methodology

The study focuses on the consumer segment that already has E-commerce skills and has previously completed online

purchases. Therefore, it focuses on the participants' knowledge, perspectives used to determine the basic requirements of the target audience with regard to increasing its confidence to use smartphone M-commerce applications that are suited to the Arabic traditional and social environment. Therefore, 12 indicators are tested in this study, focusing on the assurance perspective, which might help increase consumer confidence. To test these indicators, we developed a survey. An electronic questionnaire was selected as the best option for gathering data for two reasons: First, an online questionnaire can be distributed across a wide geographical area, and second, the use of an online survey allows the research team to gather a large amount of data from participants for research purposes [38].

Table 1: Frequencies of Demographic Variables

Category of Participants	Saudi Arabia (KSA)		Qatar		Emirate (UAE)	
	No.	%	No.	%	No.	%
All participating	386	100%	171	100%	246	100%
Q1. Gender						
Male	225	58.3	101	59.0	135	54.9
Female	161	41.7	70	40.9	111	45.1
Q2. Age group						
From 15 - Under 20	28	7.25	5	2.92	2	0.81
From 20 - Under 30	95	24.6	41	23.9	65	26.4
From 30 - Under 40	190	49.2	90	52.6	110	44.7
From 40 - Under 50	43	11.1	20	11.7	53	21.5
From 50 - Under 60	16	4.15	9	5.26	12	4.88
More than 60	5	1.30	3	1.75	1	0.41
Missing	28	7.25	5	2.92	3	1
Q3. Current Educational level						
PhD	78	20.2	27	15.7	32	13.0
Master	122	31.6	61	35.6	83	33.7
Bachelor	135	34.9	71	41.5	94	38.2
Diploma	18	4.66	-	-	12	4.88
High School	20	5.18	6	3.51	19	7.72
Missing	13	3.37	6	3.51	6	2.44
Q4. Mobile brand type						
Samsung Galaxy	138	35.7	62	36.2	10	41.0
Apple iPhone	193	50.0	88	51.4	11	48.3
Nokia	5	1.30	1	0.58	1	0.41
HTC	9	2.33	1	0.58	3	1.22
Blackberry	15	3.89	3	1.75	8	3.25
Motorola	12	3.11	7	4.09	6	2.44
LG	5	1.30	2	1.17	3	1.22
Missing	9	2.33	7	4	5	2.03
Q5. Number of hours spent on the Internet						
More than 1 - Less 5	234	60.6	70	40.9	95	38.6
More than 5 - Less 9	75	19.4	67	39.1	90	36.5
More than 9 - Less 13	46	11.9	18	10.5	45	18.2
More than 13 - Less 17	18	4.66	8	4.68	8	3.25
More than 17	8	2.07	4	2.34	6	2.44
Missing	5	1.30	4	2.34	2	0.81
Q6. Do you use the mobile phone for online purchasing						
Yes	328	84.9	15	89.4	22	91.8
No	44	11.4	3	7.60	6	7
Missing	14	3.63	5	2.92	4	1.63
Q7. How regularly do you purchase online						
Less than once a month	193	50.0	91	53.2	133	54.0
1-2 a month	111	28.7	47	27.4	64	26.0
1-2 a fortnight	21	5.44	9	5.26	16	6.50

1-2 a week	11	2.85	3	1.75	14	5.69
Daily	32	8.29	15	8.77	17	6.91
Missing	18	4.66	6	3.51	2	0.81
Q8. What are the information sources encourages you to take decision to buy via smart mobile phone?						
Experience of previous customers via trusted and formal websites	87	22.54	76	44.44	80	32.52
Competitive price	79	20.47	77	45.03	77	31.30
Company reputation	83	21.50	84	49.12	77	31.30
Friend advice	58	15.03	55	32.16	55	22.36

The main part of the questionnaire contained demographic questions and indicators about the areas under consideration. These indicators included close-ended questions about assurances. Each question was based on a five-point Likert scale [38]. The study sample consisted of residents of the GCC, who responded “yes” to some of the conditional questions. Regarding the target numbers for the questionnaires for the study segments, 800 responses were collected, based on a sample-size equation, and according to these, the confidence level was 95%, with an acceptable margin of error of 7.5.

