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MARKETING | RESEARCH ARTICLE

An exploratory examination of the influence of national culture on cross national diffusion: A case study on the MENA region

Shihanah AlMutairi[1]* and Dorothy Yen[2]

Abstract: The purpose of this paper is to determine whether country-specific variables can explain differences in diffusion patterns observed across countries from the MENA region. Specifically, we examine the relationship of several indicators on innovation and imitation levels pertaining to seven Arab States and hypotheses on the direction and significance of each variable on the diffusion patterns. The study employed two prevalent theories in the literature, Hofstede's national culture theory and the Bass model, which have been used in conjunction to explain how cultural differences can affect levels of innovativeness. The present study's findings contribute to the literature by providing the characteristics of innovative countries, which are to be high UAI, low LTO, and high IVR countries and imitative countries, which are found to have low literacy rates, low urbanization, and ranked as high PDI. Originality/value: The present study was able to isolate national cultural differences in imitative behaviour, which is an objective that was understated in most cross-national diffusion literature, seeing as most emphasis is put on the innovative profiles and innovative characteristics of societies.

Subjects: International Business; Consumer Behaviour; International Marketing

Keywords: Bass model; national culture; Arab States; MENA region; diffusion of innovations

ABOUT THE AUTHOR

Dr. Shaihana AlMutairi earned her PhD in marketing from Brunel University of London, specializing in national culture and diffusion of innovations. Her main research interests lie in cross-cultural diffusion research, international marketing, and consumer behavior. During the course of her research, she was able to refute Hofstede's clustered national culture profile of the MENA region and estimate their diffusion patterns to represent the region in diffusion literature. This present study furthers her investigation centering on the relationship between diffusion patterns and national culture. The present study's contributions provide cross-national diffusion studies with the characteristics of innovative countries and imitative countries as well as extends the literature by sampling the MENA region, an often underrepresented region in cross-national diffusion research.

PUBLIC INTEREST STATEMENT

The purpose of this paper is to determine whether country-specific variables can explain differences in diffusion patterns observed across countries from the MENA region. Specifically, we examine the relationship of several indicators on innovation and imitation levels pertaining to seven Arab States and hypotheses on the direction and significance of each variable on the diffusion patterns. The study employed two prevalent theories in the literature, Hofstede's national culture theory and the Bass model, which have been used in conjunction to explain how cultural differences can affect levels of innovativeness. The present study's findings contribute to the literature by providing the characteristics of innovative countries, which are to be high UAI, low LTO, and high IVR countries and imitative countries, which are found to have low literacy rates, low urbanization, and ranked as high PDI.

1. Introduction

The purpose of this paper is to determine whether country-specific variables can explain differences found in diffusion patterns observed across countries from the Middle East and North African (MENA) region. Specifically, we examine and discuss the relationship of several indicators on innovation and imitation levels pertaining to seven Arab States and hypotheses on the direction and significance of each variable on the diffusion patterns. This is imperative to the cross-national diffusion literature, in which research is dedicated to exploring the differences in the diffusion process between countries and attempting to discover whether these differences or similarities can be attributed to cultural and socioeconomic variables. Past research findings have shown that countries with similar economic and cultural environments are assumed to have similar diffusion patterns (Dekimpe et al., 2000; Ganesh et al., 1997). Moreover, innovative countries were thought to have a high GDP, are more literate, and have a highly urbanized population (Kumar et al., 1998; Takada & Jain, 1991; Talukdar et al., 2002; Zawislak et al., 2017).

Hofstede's national culture dimensions have also been employed to indicate the level of innovativeness and the spread of diffusion in a country. Hofstede's national culture theory has had considerable importance in cross-cultural studies and the international marketing context (Hofstede, 2001; Singh, 2006; Søndergaard, 1994). National culture theory has been hypothesized to aid organizations in formulating strategies (Schneider, 1989), predict adoptive behavior (Png et al., 2001), tailor brand personalities (De Mooij & Hofstede, 2011), and to explain the effect of corporate culture in communications (Tian & Borges, 2011). The prevalence of the Hofstedian model stems from its parsimonious nature and for having analyzed the greatest number of countries of any national culture model (Hofstede, 2001). Hofstede's theory plays a pivotal role in studies relating innovation and innovators with culture, in which all his dimensions have been shown to impact innovation and the rates of innovation whether directly or indirectly (Abdelrahim, 2020). Mainly, the literature rationalizes those countries with a certain national culture profile would be considered innovative and more attractive to international expansion and the introduction of new products and services (Shane, 1993; Steenkamp et al., 1999; Zhang et al., 2020).

However, the present study encountered a problem when trying to associate cross-national diffusion literature's findings with the MENA region's national cultural profiles on Hofstede's theory. The region is underrepresented in cross-national diffusion research due to their clustered nation culture ranking (Rinne et al., 2012). The problem was that in Hofstede's original survey, seven Arab States from the MENA region, namely: Kuwait, the Kingdom of Saudi Arabia (KSA), the United Arab Emirates (UAE), Iraq, Lebanon, Egypt, and Libya, were treated as one homogeneous cluster with the same national cultural profile. Hofstede rationalizes that at the time the survey was conducted in 1967, the region was homogeneous (Hofstede, 2001). However, that was then, and in today's world, we find that it is imperative to distinguish the region's various cultures, seeing as it allows for better profiling and segmenting strategies. As such, the present study did not use Hofstede's original cluster score for the Arab States, but instead utilized AlMutairi et al.'s (2021) latest national culture rankings for the same seven Arab States, to better understand their differences on Hofstede's cultural indices and their effect on diffusion rates. Additionally, the identification and un-clustering of the MENA region's various cultures is key in helping managers predict how likely their products and services get accepted and adopted. This is a pressing issue since it is often argued that culture is the most important characteristic and that it can play a deterministic role in the success rates of international firms (Clark, 1990; Steenkamp et al., 1999; Tian & Borges, 2011).

Furthermore, it should be noted that out of 114 empirical studies on cross-national diffusion during 1975–2020, only six studies reported a sample exceeding 50 countries (Abdelrahim, 2020; Dekimpe et al., 2000; Gong, 2009; Lee, 1990; Rinne et al., 2012; Taylor & Wilson, 2012). As such, most of the literature's findings and implications are confined to industrialized countries, thus

reducing the generalizability of the results. A substantial amount of the studies reviewed were mainly sampling European countries. Consequently, most of their findings reflected what is essentially considered a western perspective. Therefore, we argue that findings may not be as generalizable to the MENA region, because of its exclusion and underrepresentation in cross-national diffusion research, with the notable exceptions of Dekimpe et al. (2000) study, which sampled several Arab States.

As such, this paper's aim is to investigate the relationship between diffusion patterns and national culture in relation to the MENA region, in addition to reexamining the cross-national diffusion literature's various findings when based on the region's landscape. The present study is encouraged by the literature's consensus that there are systematic regional differences in diffusion patterns across the world (Choden et al., 2019; Helsen et al., 1993). We find that understanding the diffusion and adoption processes of the MENA region is of paramount importance to international companies expanding and targeting the region. Studies have found that cultural values and socioeconomic differences do in fact have an impact on consumer behavior and on consumption habits (Suh & Kwon, 2002; Yeniyurt & Townsend, 2003; Zawislak et al., 2017).

For global and international firms seeking to expand into the MENA region, the present study provides managerial implications regarding the Arab States' diffusion processes and country characteristics that may influence eventual product or service adoption. Additionally, the present study's sampling of countries from the MENA region and subsequent findings provides a stronger basis to draw empirical generalizations about international product diffusion processes than previously suggested by the literature. Findings also provide the literature with the innovative and imitative profiles of each Arab State and proposes several approaches on how to target and segment them accordingly. Due to globalization and the need to maintain revenue, firms are often introducing new products and services within their own domestic markets as well as across foreign markets (Steenkamp et al., 1999). As such, testing the Arab States provides the literature with the ability to contrast between developing and developed countries regarding the diffusion process and to represent a different region with different characteristics both economically and culturally.

2. The Hofstedian and bass models

Research indicates that culture incompatibility is a major obstacle to the success of innovation adoption. Existing cultural conditions can determine when, how, and in what form an innovation will be adopted (Herbig & Dunphy, 1998). Practitioners and academics should note that culture can influence the innovative capacity of a society and so may either foster or hinder an innovation or acceptance of a new product (Herbig & Dunphy, 1998; Takada & Jain, 1991). National culture and diffusion of innovations theory are two imperative theories that have been used in conjunction to explain how cultural differences can affect levels of innovativeness. Existing culture paradigms are often utilized to synthesize what is otherwise a complex and time-consuming effort required in understanding the cultures of the targeted markets. Particularly, the concept of national culture is often employed in cross-national diffusion studies to explain aggregate national consumer behavior towards different phenomena (Singh, 2006). National culture provides a national-level variable which can then be used to explain a variation of phenomena (other aggregate data) at country level as well as across countries (De Mooij & Hofstede, 2010). Therefore, the ability to use national culture to explain aggregate national consumer behaviour towards different phenomena is considered useful by many practitioners.

