

# THE EFFECT OF CULTURAL VALUES ON TECHNOLOGY ADOPTION IN THE ARAB COUNTRIES

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**Abstract-** The effect of culture on technology adoption was acknowledged in previous studies, specifically the effect of culture on technology adoption in developing countries such as the Arab countries. The Arab culture is a rich con-text culture. However, the majority of previous studies conducted in this field investigated the Arab culture as a whole which limits the understanding of the needs of individual users. An analysis of the existing literature related to studying the effect of the Arab culture on mobile phone adoption and usage was carried out. The results of this research indicated that individuals' differences must be taken into consideration when studying the effect of the Arab culture on mobile adoption. Also, investigating Arabs cultural values influence should be carried out by studying a subset of cultural values which relates to the case of mobile phone adoption. Future research can be conducted using empirical field work to build on the findings emerged in this research.

**Keywords:** Cross-cultural comparison, Arab culture, mobile phone adoption, mobile usage, human-computer interaction

## I. Introduction

Human-computer interaction researchers come across many challenges when designing new technologies and software applications across different cultures. Offering culturally appropriate technology products is essential. Mobile phones were a great tool in reducing the digital divide between developed and developing countries [1,2]. Virta et al. [3] highlighted the importance of finding the issues associated with successful mobile penetration in developing countries. This is due to the limited amount of research about mobile penetration in these countries. The role of culture as a predictor of technology adoption

in developing countries was acknowledged in previous studies [4].

The Middle East is one of the highest regions in terms of mobile penetration growth [5]. Although, the Arab countries are varied in terms of mobile adoption and usage level (ranging from 170% in UAE to 54% in Sudan [6]). However, the use of the new generation of mobile phones, smartphones, has not reached these levels yet. Several factors were found to affect intention towards technology adoption in the existing body of literature and several theories were developed for example; the Technology Acceptance Model (TAM) [7]; Diffusion of Innovation (DoI) [8]; Theory of Planned Behaviour (TPB) [9]; Model of PC utilization [10]; Combined TAM and TPB (augmented TAM) [11]; the Unified Theory of Acceptance and Usage of Technology (UTAUT1) [12]; the Unified Theory of Acceptance and Usage of Technology2 (UTAUT2) [13]. These models were developed and tested in developed countries where the cultural values are different from the cultural values held in the Arab countries. None of the factors identified in these theories were actually related to culture. Developing technology adoption models and testing them in developed countries however, does not imply that they can be applied successfully in developing countries. For example, The Technology Acceptance Theory (TAM) model, which is one of the most cited, applied and extended models in Information Systems (IS) research included two main predictors (Ease of Use and Perceived Usefulness). There was no inclusion of cultural factors to account for cultural values in this model. Although previous studies investigated technology adoption in different Arab countries and different models were developed, there is a lack of research that investigates cultural factors as part of the Arab culture in relation to technology adoption, more specifically, mobile phone adoption.

According to Hofstede and Hofstede [14], "culture is the collective programming of mind that distinguishes the members of one group or category of people from

another". Developing technology adoption models and testing them in developed countries however, does not imply that they can be applied successfully in developing countries. Previous research showed that there are significant cultural differences between Arab countries and other (non-Arab) countries [15]. Other studies based on ICT adoption in Arab countries (for example; [15, 16, 17], although not specifically investigated mobile adoption, emphasized the significance of culture in the adoption of technology in the Arab region. The Arab culture can both be a hindering and a supporting factor of technological adoption [18], [16], [19]. Rose and Straub [15] recommended that such a complicated culture like the Arab culture needs to be taken into account when attempting to understand ICT adoption in the region. The distinctive nature of the Arab culture and its effect on the adoption of mobile phone adoption was acknowledged in Rouibah and Abbas's [20] and Rouibah et al's. [21] studies.