4. Analysis

At the beginning of the survey, we asked basic demographic questions to get a feel for the audience (See table 1). All the participants represent a consumer demographic who has sufficient experience with online purchases, having made at least one. Of the total number of respondents, 58.3% categorised themselves as males living in Saudi Arabia, 59.06% as males in Qatar, and 54.9% as males in the UAE, while female respondents for previous countries represent the remainder. Within each age group, there was, to some extent, consistency in terms of distribution, as shown in Table 1. As regards the question of educational level, the highest proportion of participants (more than 85%) had at least a bachelor’s degree, with the highest proportion of the sample population holding a bachelor’s degree—35% in KSA, 41.5% in Qatar, and 38.2% in UAE.

One of the main questions was about the type of smartphone device used. The results showed that more than 50% of the respondents used an Apple iPhone, more than 30% used a Samsung Galaxy, and 20% is distributed among other the smartphone devices that presented in the table 1. Over 90% of the participants have conducted an online transaction via a smartphone device. This is a useful indicator of the rate of participants who have had a satisfactory experience to how to accomplish E-commerce or M-commerce transactions via smartphone, and they are familiar with aspects of the test indicators that were included in this study. All the participants believed they had to have sources of support and encouragement for them to make online purchases. The most important support-related reasons that were provided were previous experience with online shopping using reliable websites (29.1%),

competitive prices (27.9%), company’s reputation (29.2%), and advice of friends (20.1%).

A. The Factorability of the Data

As presented in Table 3, the KMO values in all the structures were between 0.861 and 0.602, which was the highest level, thereby significantly exceeding the minimum acceptable level. Finally, the Bartlett’s test result for each construct was significant, with a value of $p < 0.001$. This score indicated that a significant relationship exists between the indicators that are included in the analysis [19]. These results confirmed the factorability of EFA, which was conducted for the assurance construct [19],[39],[41] (See table 2).

Table 2: KMO and Bartlett’s Test of Sphericity, and Cronbach’s Alphas and its validity Measurement Scales

	KMO	Bartlett’s Test	Df	Sig	Cronbach’s Alpha	Validity
Trust	0.682	166.337	3	.000	0.801	0.895
Security	0.654	306.907	3	.000	0.78	0.883
Privacy	0.751	263.562	6	.000	0.771	0.879
Authority	0.837	632.738	15	.000	0.853	0.924
Attitude	0.641	169.456	3	.000	0.612	0.783
Subjective Norm	0.686	200.981	3	.000	0.756	0.87
Intention	0.625	158.67	3	.000	0.621	0.788
Behavior	0.673	163.876	4	.000	0.684	0.827

B. Internal Consistency

[42] noted the importance of consistency in participants’ answers, which is known as factor internal consistency or the Cronbach’s alpha coefficient. It is the most common measure of internal consistency [39],[42]. The information shown in Table 4 presents the internal consistency scale of the assurance constructs, which represented between 0.919 and 0.899. The validity of the same samples was between 0.959 and 0.948. The Cronbach’s alpha and the validity results indicated good internal consistency and reliability of the samples. In addition, the internal consistency of each indicator is presented separately in Table 3, which shows the high value of the internal consistency coefficient for all indicators without exception.

C. Factor Extraction and Rotation

In this study, the factors are extracted using principal components analysis (PCA) in SPSS to achieve a summary of the experimental data sets to detect the best factors [43]. In social research, it is common to examine solutions that represent 60% less than the total variance, because the information in this area is often less accurate in regard to the differing opinions among the study participants [39],[40]. Therefore, factor loading determines the degree to which the variables are loaded onto these factors once the latter have been extracted [19]. The Varimax orthogonal rotation is the preferred factor rotation method because it is the simplest and most common of the factor analysis orthogonal rotation tools [43]. A factor rotation value of 0.50 or above is considered sufficient to obtain a power level greater than 80% with all the study samples together [39],[43]. The indicators

with a factor-loading test value of less than 0.50 were excluded (See table 3).