Several researchers have already emphasized the importance of national culture, particularly Hofstede's national culture model, and innovation, as well as their combined effect on each other (Steenkamp et al., 1999; Takada & Jain, 1991; Tian et al., 2018; Van Den Bulte & Stremersch, 2004; Yaveroglu & Donthu, 2002). Initially, Hofstede (1983) conducted factor analysis of the means of the nationally aggregated responses from 40 countries of which he later analyzed into four original culture dimensions: 1) power distance, which measures the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is

distributed unequally 2) uncertainty avoidance, which pertains to society's tolerance for ambiguity and uncertainty 3) individualism, which indicates societies where ties are very loose and emphasis is on the achievements by the individual and 4) masculine/feminine, which refers to the distribution of roles in a society between the two genders.

Hofstede (2001) derived a fifth dimension called "long term versus short term orientation", in which societies with a long-term orientation value investing, saving, and achievement of results, while short term-oriented societies value stability, traditions, conventions, and have a relatively small inclination to save. A sixth dimension called 'indulgence/restraint was introduced by Hofstede et al. (2010) to represent the gratification versus control of basic human desires related to the enjoyment of life. As can be seen from Table 1, the reasoning behind the popularity of Hofstede's national culture theory in cross-national diffusion literature stems from its ability to allow practitioners and researchers to cluster many countries according to their national cultural profiles, thereby providing a useful way to summarize intercultural similarities and differences across the world. This is imperative to international firms since it is more profitable and less risky to expand into similar cultures and regions (Gupta et al., 2002). Mainly, the literature rationalizes those countries with a certain national culture profile, such as being highly individualistic and low on power distance, would be considered innovative and more attractive to international expansion and the introduction of new products and services (Hohenberg & Homburg, 2016; Lynn & Gelb, 1996; Shane, 1993; Steenkamp et al., 1999). Hofstede's national culture dimensions have also been employed to indicate the level of innovativeness and the spread of diffusion in a country. For example, the literature characterized innovative countries as high masculinity, high individualism, low long-term orientation, low-power distance, and low uncertainty avoidance (Abdelrahim, 2020; Dwyer et al., 2005; Singh, 2006; Yeniyurt & Townsend, 2003).

As such, it is safe to conclude that the diffusion of innovations is a process effected by culture (Yaveroglu & Donthu, 2002). Diffusion theory occurs within a social system and describes individuals and their adoption behavior to describe the process of diffusion of innovations. It depends on how a product is communicated through a social system and how the members of society interact with each other. As globalization of markets increase, the need for managers to understand the diffusion and adoption process in international settings has called for more academic insights and research (Craig & Douglas, 1996) particularly, more research is required into the influence of culture-specific variables, because it is a key role in determining how consumers react to a new product (Gatignon et al., 1989; Rogers & Shoemaker, 1971).

Furthermore, innovativeness is considered an important variable in innovations research and is defined as "the degree to which a responding unit is relatively earlier in adopting an innovation than other units in the system" (Rogers, 2010). Other scholars believe that demographic characteristics such as youth, wealth, and high education are better predictors of innovativeness (Gatignon & Robertson, 1985). Some believe that innovativeness is affected by psychographic characteristics like innovative predisposition, risk taking, and leadership (Midgley & Dowling, 1978), while others believe it's a mixture of both as well as consumption attitudes (Wang et al., 2008). Nonetheless, innovativeness is very relevant to international business. It is central to the theory of the diffusion and adoption of innovations, in which markets and consumers can be segmented according to their innovativeness (Lee, 1990).

Diffusion theory models have been used extensively in the literature to estimate the adoption of innovations whether they are products or services. They are of great importance in the estimation of the product or service's life cycle, likelihood of adoption, and maximum penetration reached (Michalakelis et al., 2008). Most diffusion cycles encompass the earliest adopters, which are recognized as the innovators, whose decision to adopt is independent of outside media or other influencing factors. This is unlike the rest of the adopters, whose propensity to adopt is influenced by word of mouth and media channels, and as such can be categorized as imitators (Rogers et al.,

2010). Both types of adopters, innovators, and imitators, are represented by the Bass Model, as well as the dynamics of the diffusion process and its associated variables.

Frank Bass (1969) is considered a pioneer in the diffusion field, in which he provided a mathematical formula that can predict the rate of adoption. It is very valuable, because it offers a forecasting model on how many adoptions may occur in the future (Bass, 2004). This reduces the complexity of understanding the diffusion process occurring on the national level, which makes the Bass model the most accessible as well as practical method to utilize for a lot of researchers (Rogers, 2010). Mathematically, the Bass model can be expressed as:

$P(t) = p(0) + (q/m)Y(t)$

Where p(t) is the probability of purchase at a certain time denoted by (t). The coefficient p(0) is the initial probability of a trial, which reflects the effect of external influences such as mass media and advertising. The coefficient (p) refers to innovators, since the Bass model assumes that innovators will adopt an innovation purely because of mass media influences. The term (q/m) refers to the number of potential adopters (m) and the effect of interpersonal communications (q). The coefficient (q) is also called the coefficient of imitation, in which it represents adopters who are mainly affected by personal interactions and word of mouth. Y(t) is the total number of people who have since purchased, thus magnifying the effect of social interactions on the adoption rate.

Much of the research sought to ascertain the effects of mass media and interpersonal communication on consumers. The coefficients of external and internal influences as outlined by the Bass model have been used extensively in the literature to forecast the rate of adoption for both innovative products and services. For over three decades, the Bass Model has been applied to several different datasets from different regions with credible results based on the good fit between estimated and historical data (Bass, 2004; Van Den Bulte, 2002). Its popularity stems from the model's ability to determine the coefficients of innovation (p) and imitation (q) (internal and external influence), identify the time of peak sales, as well as the magnitude of sales and market potential (Chandrasekaran & Tellis, 2007). As can be seen from Table 2, many studies have also utilized the Bass Model to make inferences on several socioeconomic, as well as cultural characteristics.

2.1. Methodology

As this study is investigating the effect of national culture on adoption and diffusion patterns of the MENA region, the context of the study would be focusing on seven countries from the region: Kuwait, KSA, UAE, Egypt. Libya, Iraq, and Lebanon. Geography wise, the region can also be further classified into North African countries (which includes Libya), the Levant countries (which includes Lebanon), the Middle East (which includes Egypt), and the Gulf States (which includes KSA, UAE, and Kuwait). The four distinct regions share vast similarities due to historical division, geopolitics, and confederate alliances (Mahajan, 2012). The present study utilized six Hofstede's national culture dimensions scores for each country obtained from the dissemination of his latest national culture survey, the VSM 13 (AlMutairi et al., 2021). The Values Survey Module 2013 (VSM 13) questionnaire is a 30-item paper-based survey developed by Hofstede for comparing national differences and is considered the most updated version of his original VSM80 instrument (Hofstede, 2013). It includes questions and statements which are scored on both Likert and itemized scales and computes answers on all six dimensions. The paper's rational behind the utilization of AlMutairi's findings was due it being the only study to disseminate and translate Hofstede's latest national culture survey, theVSM13, on all seven Arab States. Secondly, the study was the only one to survey and measure the seven Arab States on Hofstede's two newer dimensions, long-term orientation and indulgence and restraint index.

In the case of the Arab States, there has been few studies done on their diffusion patterns and the factors involved in their respective adoption processes. To measure innovation, the literature

usually employs a proxy, such as patents, new ideas and products, technologies, or inventions (Tian et al., 2018). As such, for measuring the diffusion rates of each Arab State, the present study utilized AlMutairi and Yen's (2017) findings, in which the Bass Model was applied on penetration data of mobile cellular telephone subscriptions for all seven Arab States. Estimates taken from the Arab State's mobile subscriber historical data to uncover their respective innovation and imitation coefficients is in line with previous diffusion studies, which have frequently used market penetration of new products and services to measure the diffusion rate (Chandrasekaran & Tellis, 2007; Choden et al., 2019; Griffith & Rubera, 2014; Kumar & Krishnan, 2002; Yeniyurt & Townsend, 2003). In addition, the telecommunication sector has been utilized in previous studies because its growth rate is seen as ideal for estimating the parameters of the Bass Model (Chu & Pan, 2008; Gruber, 2001; Michalakelis et al., 2008).

The mobile diffusion literature offers several factors that may affect the diffusion process, such as the effect of telecommunication infrastructure and built-in technology on adoption (Meade & Islam, 2006). However, regarding the MENA region, the present study found little evidence to the availability of such data, to include them as factors effecting the diffusion process. As such, only data that was available to all Arab States was used to help investigate the effect of influencing factors on the innovation and diffusion patterns of the MENA region. Hence, this study was left with national culture indicators, such as Hofstede's national culture dimensions; and socioeconomic indictors, including wealth, literacy rate, and urbanization, as well as sector-specific indicators, such as infrastructure and competition.

The present study utilized secondary national-level sources to make inferences about the diffusion and adoption levels of the respective Arab States. Sources for country-level data are numerous, such as the World Bank statistical data and the Statistical Yearbook of the UN. Valuable country data indices, often employed in adoption/diffusion literature, include mobility (Gatignon et al., 1989), ethnic heterogeneity (Dekimpe et al., 1998), GDP and industry size (Lee, 1990), and population concentration (Dekimpe et al., 2000). The previously listed authors have heavily utilized these national level indices to make inferences on diffusion and adoption patterns, as well as compare countries and rank them accordingly. The present study used the same sources to make inferences about the diffusion and adoption levels of the respective Arab States.