The main aim of this research is to study the relationship between cultural values and mobile phone adoption as it is the most successfully used technology by individuals in the Arab countries. This research is important because understanding the effect of culture on technology adoption would inform researchers to incorporate the specific cultural values that are related to the technology under investigation (mobile phones) in a specific Arab country. This will help to provide a more in-depth understanding of the phenomenon of human-computer interaction and technology adoption in each of these countries. Furthermore, it leads to the understanding of the design of new technologies or the adaptation to existing technologies in the Arab countries, rather than just adding the Arabic translation option to the technology interface. It is empirical to create and adopt the appropriate human-computer interaction principles for mobile devices that can suit the Arab user in order to increase mobile phone adoption and customer satisfaction.

## II. Background on the Arab culture

The Arab culture is a high context culture [22]. Arabic is the main language spoken in the majority of the Arab countries. Hofstede [23] identified five dimensions of culture including; uncertainty avoidance, power distance, long-term orientation (pragmatism vs normative), masculinity vs femininity and individualism vs collectivism. Hofstede et al. [24] further extended the cultural dimensions to include indulgence vs restraint. This dimension can be related to the construct of enjoyment in mobile adoption and the extent to which norms can restrict it. Hofstede values have been widely

used in IS and technology adoption research [25]. Arabs are high in power distance, high in uncertainty avoidance and moderate in masculinity/ femininity. Furthermore, the Arab culture (in general) is based on collectivism rather than individualism. Within these attributes of Arab culture, the effect of social influence becomes even more dominant. Arab countries scored (80) and ranked 7th in power distance, scored (68) and ranked 27th in uncertainty avoidance, scored (38) and ranked 26th -27th in individual-ism/collectivism, scored (53) and ranked 23rd in masculinity/femininity and no score was provided for long/short term orientation in Hofstede's research [23]. The author included seven countries in the study "Egypt, Iraq, Kuwait, Lebanon, Libya, Saudi Arabia, and the United Arab Emirates" [23]. Although these countries were put together as having one culture, Hofstede [23] stated that some differences exist (for example in Egypt and Lebanon) but the author had to put them together as 'Arab countries' due to the lack of data available about each Arab country. Consequently, the author generalized his findings to all Arab countries. Within the Arab culture, there is a lack of precision and an indirect way of communication [22]. The Arab culture is emotionally rich [22] on the contrary to Western cultures.

## III. Methodology

This research attempts to understand the Arabs cultural effects on mobile phone adoption (since it is the most widely used technology by users in the Arab countries) and how to incorporate them into models related to mobile phone adoption within the context of Arab individuals. Understanding the relationship between cultural values and mobile phone adoption in the Arab countries is essential for both researchers and practitioners but their related knowledge is fragmented and somehow imprecise. There is a requirement to integrate the existing views within the literature and analyze them to provide a unified framework that clarifies this relationship. To do so, previous research undertaken in this area and secondary data available in relation to this research are analyzed. Therefore, the research is based on the collection and analysis of the existing literature, using secondary data, in order to obtain a better understanding of this phenomenon. Respectively, we find it more useful to categorise the literature to be related to cultural values and mobile phone adoption in the Arab countries in order to address these issues.

## IV. Evaluating mobile phone usage within the Arab culture

The use of mobile phones caused both positive and negative changes within the social culture in Arab

countries [34]. Positively, the use of mobile phones helped families to connect informally on regular basis and SMS (Short Messaging Service) are widely used in Muslims' celebrations [34, 35]. Negatively, some of the additional mobile services integrated within the mobile device such as the mobile camera that were misused and they were thought of as a threat to the privacy of other people, especially females in the Arab Gulf countries, especially in Saudi Arabia [34]. Mobile phones can be used for texting and exchanging images and videos between males and females, who according to the culture of some Arab countries, in particular the Arab Gulf countries, should be separated [34]. Just like the case of users in Saudi Arabia, some users in Egypt think that mobiles infringe people's privacy through the use of cameras [1]. Although new laws were introduced to ban such activities in some of these countries such as Saudi Arabia [35, 36], these incidents are still occurring. This forms a threat to the structure of the Arab culture. The use of mobile phones in certain situations forms a threat and certain fears about protecting the culture and Islamic religion. Ibahrine [34] stated that mobile phone usage can extend to change the political situations in these countries. This was evident in the Arab Spring in many countries; including, "Egypt, Libya, Yemen, Syria, Bahrain, and other Arab nations" [34] (p. 1435) where mobile phones were playing a critical role in gathering people and organizing demonstrations and protests [37, 38]. This shows that the relationship between culture and mobile phone adoption and usage is a two-way relationship. While the cultural values held by Arab individuals affect mobile phone adoption, the latter affects cultural values too. The effect of culture on mobile adoption can be significant. However, mobile phones usage begins to affect culture when people start using them.