Table 3: Data analysis from all respondents showing factors listed in order of descending mean value for each group

	Variables	Factor Loading							
		1	2	3	4	5	6	7	8
Attitudes	At01	.752							
	At02	.834							
	At03	.818							
Trust	Tr01		.608						
	Tr02		.624						
	Tr03		.718						
	Tr04		.619						
Security	Sc01			.705					
	Sc02			.801					
	Sc03			.783					
	Sc04			.763					
Privacy	Pr01				.699				
	Pr02				.631				
	Pr03				.655				
Authority	Au01				.611				
	Au02				.656				
Subjective Norm	SN01					.819			
	SN02					.763			
	SN03					.662			
Behavioural intentions	BI01						.684		
	BI02						.806		
	BI03						.749		
Behavioural	Be01							.728	
	Be02							.633	
	Be03							.743	

At this stage, the EFA test was conducted to divide the indicators into those that were acceptable and those that were to be eliminated based on the results. The indicators that have more than 0.5, they should be kept together in one component. The assurance constructs were shown cohesion among the indicators and giving an indication that according to GCC traditions, the quality assurance indicators are more important for GCC in M-commerce field.

The information in Table 4 indicates the relationship between constructs in the theoretical model. The value of square root between 0.849 and 0.768. Thus, the discriminant validity of used indicators are sufficient for the study theoretical model requirements. Based on the information in the graph 1, the hypotheses for connecting the constructs together have been tested. The hypotheses is divided into two groups, one linked to the Subjective Norm constructs and the another link to the TRA model constructs. There are three main criteria should be conducted to assess the hypotheses of this study. The reliability of the measures that should be greater than 0.6, convergent validity should be greater than 0.50, and discriminant validity must be not less than 0.5. These three criteria are recommended by [3].

	Constructs	1	2	3	4	5	6	7	8	Mean	SD
1.	Tr	0.768								4.6599	0.5948
2.	Se	0.577	0.781							4.6989	0.5439
3.	Pr	0.021	0.155	0.832						4.6360	0.5770
4.	Au	0.187	0.252	0.228	0.815					4.4570	0.7190
5.	AT	0.093	0.062	0.472	0.542	0.775				4.5540	0.6310
6.	SN	0.018	0.096	0.428	0.092	0.179	0.773			4.4470	0.6830
7.	BI	0.311	0.496	0.213	0.363	0.283	0.239	0.849		4.1020	0.7440
8.	BE	0.028	0.004	0.215	0.048	0.315	0.132	0.324	0.795	3.9960	0.7416

This study also, focusing to ensure the values of constructs are strongly and significant relationships between (Tr - Se - Pr - Au) and the main components of the TRA model. The T-value between the model constructs ranges between 4.255 and 8.273, that have significant correlation and had achieved a minimum T-value that is 1.96. Additionally, the Cronbach's Alpha values for all constructs 0.612 and 0.853 that indicates good internal consistency between the model constructs [3]. Besides that, the overall of goodness-of-fit indices was examined for the constructs and the results above the recommended value and the results are presented in table 5.

