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Mohamed El Louadi  
*Université de Tunis*

Andrea Everard  
*University of Delaware*

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# **Information Technology and the Arab World: A Question of Culture**

**Mohamed El Louadi**

Unité de recherche Stratégies d'optimisation des  
informations et de la connaissance (SOIE)  
Université de Tunis, Tunisia  
Mohamed.ellouadi@isg.rnu.tn

**Andrea Everard**

University of Delaware  
everarda@lerner.udel.edu

## **ABSTRACT**

The use of IT and its applications is the source of many important economic developments, and is therefore a focus of developing countries. Much IS research has been conducted on factors that either facilitate or inhibit the adoption of IT. While several studies have focused on the cultural aspects of IT adoption, the nature of the significant cultural factors in IT adoption are not completely understood. Furthermore, current models do not always include culture as a variable, and often these models cannot be fully adapted to the Arab world. In this research we highlight some Arab traits that are not currently grasped in existing models. The possibility of culture actually diverging rather than converging may compromise efforts to explore the cultural underpinnings of IT adoption; in light of this, we suggest ways that existing models and theories can be strengthened to better explain the delay of IT adoption in Arab countries.

## **Keywords**

Arab countries, culture, Hofstede, information technology, Internet, Arabs, Ibn Khaldun

## **INTRODUCTION**

With a population estimated at more than 300 million and an economy of more than 700 billion dollars, the Arab world is made up of twenty two countries. Although the majority of Arabs practice Islam, they represent less than one third of Muslims worldwide, estimated at one billion. The Arab world is often thought of as rich and economically prosperous due to its oil resources; it is nonetheless still quite under-developed. In fact, the entire Arab world had a GDP lower than that of Spain (UNDP, 2003).

The countries that make up the Arab world share several characteristics, including their language and culture. Differences exist in terms of their size, geography, demographics, government type, etc. In terms of investment in and use of IT, research and statistics portray the Arab world as far from being up-to-date (UNDP, 2003; Saadi, 2003).

This paper raises two questions: how can this enduring lag be explained, and, more importantly, are existing research models appropriate to help explain this delay? If, as we expect, certain characteristics “proper” to the Arab culture play an important role in explaining the lack of IT adoption, then we anticipate the answer to the second question to be negative that no existing model is able to adequately study the IT adoption phenomena in the Arab world.

## **THE ARAB WORLD AND IT**

It is a recognized fact that the Arab world still lags behind in terms of IT (UNDP, 2003; World IT Report, 2003). While in the US and Europe one out of six people use the Internet, that figure drops to one in twenty-five in the Arab world (Saadi, 2003). All international classifications provide evidence that Internet access, and by extension introduction of Arab countries to electronic commerce, is lagging. Although by the end of the 1990s, progress had been reported in some Arab countries, the overall situation was definitely not considered satisfactory; this encouraged the Arab International Telecommunications Conference (AITEC '99) to recommend that immediate action be taken to enable the region to benefit from electronic commerce activities.

During this same conference it was reported that barely 0.11% of the Arab population had access to the Internet. Furthermore, several factors contributing to the lag in the development of electronic commerce activities were identified: an inadequate telecommunications infrastructure, prohibitive connection fees, a lack of awareness among the population and the business sector, and the absence of clearly drafted policy on cooperation between governments and the private sector.

Three years later, Ajeeb reported that Arab Internet reached 1.24% of the Arab population (3.54 million, Ajeeb, 2001a). Ajeeb predicted that the number of Internet users would equal 5 million by the end of 2001, and reiterated DITnet's March 2000 prediction that Internet users would number ten to twelve million by the end of 2002. In fact, by the end of 2002, there were a reported 8.2 million users.

To date, no Arab country has been able to develop its electronic commerce capabilities to the extent seen in the West (Pons, Aliifri and Fourati, 2003). In the 2004 edition of the World Economic Forum Networked Readiness Index (NRI), 102 countries were ranked according to their preparedness to participate in and benefit from IT (Dutta and Jain, 2004). Only five Arab countries were listed: Tunisia, Jordan, Morocco, Egypt, and Algeria. All Gulf Cooperation Council (GCC) countries and many other Arab countries were completely absent in the NRI index. It is clear that Davison, Vogel, Harris and Jones' (2000) comments still ring true: that the participation to the global economic situation of several developing countries remains insignificant.