Socioeconomic indicators were taken from the World Bank database and include GDP per capita based on purchasing power parity (PPP), and the percentage of people ages 15 and above who are considered literate. Sector-specific indicators were taken from the International Telecommunication Union (ITU) database and include the percentage of the population living in urban areas, the number of fixed telephone subscriptions (per 100 people), and the number of competitive mobile service providers in the country as of 2013. The rest of the indicators refer to the national culture indices gathered from disseminating Hofstede's VSM13 survey on each respective Arab State.

Both socioeconomic and sector-specific indictors were yearly data, of which were averaged from the first available data point to the year 2013, for all Arab States, respectively. The method of averaging the indicators was recommended and emulated from cross-national diffusion literature (Choden et al., 2019). The justification stemmed from the problem of measuring the diffusion process from past adoption behavior, while correlating it with independent variables that were measured in the present tense (Lee, 1990). In this present study, national-level indicators measured in the present tense would not be a viable indicator on how it adopted an innovation from years ago. Therefore, the literature suggests averaging the independent variables over the intended timespan to overcome this limitation (Stremersch & Tellis, 2004; Talukdar et al., 2002;; Gatignon et al., 1989; Choden et al., 2019). As can be seen from Table 3, the final step included taking each indicator and correlating it, respectively, with the innovation (p) and imitation (q) coefficients of the Bass Model.

The following section will discuss each indicator and its respective hypothesis in more detail.

2.2. Hypothesis

2.2.1. Wealth

According to cross-national diffusion literature, people in economically wealthy countries are considered more likely to purchase new and innovative products and services than their less affluent counterparts (Rogers, 2010). It is expected that newly launched products and services are often costlier once they are introduced, and thus the target consumer is more likely to be wealthy enough to be the first buyer and thus handle the risks of buying an unproven innovation (Lee, 1990). They are also equipped with a better media infrastructure and subsequently the population is easily informed and influenced, thereby accelerating the adoption process (Stremersch & Tellis, 2004). It is therefore expected that it would have a significantly strong positive association with both the innovation and imitation parameters.

H1a There is a significant positive relationship between GDP and innovation levels.

H1b There is a significant positive relationship between GDP and imitation levels.

2.2.2. Literacy rate

Cross-national diffusion literature suggests that the more educated the population is, the more likely an innovation will be accepted and diffused quickly. The literacy rate is seen as an indicator on how educated the country's nationals are and has been used in diffusion literature to reflect the importance of education on the diffusion of innovations (Lee, 1990; Yeniyurt & Townsend, 2003). Education is seen as vehicle for spreading new ideas and highlighting the importance of technology in human progression (Tellis et al., 2003). Therefore, high literacy rate is seen as a signpost for how receptive the population is to innovations. As such, earlier adopters are often characterized as having higher education and literacy, thus more likely to adopt the innovation faster than their illiterate counterparts (Midgley & Dowling, 1978; Rogers et al., 2010). Therefore, it is posited that the literacy rate will have a strong positive effect on the Arab State's innovation and imitation patterns.

H2a There is a significant positive relationship between literacy rate and innovation levels.
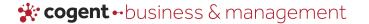
H2b There is a significant positive relationship between literacy rate and imitation levels.

2.2.3. Urbanization

The level of urbanization in a country is a reference to the number of people living in cities and large towns (Gruber, 2001). The urban population may be typically richer than their rural counterparts and should be expected to be more prone to consumption and adopting new innovations. Moreover, the concentration of the urban population will allow the innovation to be communicated faster and allow for word of mouth to speed the diffusion process, therefore adoption is quicker through society. Thus, it is hypothesized that the more urbanized a country is, the higher its innovation and imitation parameters are.

H3a There is a significant positive relationship between urbanization and innovation levels.

H3b There is a significant positive relationship between urbanization and imitation levels.

2.2.4. Infrastructure

This indicator captures the number of fixed mainlines per capita. This variable is seen as the main infrastructure in which the mobile network is built upon. Telecommunication diffusion literature suggests that the higher the number of fixed networks, the more likely the population will be mobile subscribers (Gruber & Verboven, 2001). Thus, it is hypothesized that the number of fixed lines will have a strong positive effect on the diffusion rate.

H4a There is a significant positive relationship between the number of fixed lines and innovation levels.

H4b There is a significant positive relationship between the number of fixed lines and imitation levels.

2.2.5. Competition

Telecommunication diffusion literature emphasized the importance of competition on diffusion rates. It has been posited that the higher the number of established mobile service providers are in a country, the quicker the diffusion rate is (Jang et al., 2005). The number of competitive firms is used to indicate the level of competitive intensity as is suggested by the relevant literature (Gruber, 2001). Therefore, it is theorized that the number of competitive firms will lead to a strong positive effect on the innovation and imitation patterns.

H5a There is a significant positive relationship between competition and innovation levels.

H5b There is a significant positive relationship between competition and imitation levels.

2.2.6. Power Distance Index (PDI)

The literature's findings seem to indicate that high PDI societies constrict and limit innovation levels in a country, since most of the authority is centralized with a small portion of the society (Yalcinkaya & Griffith, 2008). Such that only a fraction of the population, namely the most powerful and wealthy, can afford to adopt the latest innovations, and as such, the country's innovation level should be lower than that of low PDI countries (Shane, 1993; Waarts & Van Everdingen, 2005; Yaveroglu & Donthu, 2002). From the perspective of diffusion literature, high PDI societies tend to exhibit more preference to materialistic possessions and products that advertise their status. Therefore, it can be seen that the acquisition of the innovative product or service by the powerful, influential, and wealthy would greatly entice the less powerful to try to identify with them by emulating their purchasing decision. Hence, it can be posited that the PDI construct would have a strong negative effect on innovation levels but a positive effect on imitation patterns.

H6a There is a significant negative relationship between the PDI scale and innovation levels.

H6b There is a significant positive relationship between the PDI scale and imitation levels.

2.2.7. Individualism (IDV)

Since the IDV construct relates to the prevailing concept of the self over the group, it has been theorized that countries with a high IDV score would prove to be more innovative than imitative. The individualistic society would be more independent than the collective centric society and as such, more likely to try new innovations regardless of the society's stance on adoption. Moreover, the communication process is an integral part of the diffusion process, and since high IDV countries are more characterized to have loose ties and are more focused on promoting their self-interests rather than the group, they should exhibit higher (p) than (q) parameters, unlike collective

countries. Collective countries would have a higher communication process due to their strong social networks, and thus the diffusion of innovations would prove to be quicker than in highly individualistic countries, thus a higher imitation level (Van Den Bulte, 2002). Therefore, it is hypothesized that the indicator would prove to have a strong positive effect on innovation levels but a strong negative effect on imitation patterns.

H7a There is a significant positive relationship between the IDV scale and innovation levels.

H7bThere is a significant negative relationship between the IDV scale and imitation levels.

2.2.8. Masculinity (MAS)

The MAS index refers to a society's adherence to gender roles. It can also indicate a society's propensity to prioritize achievement, wealth, and materialism. Therefore, it has been theorized that high MAS countries would emphasize the importance of possessing products that are deemed new and innovative (Rossberger & Krause, 2014). Feminine societies, on the other hand, would place more emphasis on nurturance and care giving, and thus stress social norms and ties rather than personal consumption and achievement (Singh, 2006). Therefore, countries that have scored high on the MAS index are hypothesized to have higher innovation while feminine countries would have higher imitation levels. It is then hypothesized that the construct would have a positive association with innovation but a negative influence on imitation patterns.

H8a There is a significant positive relationship between the MAS scale and innovation levels.

H8bThere is a significant negative relationship between the MAS scale and imitation levels.

2.2.9. Long-term orientation (LTO)

The LTO dimension relates to a society's outlook. Long term-oriented societies incorporate several values such as thriftiness and persistence, whereas short term-oriented societies tend to place more value on traditions and personal connections. Diffusion studies incorporating the LTO dimension reflect that short-term-oriented societies would prove to be more innovative than their long-term oriented counterparts (Tian et al., 2018; Yalcinkaya & Griffith, 2008). Seeing as long-term oriented societies would prioritize saving and thriftiness, it would go against their nature to succumb to purchasing new, relatively expensive, as well as untested products and services. Short term-oriented societies, on the other hand, very much like MAS and PDI societies, prefer materialistic and status quo possessions. Moreover, similar to the UAI dimension, an LTO country would be more prone to imitate as a risk reduction strategy than be a first adopter of an innovation. Therefore, it can be posited that the LTO scale would have a strong negative effect on innovation patterns but a positive effect on imitation patterns.

H9a There is a significant negative relationship between the LTO scale and innovation levels.

H9b There is a significant positive relationship between the LTO scale and imitation levels.