Hypothesis No.	The relationship for path	Standardised path coefficient	Critical ratio or (t-value)	P-value	Significance
H1	AT → BE	0.363	5.254	0.005	Yes
H2	TR → SN	0.328	4.743	0.001	Yes
H3	SE → SN	0.383	6.581	0.003	Yes
H4	PR → SN	0.472	8.273	0.001	Yes
H5	AU → SN	0.339	7.481	0.002	Yes
H6	SN → BI	0.428	5.508	0.003	Yes
H7	BI → BE	0.313	4.255	0.005	Yes

Indicators	X ² /df	GFI	TLI	NFI	CFI	IFI	AGFI	RMR	RMSEA
Results	3.141	0.888	0.878	0.816	0.899	0.902	0.851	0.028	0.061

5. Discussion

It should be noted that TRA contains three key determinants that can affect the relationship between behavioural intention and behaviour. First, the measure of intention corresponds to its internal levels; therefore, the determinants for predicting particular behaviours should be equal. This implies that there is no specific behaviour that is most likely to be fundamental in the M-commerce via commercial applications. Therefore, these behaviours, including acceptance or rejection, remain as messages for those who wish to use them. The only factor that increases the level of acceptance or rejection is necessary requirements which is trust. The trust can be achieved when apply the assurance requirements that can be useful to increase confidence to deal with M-commerce commercial applications. All of the assurance requirements should be remained equal in front of the target audience in terms of

choosing according to their requirements. This means that the criteria being examined in this study must be based on the personal choices of the target audience. Second, the degree of implementation of the behavioural intention is under the voluntary control of an individual, and there must be equality freedom of choice between the acceptance or rejection of a specific behaviour and within the framework of personal opinion. In other words, the degree of implementation of any behaviour is subject to voluntary control, which is fundamental to dealing with the individual with regard to his or her behavioural Intention. Third, there must be sufficient time between the performance of the behaviour and the measurement of its impact, as well as between the intention to implement a specific behaviour and the measurement of its impact [31-32].

Based on the fundamental determinants of TRA, it can be used to identify the key aspects of multiple assurance that help increase acceptance and confidence regarding the use of commercial smartphone applications. These indicators are important for two reasons. First, these requirements indicate the identification of increased customer confidence in the system, and they take into account the continuous reviews and updates of information, which maintain the level of trust at the appropriate stage [16],[31]. Second, these requirements show strong coherence across many statistical tests, such as factor analysis and reliability. In general, the level of potential concern that consumers may feel when dealing with technical applications in the area of M-commerce helps to promote specific behavioural levels that often represent the behaviours and requirements of target audiences when it comes to dealing with M-commerce applications [12],[39]. Furthermore, measuring the level of behavioural intention and voluntary control—which depend on the user's trust in the audience targeted by these applications—as well as the time available between the diffusion of commercial applications in GCC and the measurement of the impact of trust in purchasing through M-commerce applications is considered sufficient for knowing the actual requirements for increasing necessary assurances that are essential to dealing with M-commerce applications [33]. Thus, the requirements in this study indicate the fundamental level that should be included to provide to consumers for increasing the confidence and trust level when using the M-commerce application [16]. As a result, consumers are interested for integrating the necessary requirements in the M-commerce application to ensure that the M-commerce processes are including the key determinants of increased confidence and effective use [17].

A. Attitude

Based on consumer attitudes about specific behaviours that are in keeping with the requirements of M-commerce applications, providing these requirements will centre on a variety of attitudes that are based on consumer behaviour

[28]. These behaviours can be summed up as full acceptance, total rejection, conditional acceptance, conditional rejection, or neutrality. Based on the participants' responses to the questionnaire, we find that most responses adopt full acceptance or conditional admission, because actual acceptance in regard to dealing with applications is created from the stage of discussing and proposing requirements. These requirements are presented as functions and information that are beneficial to increasing the level of consumer confidence and investing in consumer attitudes to make their attitude more positively toward using M-commerce application [44]. As well as, based on their desire to the associated to achieve their requirements, it is important to have positive attitudes while the audience dealing with M-commerce commercial applications. Consumer attitudes are based on a number of different measurement conditions, which can be summed up into three key aspects: addition, value of the product, and time spent [31-32]. These three aspects represent the fundamental determinants of building optional positions in the online commercial process through M-commerce applications [31]. These aspects will facilitate the assessment of the requirements and help determine the satisfactory and acceptable level, as well as how to achieve quality and assurance requirements in commercial applications that consist of trust, privacy, security, and authority.