#### V. The effect of cultural values on mobile phone adoption

Culture has a significant effect on the diffusion of technology [16], [18]. National culture was found a strong predictor of mobile phone adoption [26]. Previous studies investigated the effect of cultural values on technology adoption by incorporating Hofstede's dimensions to account for culture [27, 28, 29, 30]. Although these dimensions are a good starting point to study the effect of culture on technology adoption, researchers need to investigate in-depth the effect of specific Arab cultural values. For example, Arab's preference for face-to-face interactions [30, 31]. El-Louadi and Everard [31] highlighted the limitations of Hofstede dimensions in relation to the Arab cultural dimensions. The authors argued that there are other dimensions (cultural values) related to the Arab culture

which must be studied closely and incorporated to Hofstede dimensions in each country.

Attachment motivation (as part of intrinsic motivation), when an individual wants to keep in contact with other people, was found to affect both perceived usefulness and enjoyment for the case of camera mobile phone adoption in Kuwait [20]. Abbas [32] investigated the factors that can affect smartphone adoption in Kuwait. The authors relied mainly on TAM2 [33] as well as adding two new variables including subjective norm and attachment motivation. As Abbas [32] indicated, the effect of attachment motivation is associated with the nature of the Arab culture and the individual is more attached to family and friends. There are other cultural factors such as, a preference for face-to-face interaction which is important cultural aspect and it is part of the Arab culture [30]. Loch et al. [16] analyzed previous literature and found that the Arab culture has certain cultural values which were found significant for studying technology transfer in previous studies including; chronism, disposition against planning, preference for face-to-face communications, perception of religious prohibition. Individuals can be different in the degree up to which they are influenced by culture. Using Hofstede's dimensions to study the effect of the Arab cultural on mobile phone adoption is insufficient. Researchers must consider the type of technology under investigation when attempting to understand the effects of cultural values on its adoption. For example, face-to-face vs technology mediated meetings may affect mobile phone adoption while long range planning may affect the adoption of computers.

#### VI. Cultural levels when investigating mobile phone adoption

The Arab culture as a whole is considered as a widely holistic view as national culture between one Arab country and another may very well be different [18]. In their literature review concerning the Arab culture, Obeidat et al. [39] found that there is a debate in the existing body of literature whether the concept of Arab culture can be generalized to include all Arab countries or not. Some researchers emphasized that Arab countries share similar values which apply to all of them [40, 41]. Kabasakal and Bodur [42] stated that some similarities exist in the culture of these countries. Other researchers contend that it is not possible to generalize and imply that the Arab culture values are applicable to all Arab countries [43, 44, 45]. Feghali [46] stated that it is inaccurate to imply that all Arab countries have the same culture. An example provided by the author was the differences in culture between Saudi Arabia and Lebanon in terms of attitude, behaviour and lifestyle. Alkailani et al [47] stated that the level of GDP per capita can affect

culture, more specifically, it can affect the scores in Hofstede's cultural dimensions.