2.2.10. Indulgence restraint Index (IVR)

The IVR dimension is the last national cultural index to be added to Hofstede's theory and is incidentally the least widely used national culture dimension in cross-national diffusion literature. The IVR index refers to the extent society indulges or restraints its needs and desires. Such that high IVR societies would be more prone to leisure time and indulging themselves, while highly restrained societies would be conformed to strict social norms and regulations and have less time for leisure. Therefore, it is hypothesized that indulgent societies would be more predisposed in

adopting new innovations than restrained societies (Griffith & Rubera, 2014; Prim et al., 2017; Syed & Malik, 2014; Taylor & Wilson, 2012).

H10a There is a significant positive relationship between the IVR scale and innovation levels.

H10b There is a significant positive relationship between the IVR scale and imitation levels.

2.2.11. Uncertainty avoidance index (UAI)
The UAI scale indicates the extent to which members of the population feel threatened by uncertainties. Cultures that are high in UAI are therefore opposed to having risks and have a low tolerance for ambiguity. From the perspective of cross-national diffusion, innovations are often viewed as risky, seeing as they are still considered new and untested, and thus it has been previously hypothesized that high UAI countries would be less innovative than low UAI countries (Hohenberg & Homburg, 2016; Shane, 1993; Shneor & Efrat, 2014). It is also expected that high UAI countries would prove to have a high imitative coefficient, seeing that they would only adopt the innovation after the innovators and early adopters have adopted it, thus they would use imitation as a risk reduction strategy (Stremersch & Tellis, 2004; Yaveroglu & Donthu, 2002). Therefore, it is hypothesized that the indicator would have a strong and negative influence on innovation levels but a strong positive influence on imitative patterns.

H11a There is a significant negative relationship between the UAI scale and innovation levels.

H11b There is a significant positive relationship between the UAI scale and imitation levels.

2.2.12. Findings and discussion
Even though mobile cellular technology has been first introduced in the 1980's, some Arab States did not adopt this technology until this last decade (AlMutairi & Yen, 2017; Tsang et al., 2011). A spearman correlation coefficient was computed to assess the relationship between the chosen country characteristics on national innovation and imitation levels. David (1938) recommends that the Pearson's correlation be used only when the sample is or exceeds 25. Therefore, the Spearman rho's test was found to be the most appropriate for this analysis because of the small number of countries used as sample cases and the usage of ordinal data such as GDP and national culture indices (Field, 2014). The present study also found two precedents in the study conducted by Dwyer et al.'s (2005) and Yaveroglu and Donthu (2002), in which they used the Spearman's correlational analysis to test their sample of five and nineteen countries, respectively. Also, bivariate correlations were computed among the eleven variables—socioeconomic, sector specific, and national culture indicators—on the innovation and imitation levels, respectively. Table 4 shows the result of the correlation tests, indicating that only six correlations were found to be statistically significant.

A basic understanding of the factors that are likely to influence a country's adoption and diffusion patterns is of paramount interest to international managers who may face decisions involving strategic international expansion (Dekimpe et al., 2000; Talukdar et al., 2002). The MENA region's market may be considered risky, because of the political turmoil, but otherwise it is a very important market full of potential opportunities (Mahajan, 2012; Punnett & Clemens, 1999). MENA region is home to many of the largest multinational firms and yet it's the least known and least researched area in terms of the opportunities and challenges facing them. It is a highly diverse region with many ethnicities and a diverse range of economies and political systems (Mellahi et al., 2011). In the case of the Arab States, there has been few studies done on their diffusion patterns and the factors involved in their respective adoption processes. Existing studies have only focused on industrialized nations, and thus resulting findings may not be as generalizable to emerging markets, such as those of the

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Table 1. Hofstede's national culture in cross-national diffusion research

Author	Dependent Variables	Product	Number of countries	Culture Key results
Tellis et al., 2003	Time to take off	10 consumer durables	17	Products take off faster in low uncertainty avoidant cultures
Van Den Bulte & Stremersch, 2004	q/p ratio	52 consumer durables	28	Highly individualistic, low power distance, and low uncertainty avoidance will lead to high p and low q coefficients
Yaveroglu & Donthu, 2002	q and p (Bass model)	consumer durables	19	Highly individualistic, low power distance, and low uncertainty avoidance will lead to high p coefficient, high UAI, low IDV will have a high q coefficient
Yeniyurt & Townsend, 2003	Penetration rates for new products	Internet usage, PC and cellular phones ownership	56	Power distance and uncertainty avoidance hinder adoption of new products.
Steenkamp et al., 1999	Consumer innovativeness	n/a	11	Consumers in individualistic and masculine societies proved more innovative than in feminine collective and high uncertainty avoidant societies.
Yalcinkaya & Griffith, 2008	Adoption and diffusion of new products	n/a	n/a	Conceptual framework. Concludes that new product adoption will be slower in high uncertainty avoidant cultures, high power distance, feminine and individualistic cultures.

(*Continued*)

Table1. (Continued)

Author	Dependent Variables	Product	Number of countries	Culture Key results
Singh, 2006	Consumer innovativeness, propensity to imitate, normative influence, interpersonal communications	n/a	2	Cultures with smaller power distance, weak uncertainty avoidance, masculine tendencies, are likely to participate in innovative behaviour. Large power distance, strong uncertainty avoidance, more feminine societies will be more influenced by norms. Collective societies will be more influenced by interpersonal communication.
Sundqvist et al., 2005	q and p (Bass model)	Wireless communication	25	Adoption year is related to the cultural distance from the innovation Centre, and uncertainty avoiding cultures tend to imitate.
Kumar & Krishnan, 2002	Cumulative adopters, sales	Consumer durables and high tech	7	Culture similarity (represented by Hofstede's dimensions) effected cross country interactions.
Shane, 1993	National rates of innovations	Trademarks per capita	33	Low uncertainty avoidant cultures had higher national rates of innovation
Dwyer et al., 2005	Cross national diffusion rates	7 technological innovations	13	Masculinity, high power distance, and collective and short oriented countries will have a positive association with the diffusion of technological innovations.
Lynn & Gelb, 1996	National innovativeness, new product ownership	7 consumer durable products	16	National innovativeness is related to national levels of individualism, and low uncertainty avoidance.
Waarts & Van Everdingen, 2005	Country adoption rates	Enterprise Resource Planning (ERP)	10	High uncertainty avoidance, masculinity, and power distance in a country will negatively influence ERP adoption.

(Continued)

Table1. (Continued)

Author	Dependent Variables	Product	Number of countries	Culture Key results
Gong, 2009	Global diffusion	B2C e-commerce	58	High context and high uncertainty avoidant countries will adopt B2C e-commerce.
Taylor & Wilson, 2012	Country innovation rates	Technology patents	56	The paper confirmed that individualism is strongly and positively related (and collectivism is strongly and negatively related)
Rinne et al., 2012	National Innovativeness	Global Innovation Index	66	Individualism is strongly and positively related, and power distance strongly and negatively related to innovation, whereas uncertainty avoidance turned out to be insignificant
Abdelrahim, 2020	National rates of innovations	Per capita of trademarks	50	A country's rates of innovation are most closely associated with the cultural values of uncertainty acceptance and long-term orientation.
Griffith & Rubera, 2014	Design and technological innovation	Mobile phone industry	8	The results indicate that the positive effect of design innovation on changes in market share strengthens as individualism and indulgence increase, whereas the positive relationship between technological innovations and market share is weakened as uncertainty avoidance and indulgence increase
Bukowski & Rudnicki, 2019	Country innovation rates	Patents, per capita scientific and technical publications, per capita number of trademarks, and per capita number of industrial design applications among other national level economic indices	n/a	The study suggests that there is no single pattern for the impact of culture on national innovation rates that should be considered in seeking effective innovation strategies and policies.

Note. Studies taken from the literature on cross national diffusion research.

Table 2. The Bass Model in Cross National Diffusion Research				
Authors	**Dependent Variable**	**Product**	**Number of countries**	**Key results**
Gatignon et al., 1989	q and p (Bass model)	6 consumer durables	14	Cosmopolitan, mobility, and sex roles effect diffusion of innovations.
Ganesh et al., 1997	Country level diffusion patterns (Bass model)	4 consumer durables	16	Authors find evidence towards a learning effect in consumer durables diffusion.
Ganesh, 1998	Country level diffusion patterns (Bass model) difference for pre- and post-1970 innovations	Ten innovations	12	Authors found that unification of EU did not lead to faster diffusion rates in the EU countries as initially hypothesized.
Takada & Jain, 1991	q (Bass model)	9 consumer durables	4	q coefficient is positively related to time lag of product introduction between countries. The rate of adoption is higher in high context societies with homophiles communication.
Putsis et al., 1997	Cumulative adopters, sales	4 consumer durables	10	Evidence suggests significant cross country interaction effects.
Talukdar et al., 2002	Bass model	6 consumer durables	31	Ethnic diversity will hinder speed of diffusion. Developing countries will have a slower adoption rate compared to that of developed countries.
Dekimpe et al., 1998	Country level diffusion patterns (Bass model)	Cellular telephone adoption	184	Authors find that crude deaths and ethnic heterogeneity to have a negative influence on diffusion, while income per capita has a generally positive influence on diffusion.
Dekimpe et al., 2000	Technology Adoption	Cellular telephone adoption	184	Innovative countries are wealthier, has a highly concentrated population, and is culturally homogeneous.