B. Subjective norms

Many requirements are related to subjective norms that can be changed according to the desires of consumers [31]. These criteria are directly affected by social environments, and behavioural intentions can be affected in the future [8],[31]. These requirements that are related to subjective norms are affected and changed based on personal convictions, which are, in turn, influenced by the social environment [26]. Therefore, subjective norms govern the importance or irrelevance of any part of the basic assurance of quality and consumer confidence to deal with M-commerce commercial applications [16],[26]. Furthermore, the social environment is primarily supportive with regard to the acceptance of M-commerce; thus, the basic requirements included in this study may help to increase the level of acceptance with it comes to dealing with commercial applications, as well as in regard to measuring the level of behaviour that positively affects behavioural intentions [11], [31]. Therefore, consumer satisfaction level, self-assurance regarding the possibility of increasing quality when applying these requirements, and achieving consumer expectations of applications through the provision of these requirements are the key milestones that will help guide the target audience towards accepting the commercial applications [12],[44]. When conducting the survey and gathering data from the participants in this study, it was important to link the level of acceptance to basic quality aspects. The expectations of the target audience's

acceptance are also important when it comes to these requirements, and this is what has already emerged and evident. These requirements are considerably important, depending on the participants' results, and they make the relevant hypothesis significant relation between the aspect subjective norm and behavioural intention. Additionally, the other parts (Trust, Privacy, Security, and Authority) that are associated with this construct provide the most important requirements to increase the acceptance level by identifying and examining the necessary assurances that will positively affect the target audience and associated social environments [12]. This is what is emphasised in the following paragraphs. The information has been divided into four main sections addressing the kind of assurance should be provided to reflect the core interests of the target audience by determining its level of satisfaction regarding the use of M-commerce applications via smartphones.

1) Trust (AS1-4)

The main criteria that can help to build confidence through M-commerce applications consists of four key elements. These are the factors that increase and deepen the level of confidence of the target group, and they take into account the importance of not using a specific method to convince the consumer about a specific product [16]. This helps to increase the level of acceptance based on voluntary control, all possible suggestions would come under the people opinion, and they should be without coercion [31]. First, the availability of diverse and secure payment methods, including basic security steps, represents the key important factor that increases the standard of acceptance and confidence to deal with M-commerce applications [7]. Second, increasing consumer awareness about the threats or risks of using the online commercial applications represents a major challenge to companies when it comes to increasing