Straub et al [48] recommended studying a subset of culture related to the studied technology at the individual user level. El-Louadi [49] stated that differences exist between the Arab countries and even between regions and individuals with different Islamic beliefs. However, the majority of the studies related to technology issues addressed culture at a national or organizational level [50, 51]. Although the effect of groups around the individual can have a significant effect specially in collectivistic cultures, the individual's own decisions and culture must not be overlooked [48, 25]. Srite and Karahanna's [52] findings indicate that studying espoused national cultural values at the individual user level is important. Culture needs to be studied at the individual user level [53] as it allows an in-depth analysis and understanding of the technology acceptance phenomenon.

Although obtaining information about the Arab culture provides useful primary insights, understanding that each country has its own cultural characteristics and influences provides a more in-depth insight. In fact, the findings of this research indicate that researchers need to investigate the effect of cultural values at the individual Arab user level, despite the collectivistic nature of the Arab culture, as well as being critical in their selection of the cultural values that can affect mobile phone adoption. This will help to provide more accurate results and more robust models for mobile phone adoption in the Arab countries.

## VII. Research implications and conclusions

The results of this research have strategic implications. Within the rapid increase in mobile phone adoption in the Arab countries, investigating the main cultural factors related to this phenomenon in these countries becomes mandatory. The region is becoming a hub for mobile phones and the use of smartphones is increasing too. Researchers are encouraged to include cultural factors related to the behaviour intention of the users they are addressing. The analysis conducted in this paper shows that the inclusion of Hofstede's cultural dimensions into models developed and tested by researchers is insufficient. There are other cultural values (for example; preference for face-to-face meetings rather than technology mediated meetings) which are specifically related to the Arab user which should be considered and included if found related to the specific Arab user in the country where the research is being conducted. There is a need for integrating other cultural values that are specific to mobile phone adoption in the Arab countries in future models. We do not imply that Hofstede's dimensions should be neglected when studying the effect of culture on mobile phone adoption in the region as they can still

be used as general indicators and they form a good starting point. However, in order to gain a more in-depth understanding of mobile phone adoption in this region, the incorporation of the more specific cultural values related to the Arab user into new models is required.

For the Arab user in the Arab countries, culture has a strong effect on mobile phone adoption and usage at the adoption decision stage and the early stages of usage. However, this effect begins to decrease as consumers continue to use mobile phones and they develop habits and this is when using mobile phones causes changes (although maybe minor changes in some cases) in culture. The fact that mobile phones have caused changes in culture in these countries and may cause more changes (especially with the emergence of smartphones) indicate that there is a need for monitoring the changes in cultural values which occur as a result of mobile phone usage. Therefore, researchers need to consider these changes when deciding on the appropriate cultural values to be included in their models. Also, conducting longitudinal studies to track these changes can provide guidance to researchers to understand the power and effect mobile phones usage can have in rich cultures.

When studying the effect of the Arab culture on mobile adoption, understanding that culture is not only specific to the entire region or a country in the region but that it is also an individual's choice whether to follow it or not is important and it needs to be taken into consideration in future research. Based on the analysis carried out in this research, we recommend that researchers should study the effect of culture at the Arab individual user level rather than a national or an organizational level.

The results of this research are beneficial for both researchers and interface designers. Researchers interested in studying mobile phone adoption concerning the Arab user in an Arab country are required to develop integrated models that include the cultural values that apply to the situation under investigation. Also, interface designers should consider the cultural values that apply to the system they are trying to develop in order to increase the use of the new generation of smartphones which the Arab World is starting to adopt. This will contribute towards the area of human-computer interaction. Also, this will help to reach higher customer satisfaction.

The attributes of culture integrated in future models related to studying mobile phone adoption should take into consideration individuals' differences. This is an area that needs to be investigated in depth in future research. This research was conducted based on the analysis of the existing literature. Future studies can investigate cultural effects at the individual user level in each Arab country and their effect on mobile phone adoption using empirical work (field studies). This will help to build more representative and accurate models

that can explain the high adoption and usage of mobile phones in these countries. Also, future research can investigate and track changes that have occurred in the Arab countries in terms of cultural values and the extent to which mobile phones were able to change the Arab users' cultural values using qualitative research.

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