(Continued)

Authors	Dependent Variable	Product	Number of countries	Key results
Helsen et al., 1993	Bass model	3 consumer durables	12	Macro level variables have no effect on diffusion patterns across countries.
Lee (1990)	National innovativeness	Ownership of black and white, colour TV	73	Wealthier and more industrialized countries are more innovative.
Kumar et al., 1998	Cross national diffusion rates	6 consumer durables	14	Country specific variables and time lag are useful in explaining differences in adoption rates between countries. Richer countries are more innovative, and a homogeneous social system will reach the confirmation stage faster.

Note. Studies taken from the literature on cross national diffusion research.

Arab States (Talukdar et al., 2002). Therefore, this section will examine the significant findings from H1b, H3b, H6b, H9a, H10a, and H11a and attempt to link them to the relevant literature.

2.2.13. The higher the literacy rate, the lower the imitation parameter
Correlational analysis indicated a strong negative relationship between the literacy rates of a country with its imitation coefficient. It seems to indicate that the more literate a society is, the less imitative it is. In past literature, findings proved that literacy rate was positively associated with innovation levels and the innovation coefficient (p) (Lee, 1990; Rogers, 2010; Talukdar et al., 2002). However, until the present study, cross-national diffusion literature did not allude to the negative association between the literacy rate and imitative behavior or the imitation coefficient (q). Still, since the imitation coefficient of the Bass Model also refers to the influence of word of mouth on the diffusion process and taking in mind the results of the correlational analysis, it can be inferred that the higher the literacy rate in a country, the less effect word of mouth communication has on its society. Such results may indirectly suggest that external mass media, which also denotes for the p parameter, is more influential on a literate and educated society, much like the literature has hypothesized.

Our study ranks Lebanon and Kuwait as the countries with the highest literacy rate and the lowest imitation rate versus Iraq, Libya, and Egypt. Empirical results suggest that word of mouth, interpersonal connections, and social networks may not work as well on these countries with such low imitation levels. As such, external mass media, promotion, and advertisement would work better in accelerating the diffusion and adoption process in Kuwait and Lebanon. Countries with low imitation levels but a high literacy rate would imply a population that is well educated, has more formal education, and as such is more exposed and influenced by mass media channels (Rogers, 2010). For countries, such as Egypt and Iraq, who have a low literacy rate and high imitation coefficients, the literature suggests that their social networks would exert the highest influence on their diffusion patterns. As such, marketing efforts should focus on affiliating their

Table 3. Arab VSM 13 scores and innovation and imitation levels							
	Kuwait	**KSA**	**UAE**	**Lebanon**	**Iraq**	**Egypt**	**Libya**
PDI	73	72	74	62	97	80	103
IDV	39	48	36	43	31	37	35
MAS	45	43	52	48	53	55	66
UAI	70	64	66	57	96	55	67
LTO	19	27	22	22	12	42	15
IVR	29	14	22	10	23	−2	74
p (innovation levels)	.000471	6.07e-05	2.770e-04	1.538e-06	.0047	. 6.973e-05	3.91e-04
q (imitation levels)	.17231	.39677	.22394	.13491	.40037	.41109	.47651

Note. National culture scores obtained from AlMutairi's et al. (2021) study. Bass Model scores were derived from AlMutairi and Yen's (2017) findings, in which the Bass Model was applied on penetration data of mobile cellular telephone subscriptions for all seven Arab States.

products and services with local celebrities to act as brand ambassadors, or opinion leaders, to help increase the acceptance rate throughout the community.

2.2.14. The more urbanized the population, the lower the imitation parameter

The relationship reflects a negative strong association between the urban population and the propensity of a country to imitate. The more geographically concentrated the society is, the less imitative it gets. Again, no past study has mentioned the possible correlation between the imitation coefficient and the level of urbanization in a country. The findings indicate that the level of urbanization may negatively affect the word-of-mouth process, such that the higher the level of urbanization is, the less effective word of mouth is on the diffusion process. This may imply that people living in cities and large towns are not prone to socializing regardless of their close geographical proximity. In fact, several studies suggest that urbanization often leads to a more individualistic society, distant relationships, and looser ties with the community (Marsella, 1998; Wirth, 1938).

Again, Kuwait and Lebanon are the countries with the highest urbanization rate and the lowest imitation coefficient. Theoretically, high literacy rate and high urbanization have been found to be correlates and as such the results are not overly confounding. Taking this in mind, the same previously discussed implications do apply in this case as well. A highly literate and urbanized population would be more susceptible to mass media influence and advertising schemes. As opposed to Egypt, for example, whose population of around 100 million is only 43% urbanized (World Bank, 2020). As such, Egypt's large geographic area is mostly villages and small towns with sometimes no access to radio, internet, and other external media. Therefore, it would be better for managers to focus their external mass media efforts on cities and more urbanized areas, whereas they should utilize one-on-one partnerships with recognized local retailers when targeting rural areas and mostly rural countries, such as Iraq and Egypt.

2.2.15. High power distance in a country leads to more imitation

Yaveroglu and Donthu's (2002) and Singh's (2006) study has already alluded to the positive effect of power distance on the imitation coefficient, however their studies did not find the relationship significant. People in high-power distance communities are more susceptible to power inequalities and are more accepting of these differences. Therefore, it is inferred that there is a great gap between the more powerful and less powerful in the society and imitating the more powerful will enable the less powerful to outwardly bridge that gap. This mimicking behaviour may be the result

Table 4. Hypothesis path and resulting estimates					
Path	**Hypothesis Tested**	**Sign**	**p-value**	**Estimates**	**Correlation**
Wealth → innovation levels	H1a	+	.645	.214	NS
Wealth → imitation levels	H1b	+	.337	−.429	NS
Literacy → innovation levels	H2a	+	.589	−.250	NS
Literacy → imitation levels	H2b	+	.014	−.857	*Significant [a]
Urban pop. → Innovation levels	H3a	+	.939	−.036	NS
Urban Pop. → Imitation levels	H3b	+	.014	−.857	*Significant
Infrastructure → innovation levels	H4a	+	.702	−.179	NS
Infrastructure → imitation levels	H4b	+	.071	−.714	NS
Competition → innovation levels	H5a	+	.741	.154	NS
Competition → imitation levels	H5b	+	.805	.116	NS
PDI → innovation levels	H6a	-	.180	.571	NS
PDI → imitation levels	H6b	+	.014	.857	*
IDV → innovation levels	H7a	+	.119	.-643	NS
IDV → imitation levels	H7b	-	.180	.-571	NS
MAS → innovation levels	H8a	+	.760	.143	NS
MAS → imitation levels	H8b	-	.052	.750	NS
LTO → innovation levels	H9a	-	.027	−.811	*
LTO → imitation levels	H9b	+	.818	.108	NS
IVR → innovation levels	H10a	+	.023	.821	*
IVR → imitation levels	H10b	+	.645	.214	NS
UAI → innovation levels	H11a	-	.000	.964	**
UAI → imitation levels	H11b	+	.879	.071	NS

* Correlation is significant at the .05 level (p < 0.05)
** Correlation is significant at the .01 level (p < 0.01

Note. Socioeconomic indicators were taken from the World Bank database and include GDP per capita based on purchasing power parity (PPP), and the percentage of people ages 15 and above who are considered literate. Sector specific indicators were taken from the International Telecommunication Union (ITU) database and include the percentage of the population living in urban areas, the number of fixed telephone subscriptions (per 100 people), and the number of competitive mobile service providers in the country as of 2013. The rest of the indicators refer to the national culture indices gathered from disseminating Hofstede's VSM13 survey on each respective Arab State found in AlMutairi's (2021) study.

of the power imbalance, but it does accelerate the diffusion process of innovations, most specifically status and materialistic innovations. In accordance with the previous analysis, Libya, Iraq, and Egypt are shown to have the highest imitation level. The relationship indicates a significant positive association with them being the highest scored on Hofstede's PDI scale. Countries such as Libya, Iraq, and Egypt could be influenced by using trusted authority figures from the local community to act as brand ambassadors. This type of strategy will be most optimal, seeing as high PDI societies seek to emulate the ruling elites, and as such affiliating the firm's product and services with the most prestigious and wealthy demographic will increase the adoption and diffusion process. Findings of the present study corroborate with Mellahi et al. (2011), in which they believe that in the MENA region, establishing a relationship with local powerful partners will act as an insurance policy and also provide them with preferential treatment and access to valuable resources.

2.2.16. High uncertainty avoidant countries are more innovative
While the initial hypothesis rejects any positive relationship between UAI and innovation level, the correlational analysis shows an unexpected positive association. This is the antithesis of the literature's consensus that high UAI countries hinder the adoption of new innovations (Yeniyurt & Townsend, 2003; Steenkamp et al., 1999; Lynn & Gelb, 1996; Singh, 2006). Therefore, the present study's findings are an anomaly when compared with the cross-national diffusion literature, except for the study by Gong (2009) and Abdelrahim (2020). As such, the findings may indicate that the results may be sector specific in the case of this dimension. The cellular network related innovation is vital to a country's security as well as economic and political health than any other innovation (Gruber, 2001). Since high UAI societies are risk averse, and have structured regulations, it would not be farfetched to hypothesize that they would early mobile subscribers. Incidentally, it's also considered an interactive technology, and according to Metcalfe's Law, as the risk of uncertainty decreases the number of adopters increases (Sundqvist et al., 2005). In this theoretical scheme, the present study's findings indicate that for critical national-level innovations, high UAI countries would prove to be more innovative.