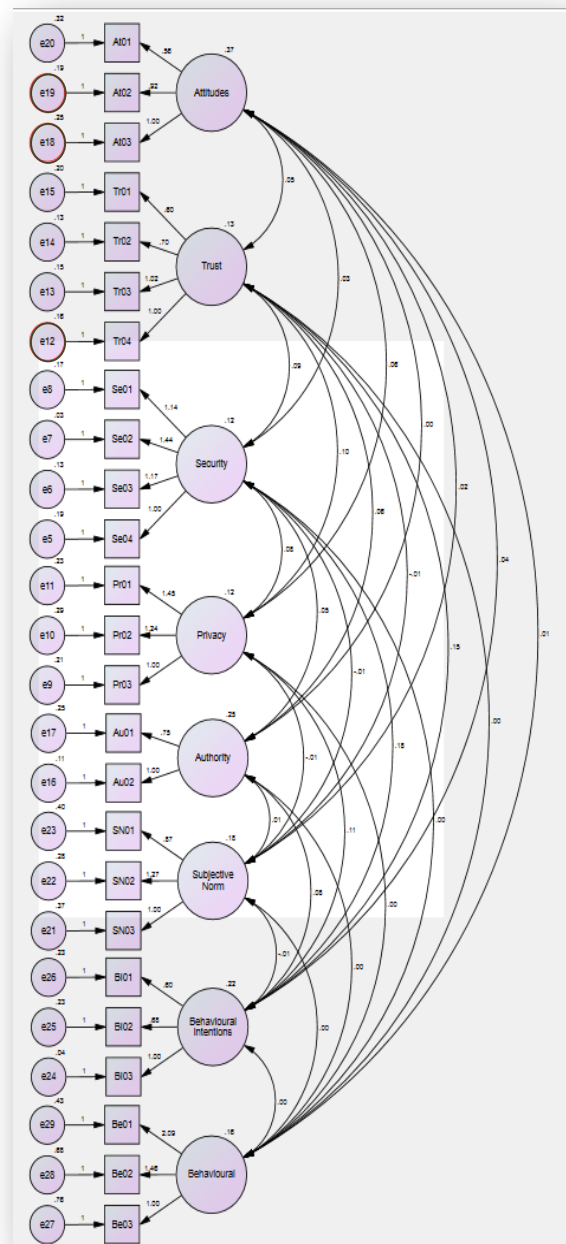


Figure 2: Model Constructs Tested via CFA

confidence. Thus, the companies should take their lead to keep and cooperate with their customers by offering them periodic assistance about security errors and how these problems can be overcome [17],[26]. Third, it is important to provide feedback to increase the level of acceptance of the target audience towards the purchase of a specific product or to deal with a particular method through the use of M-commerce applications, which directly affect the decisions of consumers regarding particular products or

processing styles. Moreover, many participants in this study preferred to receive comments about products and services from third parties, as this helped to prevent the manipulation of the reactions by the companies themselves [44]. Finally, the information about the contact companies and their representatives helps to solve urgent problems; thus the availability of companies' information helps to speed up completion of user issues that cannot be completed with online channels, increase the level of customer satisfaction, and ultimately increase the level of acceptance of the target audience [11].

2) Security (AS5-8)

It is important to evaluate the security policy through M-commerce applications on smartphones, and the level of security in commercial applications can be measured based on many basic aspects [27],[36]. This is because the provision of security requirements is one of the main pillars for increasing the level of acceptance for the target audience

3) Privacy (AS9-11)

Privacy is one of the subjective norm criteria that help the target segment become involved with and accept M-commerce applications [28]. The main condition in the user's data is protected in applications and is only authorised by the company representatives, with explicit authorisation from the users [28]. The subjective norm criteria in the privacy aspect include a number of basic requirements which increase the level of acceptance. The privacy procedures show the certificate of privacy and guarantee that the data registered in the application remain confidential based on several criteria, such as the provision of double verification standards, which are widely used in the banks field in GCC [8]. In other words, do consumers tend to keep their personal and financial information in M-commerce applications to complete online purchases through bilateral verification? How often are they willing to make future purchases using the same method? The results showed slight differences between the three countries with regard to their responses: 93% Saudis agreed and were willing to use this approach, compared to 86.5% from Qatar and 91.8% from the UAE. In general, a large proportion of the participants noted the importance of this parameter, which helps to increase confidence when saving personal account information and credit card details in a safe place after showing an explicit certificate that displays the security policy of commercial applications and ensures that all data stored in these applications are secure, encrypted, and will be used only when the customer requests the information for bank transactions [7]. Furthermore, one of the most important requirements of self-criteria is not saving the customer's data in temporary files on the Internet browser for subsequent use, but technically to ensure that it is safely encrypted within the application to preserve sensitive data and prevent illegal access and theft. Moreover, using

[36]. In this study, providing the security requirements has a direct effect on social environments and affects behavioural intentions. The security requirements consist of providing security and privacy policies in the e-purchasing field to resolve trade disputes, providing different countries' policies governing online trading, especially for customers who purchase online from websites and application that are hosted in other countries, as this could help to increase the level of acceptance [11],[36]. Furthermore, presenting the success certificates for applications functioning under certain operating systems is necessary to allow them to be made available across many operating system stores [45]. Providing the online certificate is useful for consumers, as the application approval certificate means that the application is compatible with a core set of standards for each operating system and, thus, increases the level of security [27]. Briefly, the availability of basic security means represents the one of the main fundamental conditions that could help to increase the level of acceptance while using M-commerce applications. encrypted cloud storage will help access data directly while maintaining the confidentiality, availability, and integrity of the data at any time anywhere [26].