## REASONS FOR THE LAG

What factors can help explain the IT lag of Arab countries? Part of the lag can be explained by the delay with which new ITs have traditionally reached Arab countries. For example, although the printing press was invented around 1450, the first Arabic book to be printed, the Koran, was first printed in Venice in 1537. Printing was only introduced to Arab soil in 1728. Several other reasons have been suggested for the apparent lack of enthusiasm to introduce new IT applications to the Arab world. Among them, Davison et al. (2000) propose: (1) a perceived incompatibility between local cultures and technologies often created elsewhere; (2) a preference for autonomy, self-sufficiency, and independence with respect to the technology in question, and (3) a lack of economic resources to acquire and use the technology. The first two of these capture our attention as is it often the case that IT stumbling blocks occur not because of technical reasons but rather because of human and social obstructions. To this effect, Arab societies differ from others by reason of their organizations, their social structures and their institutional pluralism.

IT in general and the Internet in particular are often developed elsewhere. Danowitz, Nassef, and Goodman (1995) contend that when ITs are adopted by different cultures, they are steeped in cultural values, symbols, and icons different from those of the local culture. The acceptance or rejection of a technology cannot solely be attributed to characteristics of that technology, and a technology cannot be assumed to embody a unique and universal cultural norm.

The third reason cited by Davison et al. (2000), namely a lack of economic resources to acquire and use the technology, can be excluded for some Arab countries. The six countries that make up the GCC claim per capita revenues of nearly five times the average of the rest of the Arab nations (see Table 1). The rate of adoption of the Internet for these countries is up to fifteen times that of the rest of the Arab world. Although representing only 12% of the Arab population, these six nations account for close to 75% of Internet users (Table 1).

A report drafted by the UNDP (2003) offers other leads to answering our initial question, including the inadequate and inefficient use of human resources due to maladapted educational systems and a soaring level of illiteracy. Sixty five million Arab adults are illiterate, and ten million children are not schooled. Furthermore, Arab nations spend little on R&D, about a seventh of the world average.

Other factors also explain the low rate of Internet penetration in Arab nations as compared to the rest of the world. Due to space constraints, only two will be discussed: language and culture.

## Language

Arabic is the sixth most widely spoken language in the world (UNCTAD, 2002), yet it is not one of the twelve most used on the Web<sup>1</sup>. Will Arab Internet users only espouse the Internet when it becomes national and in Arabic? Such a question becomes even more important when one considers that the number of Arab Internauts who will not be able to fully benefit from the Internet due to the language barrier is growing (Ajeeb, 2001b). Already half of all Arab Internet users face this dilemma, and the numbers are expected to grow 5-7% annually. In 1995, 99% of Arab Internauts understood English or French. In 2001 that percentage shrunk to 55%. It is expected that by 2005, when the rate of Internet use is predicted to reach 8%, 67% of the estimated 25 million Internet users will be in the same predicament (Ajeeb, 2001b).

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<sup>1</sup> According to Global Reach, [www.greach.com/globstats/](http://www.greach.com/globstats/) (September 2002).