The most UAI country is Iraq and is also the most innovative country out of the sample. It should be noted, however, that the present study suspects that Iraq's high innovation level is an outcome of it being the last country to adopt the mobile technology in response to the end of Saddam Hussein's embargo on Iraq's telecommunication sector. As such, it has the shortest adoption time span of any MENA region country and is the last to adopt the technology. Seeing neighboring countries continued usage of the technology increases the target country's acceptance of the technology and thus speeds the adoption process (Meade & Islam, 2006; Tellis et al., 2003). Therefore, it is more theoretically plausible that Kuwait is the most innovative country along with Libya and the UAE; coupled with their high UAI rank, it would suggest that these countries in particular should be more exposed to external mass media as hypothesized by the literature. The nature of the mass media message should be tailored to recognize and address the ambiguities related to the product and services. Given that all the Arab States have a high uncertainty avoidant culture, it would be prudent for companies expanding in the region to reduce all the risks associated with their products and services and communicate the necessary relevant information to their target market in order to curb these uncertainties.

2.2.17. Short term-oriented countries are more innovative

Consequently, the same analysis on Iraq's innovation level is applied. The same countries, Libya, Kuwait, and the UAE, are again featured as the most innovative in relation to their short-term oriented position on Hofstede's LTO dimension. As indicated by the results, short term-oriented societies will be more influenced by mass media than long term-oriented societies. The literature does seem to allude that short term-oriented societies are more prone to spending, status consumption and are not averse to risk-taking, which suggests that they would innovate and adopt earlier. Libya, Kuwait, and the UAE's short term-oriented culture coupled with their high PDI rank, indicates their societies' inclination towards consumption and spending. Unlike high LTO societies, such as Egypt, whose thrifty attitude and saving mentality, coupled with its very low innovation level, suggests that LTO countries would not adopt innovations on the expense of their saving's account. As such, our findings prove that the adoption and diffusion process will be much greater in short term-oriented countries, as was already confirmed by Dwyer et al. (2005).

2.2.18. More indulgent countries are more innovative

Our findings seem to signify that the more indulgent the society is, the more innovative it is. From a theoretical lens, it would seem that restrained societies would not indulge themselves by adopting new innovations, because of the constraints they would inwardly place in fulfilling their desires. Unlike indulgent societies, which have more freedom to enjoy their proclivities without being restricted or shunned from their society. While all the Arab States scored as restrained, the only Arab country to score as highly indulgent is Libya. According to the literature, indulgent societies would exhibit higher innovation levels, and as such, would be more inclined to innovate and adopt faster. The positive association between less restraint and innovation levels within a country is exhibited by the first ranking of Kuwait and Libya. The correlational analysis also implies that restrained societies would be inversely associated with innovation levels. This can be seen from Egypt's low rank of the most restrained (−2 IVR) and one of the least innovative countries (.000006 p). Innovations can vary and may not always be necessary or vital, but indulgent societies would be more predisposed to adopt innovations to gratify their desires and not because it's a necessity. As such, with restrained societies, such as Egypt, it would be beneficial to stress the importance of the innovation and market it as essential.

3. Conclusion

Extending this stream of research, our study offers additional insights and understanding of the relevancy of the literatures findings and how generalizable they are in relation to the MENA region. In this instance, some of our results have proven to be contrary to the literature's findings. For example, the present study did not find MAS and IDV dimensions to be significantly associated with innovation, but it did confirm that innovation levels were positively associated with low LTO. It also found high UAI to be positively correlated with innovation levels as opposed to the literature's consensus. Therefore, the present study's innovative profile is found to be high UAI, high IVR, and low LTO. Findings also found the country imitative profile to have low literacy rates, low urbanization, and high on the PDI dimension. The findings of the present study are in agreement with the literature in cross-national diffusion, which concedes that the diffusion of a new innovation is a culture-specific phenomenon (Rogers, 2010; Takada & Jain, 1991), and that the differences in diffusion rates between the Arab States is a function of country-specific characteristics, such as their literacy rate, urbanization, and their rank on Hofstede's PDI, LTO, IVR, and UAI dimensions.

Although much research has previously been dedicated to the effect of national culture on the diffusion patterns of countries, the present study still offers a number of independent contributions to academia and further research. Our study expands the number of countries sampled in cross-national diffusion literature to include the MENA region and investigates how generalizable the findings are when examined through the Arab States. The present study also validates the role of national culture in diffusion literature as proposed in previous research. However, the present study also extends previous understanding of national culture's role in diffusion research, in which empirical findings did not corroborate with the literature's suggested innovative and imitative

profiles. As such, implications in cross-national diffusion literature are found not to be applicable to the MENA region context, which is an area that has never been previously tested in the literature. Particularly, the present study was able to isolate national cultural differences in imitative behaviour, which is an objective that was understated in most cross-national diffusion literature, seeing as most emphasis is put on the innovative profiles and innovative characteristics of societies. As such, the results of this research can further enrich the body of literature investigating the characteristics of imitative societies and the imitative behaviours of communities and their effect on the diffusion process. Hence, this research provides fresh insights into the diffusion and national culture relationship having analyzed the MENA region, which presents a theoretical contribution to cross national diffusion studies by advancing our understanding of the process by which Hofstede's dimensions are associated with innovative and imitative levels.

4. Managerial implications

The present study provides several practical managerial implications. Our findings provide important managerial implications for firms managing their expansion and targeting strategies. The most critical aspect of the product or service may not be how innovative it is, but how innovative or receptive the market is and as such, clarity of the target market is key to a successful product and service launch. We argue that countries that have a slightly low literacy rate, are less urbanized, and are ranked as high PDI countries should be targeted for late market entries. Since these characteristics are linked with a very high imitation level, they can be considered imitator countries, and as such, entry strategies should be adjusted accordingly. For example, a most likely expansion scheme would be to adopt a waterfall strategy and target an adjoining innovative country, for initial entry into the region, seeing as they would be more receptive of new innovations. A waterfall strategy would imply subsequent market introductions, while a sprinkler strategy would be a simultaneous market entry across countries. The literature consensus supports the present study's findings in targeting innovative countries and later imitator countries after the awareness of the innovation has spread (Putsis et al., 1997; Takada & Jain, 1991; Tellis et al., 2003).

Understanding the findings of the present study provides international firms looking to enter the international market with several different parameters to help make their entry successful. Considering that the results indicate a significant positive relationship with UAI, IVR, and short orientation with innovation levels, managers would find it helpful in targeting those countries first for introducing their innovation. In the case of the Arab States, Libya and Kuwait appear to be the most desirable choice in the MENA region towards market entry and adopting new innovations. Moreover, the Bass Model's (q)

parameter is often linked with word-of-mouth communication and how greatly internal and social influence is integral to imitating societies' diffusion process. As such, promotional strategies could employ the usage of opinion leaders and influencers. Opinion leaders can be anyone that can act as a link between the targeted segment and the innovation being communicated (Rogers, 2010).

The benefit of utilizing these sources, especially in imitator countries, is that these authority figures are able to recommend the product or service and informally influence others through interpersonal communication, which often determines the rate of adoption speed in imitator countries (Singh, 2006). Sociology literature has always indicated the notion that imitation is driven by social and status concerns, very much like in cross-national diffusion literature (Van Den Bulte & Stremersch, 2004). This is particularly relevant when targeting imitator countries, who are also high PDI, such as Egypt, which also happens to be the least innovative out of the sample. In Egypt's case, notable international brands such as Pantene and Lipton tea, frequently employ Egyptian actresses and football players to act as brand ambassadors and utilize their star power to attract and influence their targeted market (AlMutairi et al., 2021; Mahajan, 2012).

5. Limitation and further research

It should be noted that international firms should not be limited to the implications listed previously but should consider them alongside a multitude of other factors vital to the success of the product and service introduction and adoption process. They should be fortified with other appropriate business strategies, such as pricing and distribution. However, international managers can still tentatively utilize the present study's results, as long as they also consider the pitfalls and limitations of the findings of the present study. Methodologically, one of the limitations of the research pertained to the level of association observed, which was only correlational, and as such conclusive causality could not be ascertained. This was due to the small country sample size conducted by the present study. Consequently, we find that the present study could be extended to include more countries from the MENA region, seeing as there is still more potential research in this area.

Another limitation refers to using only one single indicator (mobile cellular telecommunication subscriptions) to measure the diffusion process. Subsequently, there might be different correlates if other products and services were used, and as such, findings may only prove idiosyncratic. Although the extent of which innovators can be generalized across different product classes has been supported by the literature, it is harder to generalize national innovativeness across different product classes (Lee, 1990). It could also be extended to investigate other aspects of the diffusion process. Other studies could also extend more sets of indicators, preferably consumer durables, to allow for a more complex set of analysis as well as the ability to increase the generalizability of the results.