4) Authority (AS12-13)

One of the ways to increase the acceptance level in the subjective norm is to strengthen the power of companies in regard to their information, as well as the need to provide basic contact information about the company, which includes back-office information and alternative communication means in case of any disruption or delay, such as in the form of electronic applications or websites [11]. The alternative plans represent one of the basic criteria for increasing confidence, which lead to an increase in the consumer's desire to deal with these companies for their alternative available data and to communicate with the employees of the company [44]. Additionally, it is important to protect the company's rights in terms of guarding it from plagiarism and distributing these policies to all customers in order to preserve their information from illegal use, such as hacking via social engineering techniques [12],[44]. Saving information leads to the importance of the product and the company's main information, such as logos and policies, as well as how to increase consumers' awareness through various cognitive methods that help distinguish the valid communication with real customers through specific information that no body know it except the real customers and providing the right communication may help the company through its customers [12]. Furthermore, the availability of communication information through specific screens in applications will help to keep the applications running at normal times and prevent disasters [8]. The necessary assurance is linked to parameters that increase acceptance of and confidence to use M-commerce applications. These requirements are important for two reasons. First, they indicate the identification for increased

customer confidence in the system, and they take into account the continuous review and updating of information that maintains the level of trust in the appropriate stage continuously [1]. Second, the level of potential concern that consumers may feel when using these applications is based on previous pad experience when using the M-commerce or e-commerce [14]. Authority and subjective norm constructs show that consumer adoption of M-commerce applications depends on user confidence in the commercial applications [1]. Thus, the entirety of the main requirements indicates the essential level of acceptance that should be provided to meet the consumers' requirements to deal with M-commerce applications.

C. Behavioural intentions

People's motivation is based on their interests, attitudes, and subjective norms [31]. From the motivation, the desire for continuity can be raised, which helps to develop specific behaviour in social theories [31]. This confirms the importance of positive individual attitudes towards the ease of online shopping and trust in these processes in regard to the security risks that are expected and that could harm users [16]. These opposing situations make it imperative to accept online shopping and increase the level of trust through necessary assurance that leads to actual behaviour. Thus, the measurement of the intention to reuse the M-commerce applications based on the factors explained above showed many significant statistical results of previous factors on the quality assurance in the M-commerce applications. Furthermore, the subjective norms remain in equal options to be chosen for the target audience according to their requirements [31]. The equality option might help to place personal attitudes within the full voluntary control of the individual, as the status must be equal for acceptance or rejection of behaviour [31].

D. Behavioural

Extensive research has measured behaviour when dealing with smartphone commercial applications [4],[31]. The behaviour goes through a variety of stages until it becomes a mature behaviour that adopts an M-commerce approach in all its forms [7]. This interdependence in the behavioural requirements begin with attitudes and subjective norms, which are derived from many quality requirements and the necessary assurance, which help increase the level of confidence and acceptance [31]. Thus, conducting and dealing with commercial applications relies primarily on feedback-based recommendations that are built and increased with an increase in positive attitudes, subjective norms, and the intention to reuse, which is associated with them [10]. As a result, the behaviours of societies are not fixed but often change based on the requirements, aspirations, and attitudes, which help to increase the chances of acceptance in societies based on their aspirations and demands [33]. This then places all options and possibilities

on the table, with equal options for the target group [31]. In addition, the degree of implementation of these behaviours is subject to voluntary control within the framework and personal views that using the time to accept dealing with electronic systems in general and commercial smartphone applications in particular [31]. These decisions can then be turned into behaviours through the adoption of all relevant features, leading to significant adoption in the future [31].