Country	per capita GDP <sup>1</sup>	First connected to the Internet	Subscribers (000) <sup>2</sup>	Users (000) <sup>3</sup>	Literacy <sup>4</sup>	Internet penetration	Population <sup>4</sup> (million)	of which expatriates <sup>4</sup> (million)	% Female population <sup>4</sup>
1 Algeria	5 300	1994	45.0	500.0	70.00%	1.52%	32.82		49.51%
2 Bahrain	14 000	1995	40.0 <sup>11</sup>	165.0	89.10%	23.6%	0.69 <sup>11</sup>	0.24	43.88%
3 Comoros	720	1998	0.0	2.5 <sup>5</sup>	56.50%	0.39%	0.63		50.38%
4 Djibouti	1 300	1996	0.0	4.5	67.90%	0.98%	0.46		48.54%
5 Egypt	3 900	1993	70.0	600.0 <sup>5</sup>	57.70%	0.80%	74.72		49.54%
6 Iraq	2 400	1997	0.5	13.0 <sup>4</sup>	40.40%	0.05%	27.14 <sup>11</sup>		49.42%
7 Jordan	4 300	1994	127.3 <sup>11</sup>	307.5 <sup>11</sup>	91.30%	5.00%	5.80 <sup>11</sup>		47.61%
8 Kuwait	15 000	1992	150.0 <sup>11</sup>	250.0 <sup>11</sup>	83.50%	11.00%	2.18	1.29	39.69%
9 Lebanon	5 400	1993	300.0 <sup>11</sup>	400.0 <sup>5</sup>	87.40%	9.00%	4.43 <sup>11</sup>		51.50%
10 Libya	7 600	1997	4.0	20.0	82.60%	0.36%	5.50	0.17	48.64%
11 Morocco	3 900	1994	55.0	500.0	51.70%	1.58%	31.69		35.61%
12 Mauritania	1 900	1996	0.0	10.0	41.70%	0.34%	2.91		50.51%
13 Oman	8 300	1996	90.0 <sup>11</sup>	180.0 <sup>11</sup>	75.80%	5.00%	3.23 <sup>11</sup>	0.58	43.90%
14 Palestine <sup>10</sup>	600-800	1999	35.0 <sup>11</sup>	105.0 <sup>11</sup>	-	3.00%	3.40 <sup>11</sup>		49.12%
15 Qatar	21 500	1996	30.0 <sup>11</sup>	70.5 <sup>11</sup>	82.50%	9.18%	0.65 <sup>11</sup>		34.47%
16 Saudi Arabia	10 500	1999	200.0 <sup>11</sup>	1418.9	78.80%	6.00%	23.34 <sup>11</sup>	5.58	45.09%
17 Somalia	550	1997	0.0	0.2 <sup>9</sup>	37.80%	0.00%	8.03		49.95%
18 Sudan	1 420	1997	7.0	84.0	61.10%	0.22%	38.11		49.38%
19 Syria	3 500	1996	30.0	220.0 <sup>11</sup>	76.90%	1.00%	19.23 <sup>11</sup>		48.78%
20 Tunisia	6 500	1991	84.7	551.0 <sup>8</sup>	74.20%	5.55%	9.92		49.57%
21 UAE	22 000	1993	735.0 <sup>11</sup>	1175.6	77.90%	35.00%	3.34 <sup>11</sup>	1.61	40.51%
22 Yemen	840	1996	15.0 <sup>11</sup>	100.0 <sup>11</sup>	50.20%	0.59%	16.68 <sup>11</sup>		49.09%
Totals			952.7	5620.2		1.78%	314.90	9.45	47.43%

<sup>1</sup> Purchasing Power Parity (PPP) in 2002 US dollars (CIA World Factbook, 2003)

<sup>2</sup> March 2001 (Ajeeb.com) with the exception of Tunisia (May 2003. ATI)

<sup>3</sup> ITU 2002 unless otherwise indicated

<sup>4</sup> CIA World Factbook (2003, except Palestine, July 2002)

<sup>5</sup> ITU (2001)

<sup>6</sup> Nielsen/Netratings 2001

<sup>7</sup> Ajeeb.com 2002

<sup>8</sup> ATI (2003)

<sup>9</sup> ITU (1999)

<sup>10</sup> Gaza and West Bank

<sup>11</sup> Internet WorldStats, <http://www.internetworldstats.com/>

Table 1. Economic and Technological Characteristics of Arab Countries

The language issue appears to be a major stumbling block in a field dominated by the English language. Coll (1998) refers to a study conducted by Gartner in which it was found that language accounted for the lag in electronic commerce adoption in Europe vis-à-vis the US. However, European nations where English is taught from a young age have been found to be the most zealous in adopting the new technology<sup>2</sup>.

### Culture

Culture is a set of meanings, values, and beliefs which characterize national, ethnic and other groups and define these groups' behaviors. For Hofstede (1991) culture is "[the] collective programming of the mind that distinguishes the members of one group of people from those of another". For Ibn Khaldun, 14th century Arab sociologist, man is son to his habits and his environment, not to his nature and his moods<sup>3</sup>.