From a theoretical standpoint, segmenting international markets based on their diffusion rates may not result in robust segments since the derived segments would vary according to the different product categories of which they were derived from (Helsen et al., 1993). However, the availability of the indictors was limited not only to the rare availability of time-series data pertaining to the MENA region, but also to the reliability of the data source. As such only credible sources recommended by the literature were used, which narrowed the databases available to the few selected options outlined, such as the ITU publications and World Bank databases. Whilst findings were based on diffusion patterns of one indicator, the data obtained from the telecommunication sector does provide an otherwise unaffordable opportunity in testing the prevailing theories in diffusion literature. However, we encourage further research that investigates the effects and diffusion of other indicators on the MENA region so that the present study's findings on the MENA region can be further validated and enriched.

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References
Abdelrahim, D. (2020). The influence of culture on rates of innovation: Re-examining Hofstede's cultural dimensions. *International Journal of Management, 11*(9), 999–1009. https://ssrn.com/abstract=3711527

AlMutairi, S. M., & Yen, D. (2017). International diffusion of digital innovations: Mapping the mobile telephony of the Arab States. *The Bottom Line, 30*(4), 310–329. https://doi.org/10.1108/BL-08-2017-0020

AlMutairi, S., Heller, M., & Yen, D. (2021). Reclaiming the heterogeneity of the Arab states. *Cross Cultural & Strategic Management, 28*(1), 158–176. https://doi.org/10.1108/CCSM-09-2019-0170

Bass, F. (1969). A new product growth model for consumer durables. *Management Science, 15*(5), 215–227. https://doi.org/10.1287/mnsc.15.5.215

Bass, F. (2004). Comments on "a new product growth for model consumer durables the bass model". *Management Science, 50*(12), 1833–1840. https://doi.org/10.1287/mnsc.1040.0300

Bukowski, A., & Rudnicki, S. (2019). Not only individualism: The effects of long-term orientation and other cultural variables on national innovation success. *Cross-Cultural Research, 53*(2), 119–162. https://doi.org/10.1177/1069397118785546

Chandrasekaran, D., & Tellis, G. J. (2007). A critical review of marketing research on diffusion of new products. In Malhotra, N. K. ed. *Review of Marketing*

Research, Vol. 3, (Bingley: Emerald Group Publishing Limited), pp. 39–80. https://doi.org/10.1108/S1548-6435(2007)0000003006

Choden, K., Bagchi, K. K., Udo, G. J., Kirs, P. J., & Frankwick, G. (2019). The influence of cultural values on information and communication technology (ICT) diffusion levels: A cross-national study. *Journal of Global Information Technology Management, 22*(4), 243–256. https://doi.org/10.1080/1097198X.2019.1679586

Chu, C. P., & Pan, J. G. (2008). The forecasting of the mobile Internet in Taiwan by diffusion model. *Technological Forecasting and Social Change, 75*(7), 1054–1067. https://doi.org/10.1016/j.techfore.2007.11.012

Clark, T. (1990). International marketing and national character: A review and proposal for an integrative theory. *Journal of Marketing, 54*(4), 66. https://doi.org/10.1177/002224299005400406

Craig, C. S., & Douglas, S. P. (1996). Developing strategies for global markets: An evolutionary perspective. *The Columbia Journal of World Business, 31*(1), 70–81. https://doi.org/10.1016/S0022-5428(96)90008-3

David, F. N. (1938). *Tables of the ordinates and probability integral of the distribution of the correlation coefficient in small samples*. Cambridge University Press.

De Mooij, M., & Hofstede, G. (2010). The Hofstede model: Applications to global branding and advertising strategy and research. *International Journal of Advertising, 29*(1), 85. https://doi.org/10.2501/S026504870920104X

De Mooij, M., & Hofstede, G. (2011). Cross-cultural consumer behaviour: A review of research findings. *Journal of International Consumer Marketing, 23*(3–4), 181–192. doi:10.1080/08961530.2011.578057.

Dekimpe, M. G., Parker, P. M., & Sarvary, M. (1998). Staged estimation of international diffusion models: An application to global cellular telephone adoption. *Technological Forecasting and Social Change, 57*(1), 105–132. https://doi.org/10.1016/S0040-1625(97)00085-1

Dekimpe, M. G., Parker, P. M., & Sarvary, M. (2000). "Globalization": Modeling technology adoption timing across countries. *Technological Forecasting and Social Change, 63*(1), 25–42. https://doi.org/10.1016/S0040-1625(99)00086-4

Dwyer, S., Mesak, H., & Hsu, M. (2005). An exploratory examination of the influence of national culture on cross-national product diffusion. *Journal of International Marketing, 13*(2), 1–27. https://doi.org/10.1509/jimk.13.2.1.64859

Field, A. P. (2014). *Discovering statistics using SPSS (4th edition)*. Sage.

Ganesh J. (1998). Converging Trends within the European Union: Insights from an Analysis of Diffusion Patterns. *Journal of International Marketing, 6*(4), 32–48. 10.1177/1069031X9800600407

Ganesh, J., Kumar, V., & Subramaniam, V. (1997). Learning effect in multinational diffusion of consumer durables: An exploratory investigation. *Journal of the Academy of Marketing Science, 25*(3), 214–228. https://doi.org/10.1177/0092070397253003

Gatignon, H., Eliashberg, J., & Robertson, T. S. (1989). Modeling multinational diffusion patterns: An efficient methodology. *Marketing Science, 8*(3), 231–247. https://doi.org/10.1287/mksc.8.3.231

Gatignon, H., & Robertson, T. S. (1985). A propositional inventory for new diffusion research. *Journal of Consumer Research, 11*(4), 849–867. https://doi.org/10.1086/209021

Gong, W. (2009). National culture and global diffusion of business-to-consumer e-commerce. *Cross Cultural Management: An International Journal, 16*(1), 83–101. https://doi.org/10.1108/13527600910930059

Griffith, D., & Rubera, G. (2014). A cross-cultural investigation of new product strategies for technological and design innovations. *Journal of International Marketing, 22*(1), 5–20. https://doi.org/10.1509/jim.13.0082

Gruber, H., & Verboven, F. (2001). The diffusion of mobile telecommunications services in the European Union. *European Economic Review, 45*(3), 577–588. https://doi.org/10.1016/S0014-2921(00)00068-4

Gruber, H. (2001). Competition and innovation: The diffusion of mobile telecommunications in Central and Eastern Europe. *Information Economics and Policy, 13*(1), 19–34. https://doi.org/10.1016/S0167-6245(00)00028-7

Gupta, V., Hanges, P. J., & Dorfman, P. (2002). Cultural clusters: Methodology and findings. *Journal of World Business, 37*(1), 11–15. https://doi.org/10.1016/S1090-9516(01)00070-0

Helsen, K., Jedidi, K., & DeSarbo, W. (1993). A new approach to country segmentation utilizing multinational diffusion patterns. *Journal of Marketing, 57*(4), 60. https://doi.org/10.1177/002224299305700405

Herbig, P., & Dunphy, S. (1998). Culture and innovation. *Cross Cultural Management: An International Journal, 5*(4), 13–21. https://doi.org/10.1108/13527609810796844

Hofstede, G., Hofstede, G., & Minkov, M. (2010). *Cultures and organizations*. McGraw-Hill.

Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of International Business Studies, 14*(2), 75–89. https://doi.org/10.1057/palgrave.jibs.8490867

Hofstede, G. (2001). *Culture's consequences*. Sage Publications.

Hofstede, G. (2013). Replicating and extending cross-national value studies: Rewards and pitfalls–An example from Middle East studies. *Academy of International Business Insights, 13*(2), 5–7. https://doi.org/10.46697/001c.16952

Hohenberg, S., & Homburg, C. (2016). Motivating sales reps for innovation selling in different cultures. *Journal of Marketing, 80*(2), 101–120. https://doi.org/10.1509/jm.14.0398

ITU ICT Indicators Database (Version 16). (2013). Geneva, Switzerland.

Jang, S. L., Dai, S. C., & Sung, S. (2005). The pattern and externality effect of diffusion of mobile telecommunications: The case of the OECD and Taiwan. *Information Economics and Policy, 17*(2), 133–148. https://doi.org/10.1016/j.infoecopol.2004.05.001

Kumar, V., Ganesh, J., & Echambadi, R. (1998). Cross-National diffusion research: What do we know and how certain are we? *Journal of Product Innovation Management, 15*(3), 255–268. https://doi.org/10.1111/1540-5885.1530255

Kumar, V., & Krishnan, T. V. (2002). Multinational diffusion models: An alternative framework. *Marketing Science, 21*(3), 318–330. https://doi.org/10.1287/mksc.21.3.318.139

Lee, C. (1990). Determinants of national innovativeness and international market segmentation. *International Marketing Review, 7*(5). https://doi.org/10.1108/EUM0000000001534

Lynn, M., & Gelb, B. D. (1996). Identifying innovative national markets for technical consumer goods.

International Marketing Review, 13(6), 43–57. https://doi.org/10.1108/02651339610151917

Mahajan, V. (2012). *The Arab world unbound*. Jossey-Bass.