2. Implications and future studies

The implication of this study is that it helps to identify the effects of the necessary assurance reflections and their direct and indirect impact on increasing the chances of acceptance level when dealing with commercial applications. There is a link between the literature review outcome by improving participants' attitudes and subjective norms standards in M-commerce applications and their relatedness to behavioural intention and the reuse of these applications in the future. The relevance of M-commerce research and its increased acceptance are highly evident in the management aspect of IS; this leads to the importance of studying the effects of theoretical frameworks and the resulting opportunities for the increasing acceptance of M-commerce through current studies [1],[24].

Through reviewing previous research, the theoretical framework of TRA showed the transition of the target segment through several stages to reach the stage of positive behaviour to deal with commercial applications based on attitudes and subjective norms that help to map the road directly to the behavioural intention and full confidence in a specific behaviour that is one of the main pillars of the TRA [8]. It is also not to be overlooked that behavioural intention is directly related to the impact of social acceptance, which is one of the fundamental determinants of predictive behaviour with respect to the adoption of technology [31]. Furthermore, it has been pointed out that attitudes are based primarily on cumulative beliefs and that subjective norm depends on the provision of the necessary assurance to increase the chances of acceptance [32]. Both sides' attitudes and subjective norms show the importance of trust, on which behavioural intention is based, and then the behaviour that results from the availability of the basic requirements and is related to the provision of the minimum requirements for confidence in smartphone commercial applications [8].

The behavioural intention to use commercial applications is the most important standard used to understand and know the degree of target audience acceptance to deal with commercial applications through the implementation of the voluntary control of target audience decisions to deal with commercial applications [32]. This leads to the possibility of measuring the level of consumer acceptance by rethinking certain relevant M-commerce applications and increasing customer awareness by dealing with similar M-commerce applications in the same field [8],[33]. Using

similar commercial applications gives end users' greater confidence and flexibility to deal with many smartphone commercial applications with the same features, although there are some differences in the overall look and the products offered [8].

This study also indicates the importance of improving the level of necessary assurance to create customer loyalty to deal with smartphone commercial applications [26]. Increasing customer satisfaction is a key factor to determine the level of acceptance of the target segment, thus focusing on providing the Authority construct's requirements to increase the chances of acceptance, and this could be helpful in terms of building sufficient confidence [23]. Creating sufficient loyalty is key to increasing revenues in M-commerce and is an important aspect of increasing the likelihood of reuse. Furthermore, developers of M-commerce systems should be more professional in portraying these requirements, increasing user satisfaction, and increasing their drive to reuse commercial applications in the future [26],[28]. Moreover, the lack of basic requirements to build customer confidence in the M-commerce applications of customers can simply lead to a refusal to buy through a specific application and the decision to use other applications to a minimal degree, which may affect the reputation of companies [23]. If we want to increase brand loyalty, it is important to review the necessary assurance continuously, because maintaining long-term relationships between consumers and vendors is

built on an increase in the m-loyalty aspect of the M-commerce application [10].

3. Conclusion

This study focused on determining the assurance requirements that represent specific aspects of GCC societies and the acceptability among target segment audiences of online purchasing through smartphone commercial applications. These assurance requirements represent what the consumer needs to increase his or her acceptance level in dealing with commercial applications, and thus helps companies that want to engage in this field or already have commercial websites, which leads to increasing the acceptance level of the target population for these applications. These requirements are very cohesive during most analysis based on statistical tests, which indicate the importance of this part of the requirements to work together and deal with these requirements as an integral whole and not to focus on some of them without the other requirements. Therefore, it often explains the importance of the aspects of the assurance that help to increase the level of confidence in the online commercial companies' ability to engage with the M-commerce field and then facilitates the target population's acceptance of M-commerce. There are many other requirements that will be focused on in the coming studies, which will help to cumulatively build an integrated model of the successful requirements in smartphone commercial applications

4. List of References

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