Several characteristics are often ascribed to Arabs, including a sense of honor and the importance of reputation, humility, an acute sense of hospitality, patience, and tolerance. Hill, Loch, Straub, and El-Sheshai (1998) claim that the Arab culture and social systems are some of the most complex of this world. The Arab culture is complex for several reasons. Though the majority of Arabs are Muslim, many are Jewish or Christian while others are agnostic and even atheists.

Many actions and symbols assume a particular significance. Often in traditional Arab cultures a handshake or the spoken word are seen as more legally binding than a signed contract and the written word has less significance than in other cultures. When given the choice, an Arab would find it inappropriate to use technology (electronic mail, fax) to communicate with another (Hill et al., 1998) due to the impersonal nature of these media. Decisions are never communicated using a fax or a phone; rather they are delivered in person and orally by the decision maker.

For Arabs bartering is very different from what the West calls negotiating. If a buyer does not bargain fervently enough, he is considered inexperienced. In traditional Arab cultures, the numerous steps involved in bartering hold social meanings, the least of which is to learn about and get more acquainted with the other (Hendon, Hendon, and Herbig, 1996) so as to build trust in terms of the product quality. Selling and buying are social acts not replicated by technology.

Solberg (2002) is one of the few who speak of "social capital" or "wasta" (social connections and string-pulling). In his study of Qatari and Emirati cultures, he found that wasta could be used to lower the level of uncertainty during certain business transactions (such as drawing up a contract or accepting a request for proposals). Even when more direct means are available, Arabs still prefer wasta because of the human contact it offers and because they prefer the spoken word, the equivalent of which does not exist in computing. Wasta is a way of life that builds upon human interactions, a major part of an Arab's life, that s/he may not be willing to sacrifice to technology.

Cultures can also be classified according to whether they are polychronic or monochronic (Hall, 1989). In monochronic societies, people attend to only one thing at a time, while in polychronic societies, people often do several things simultaneously. In any case, with Arabs, who are often characterized as polychronic, time does not have the same meaning as with Westerners, and punctuality (as understood in the West) is a notion that is practically inexistent (Lewis, 2003). Rose et al. (2003) have shown that polychronic culture were more tolerant with Web site download time.

In most Arab countries, Islam plays a considerable role in food and drink consumption, dress habits, financial products, social relationships, etc. Rare are western countries in which religion has an influence as strong on business and trade as in Arab nations. However, we should not deduce that religion, in this instance Islam, is one of the factors that have played a role in the technological lag in Arab nations. In fact, nothing in the Koran rejects technology as a means of advancement and knowledge. Furthermore, Noland (2003) empirically found that religion was not a hindrance in economic development; in fact, quite the contrary was true for Islam. Nonetheless, religion is important in that it affects and is affected by culture.

Arabs tend to be more talkative than Western individuals in their communication. Arabs are fond of long sentences and using several adjectives and attributes, the number of which, combined with the length of sentences and the tone of the voice make up an integral part of the message. An oft invoked example involves the guest who is offered a cookie: it is customary to not accept too keenly or quickly; in fact, often it is suggested to refuse the first time one is offered something. It is up to the host to insist (invoking God) in an attempt to convert the initial refusal into a yes<sup>4</sup>. It is also considered inappropriate for the host

<sup>2</sup> The first seven countries ranked by the Economist Intelligence Unit (2003) are: Sweden, Denmark, the Netherlands, the United States, Great Britain, Finland, and Norway.

<sup>3</sup> Ibn Khaldun, *The Muqaddimah, An Introduction to History*, Translated from French by F. Rosenthal, Princeton, 1958; 1967.

<sup>4</sup> In his book, "The Saddam Years" (Fayard, 2003), Saman Abdul Majid, personal interpreter to the deposed dictator, explains how in 1993 President Clinton sent a secret agent to Iraq to suggest that a new leaf be turned over and that discussions be

to not insist when the guest initially refuses. Arabs rarely say yes or no. Rather, they are inclined to answer using more obscure, less committed terms such as “in principle,” “usually,” “Inshallah,” and so forth. In light of this, the confusion felt by Arabs facing a computer screen with only “yes”, “no” and “cancel” buttons is quite easily understandable.