Marsella, A. J. (1998). Urbanization, mental health, and social deviancy: A review of issues and research. *American Psychologist, 53*(6), 624. https://doi.org/10.1037/0003-066X.53.6.624

Meade, N., & Islam, T. (2006). Modelling and forecasting the diffusion of innovation–A 25-year review. *International Journal of Forecasting, 22*(3), 519–545. https://doi.org/10.1016/j.ijforecast.2006.01.005

Mellahi, K., Demirbag, M., & Riddle, L. (2011). Multinationals in the Middle East: Challenges and opportunities. *Journal of World Business, 46*(4), 406–410. https://doi.org/10.1016/j.jwb.2010.10.001

Michalakelis, C., Varoutas, D., & Sphicopoulos, T. (2008). Diffusion models of mobile telephony in Greece. *Telecommunications Policy, 32*(3), 234–245. https://doi.org/10.1016/j.telpol.2008.01.004

Midgley, D. F., & Dowling, G. R. (1978). Innovativeness: The concept and its measurement. *Journal of Consumer Research, 4*(4), 229–242. https://doi.org/10.1086/208701

Png, I., Tan, B., & Wee, K.-L. (2001). Dimensions of national culture and corporate adoption of IT infrastructure. *IEEE Transactions On Engineering Management, 48*(1), 36–45. https://doi.org/10.1109/17.913164

Prim, A. L., Filho, L. S., Zamur, G. A. C., & Di Serio, L. C. (2017). The relationship between national culture dimensions and degree of innovation. *International Journal of Innovation Management, 21*(1), 1730001. https://doi.org/10.1142/S136391961730001X

Punnett, B. J., & Clemens, J. (1999). Cross-national diversity: Implications for international expansion decisions. *Journal of World Business, 34*(2), 128–138. https://doi.org/10.1016/S1090-9516(99)00012-7

Putsis, W., Balasubramanian, S., Kaplan, E., & Sen, S. (1997). Mixing behavior in cross-country diffusion. *Marketing Science, 16*(4), 354–369. https://doi.org/10.1287/mksc.16.4.354

Rinne, T., Steel, G. D., & Fairweather, J. (2012). Hofstede and Shane revisited: The role of power distance and individualism in national-level innovation success. *Cross-Cultural Research, 46*(2), 91–108. https://doi.org/10.1177/1069397111423898

Rogers, E., & Shoemaker, F. (1971). *Communication of innovations*. Free Press.

Rogers, E., Singhal, A., & Quinlan, M. (2010). Diffusions of Innovations. In D. Stacks, and M. Salwen (Eds.), *An integrated approach to communication theory and research* (1st ed.). Routledge, pp. 418–434.

Rogers, E. (2010). *Diffusion of innovations* (4th ed.). Free Press.

Rossberger, R. J., & Krause, D. E. (2014). Personality, culture and innovation a national level analysis. *GSTF Journal of Psychology (Jpsych), 1*(1). http://dl6.globalstf.org/index.php/jpsych/article/view/122/2446.

Schneider, S. C. (1989). Strategy formulation: The impact of national culture. *Organization Studies, 10*(2), 149–168. https://doi.org/10.1177/017084068901000202

Shane, S. (1993). Cultural influences on national rates of innovation. *Journal of Business Venturing, 8*(1), 59–73. https://doi.org/10.1016/0883-9026(93)90011-S

Shneor, R., & Efrat, K. (2014). Analyzing the impact of culture on average time spent on social networking sites. *Journal of Promotion Management, 20*(4), 413–435. https://doi.org/10.1080/10496491.2014.930281

Singh, S. (2006). Cultural differences in, and influences on, consumers' propensity to adopt innovations. *International Marketing Review, 23*(2), 173–191. https://doi.org/10.1108/02651330610660074

Søndergaard, M. (1994). Research note: Hofstede's consequences: A study of reviews, citations and replications. *Organization Studies, 15*(3), 447–456. https://doi.org/10.1177/017084069401500307

Steenkamp, J. B. E., Hofstede, F. T., & Wedel, M. (1999). A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness. *Journal of Marketing, 63*(2), 55–69. https://doi.org/10.1177/002224299906300204

Stremersch, S., & Tellis, G. J. (2004). Understanding and managing international growth of new products. *International Journal of Research in Marketing, 21*(4), 421–438. https://doi.org/10.1016/j.ijresmar.2004.07.001

Suh, T., & Kwon, I. W. G. (2002). Globalization and reluctant buyers. *International Marketing Review, 19*(6), 663–680. https://doi.org/10.1108/02651330210451962

Sundqvist, S., Frank, L., & Puumalainen, K. (2005). The effects of country characteristics, cultural similarity and adoption timing on the diffusion of wireless communications. *Journal of Business Research, 58*(1), 107–110. https://doi.org/10.1016/S0148-2963(02)00480-0

Syed, H., & Malik, A. N. (2014). Comparative study of effect of culture on technology adoption in Pakistan and USA. *The Business & Management Review, 5*(1), 42. https://www.proquest.com/openview/a6b4f41bdfa54ce69e4f30b0b3a647a8/1?pq-origsite=gscholar&cbl=2026610

Takada, H., & Jain, D. (1991). Cross-National analysis of diffusion of consumer durable goods in pacific rim countries. *Journal of Marketing, 55*(2), 48–54. https://doi.org/10.1177/002224299105500206

Talukdar, D., Sudhir, K., & Ainslie, A. (2002). Investigating new product diffusion across products and countries. *Marketing Science, 21*(1), 97–114. https://doi.org/10.1287/mksc.21.1.97.161

Taylor, M. Z., & Wilson, S. (2012). Does culture still matter?: The effects of individualism on national innovation rates. *Journal of Business Venturing, 27*(2), 234–247. https://doi.org/10.1016/j.jbusvent.2010.10.001

Tellis, G. J., Stremersch, S., & Yin, E. (2003). The international take-off of new products: The role of economics, culture, and country innovativeness. *Marketing Science, 22*(2), 188–208. https://doi.org/10.1287/mksc.22.2.188.16041

Tian, K., & Borges, L. (2011). Cross-cultural issues in marketing communications: An anthropological perspective of international business. *International Journal of China Marketing, 2*(1), 110–126. http://www.na-businesspress.com/ijcm/tiankweb2_1_.pdf

Tian, M., Deng, P., Zhang, Y., & Salmador, M. P. (2018). How does culture influence innovation? A systematic literature review. *Management Decision, 56*(5), 1088–1107. https://doi.org/10.1108/MD-05-2017-0462

Tsang, F., Yaqub, O., van Welsum, D., Thompson-Starkey, T., & Chataway, J. (2011). *The impact of information and communication technologies in the Middle East and Africa*. RAND Corporation. http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR1163.pdf

Van Den Bulte, C., & Stremersch, S. (2004). Social contagion and income heterogeneity in new product diffusion: A meta-analytic test. *Marketing Science, 23*

(4), 530–544. https://doi.org/10.1287/mksc.1040.0054

Van Den Bulte, C. (2002). Want to know how diffusion speed varies across countries and products? Try using a Bass model. *PDMA Visions, 26*(4), 12–15. http://faculty.haas.berkeley.edu/hoteck/papers/basseasy.pdf

Waarts, E., & Van Everdingen, Y. (2005). The influence of national culture on the adoption status of innovations: An empirical study of firms across Europe. *European Management Journal, 23*(6), 601–610. https://doi.org/10.1016/j.emj.2005.10.007

Wang, G., Dou, W., & Zhou, N. (2008). Consumption attitudes and adoption of new consumer products: A contingency approach. *European Journal of Marketing, 42*(1/2), 238–254. https://doi.org/10.1108/03090560810840998

Wirth, L. (1938). Urbanism as a Way of Life. *American Journal of Sociology, 44*(1), 1–24. https://doi.org/10.1086/217913

World Bank. (2016). Data retrieved March 5, 2016, from World Development Indicators Online (WDI) database.

World Bank. (2020). *World development indicators.* Retrieved October 1, 2021, from http://data.worldbank.org/

Yalcinkaya, G., & Griffith, D. A. (2008). A culture-based approach to understanding the adoption and diffusion of new products across countries. *International Marketing Review, 25*(2), 202–214. https://doi.org/10.1108/02651330810866281

Yaveroglu, I. S., & Donthu, N. (2002). Cultural influences on the diffusion of new products. *Journal of International Consumer Marketing, 14*(4), 49–63. https://doi.org/10.1300/J046v14n04_04

Yeniyurt, S., & Townsend, J. D. (2003). Does culture explain acceptance of new products in a country: An empirical investigation. *International Marketing Review, 20*(4), 377–396. https://doi.org/10.1108/02651330310485153

Zawislak, P. A., Tello-Gamarra, J., Fracasso, E. M., & Castellanos, O. (2017). Innovation beyond technology: Perspectives from Latin America. *Academia Revista Latinoamericana de Administración, 30*(4), 434–443. https://doi.org/10.1108/ARLA-07-2017-0221

Zhang, H., Tian, M., & Hung, T. K. (2020). Cultural distance and cross-border diffusion of innovation: A literature review. *Academia Revista Latinoamericana de Administración, 33*(2), 241–260. https://doi.org/10.1108/ARLA-10-2018-0239

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