## THEORIES AND RESEARCH MODELS

Several research models are available to study IT adoption both at the micro-economic/individual level and at the macro-economic/national level (see El Louadi, 2002). Most models that map behavior, beliefs and technology acceptance are generally accepted within the cultures that they were developed, tested, and validated; however, rarely do they take culture into account. Can these models grasp the cognitive dissonance that results from the perceived incompatibility between receptive cultures and the adopted technologies which Davison et al. (2000) discussed and which were empirically detected by Hill et al. (2001)?

### Hofstede's Model

Hofstede's work (1991; 2001a) considers culture a national trait. The results of Hofstede's research is a typology of cultures based on five cultural dimensions: (1) power distance, (2) individualism, (3) masculinity, (4) uncertainty avoidance, and (5) long-term orientation<sup>5</sup>. Arab countries scored 80, 38, 53, and 68 on the first four dimensions (see Table 2).

Region	Power Distance	Individualism	Masculinity	Uncertainty Avoidance	Long-term Orientation
Arab World <sup>1</sup>	80	38	53	68	-
Eastern Africa <sup>2</sup>	64	27	41	52	25
United States	40	91	62	46	29
Western Africa <sup>3</sup>	77	20	46	54	16
France	68	71	43	86	-

<sup>1</sup>. Egypt, Iraq, Kuwait, Lebanon, Libya, Saudi Arabia, United Arab Emirates

<sup>2</sup>. Ethiopia, Kenya, Tanzania, Zambia

<sup>3</sup>. Ghana, Nigeria, Sierra Leone

**Table 2. The Hofstede dimensions for selected regions of the world (Source: Hofstede's Dimensions of Culture Scales, [http://spectrum.troyst.edu/~vorism/hof\\_ban.htm](http://spectrum.troyst.edu/~vorism/hof_ban.htm)).**

Hofstede's model is by far the most well-known and the most used in IS (Simon, 2001)<sup>6</sup>. Although the notion of culture is currently enjoying a renewal in interest in IS research, it is unfortunate that despite efforts by Straub and his colleagues (Straub, Loch, Evaristo, Karahanna, and Strite, 2002), Hofstede's cultural dimensions have yet to be integrated into a theory able to identify the factors that play a role in explaining the IT adoption lag of Arab countries.

In IS research, certain dimensions have been invoked more than others: individualism (Jarvenpaa, Tractinsky, Saarinen, and Vitale, 1999), power distance (Simon, 2001) and masculinity (Hofstede, 2001b) and some interesting results have been obtained. For example, findings from Hofstede (2001b) show a significant relationship between masculinity and fax machines, and femininity and cellular phones. Like authority, a masculine trait, a fax is not interactive; and like exchange and dialogue, which are feminine traits, a cellular phone is interactive.

In the context of the Arab world, certain values could be mapped onto cultural dimensions such as Hofstede's. For example, what one calls “*maslaha el amma*” in Arabic and which brings to mind public interest happens to mean the exact opposite of what Hofstede calls individualism. In the Arab culture, this *maslaha el amma* could even be extended to the notion of *Umma*

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resumed. Saddam did not immediately answer, an act that Clinton took as a refusal. That file was then closed. In fact, Saddam was expecting a more solid and thought-out proposition to be put forward, and was surprised that Clinton did not come through with one. This mis-communication between two men of very different cultures has had the now all-too known consequences.

<sup>5</sup> It is assumed that most readers are familiar with Hofstede's work. Due to space limitations, details of his work will not be elaborated here. For more information, the reader is referred to Hofstede (1980) and Hofstede (2001b).

<sup>6</sup> The reader interested in other promising cultural paradigms should consult the work of Kluckhohn and Strodtbeck (1961), Trompenaars and Hampden-Turner (1998), and Schwartz (1999) that space limitations do not allow us to review here. Also of interest, the GLOBE project, see for example Abdalla and Al-Homoud (2001).

(or nation). Family commitments and responsibility towards authority figures and political leaders often held as priorities over other matters. Arabs from the Gulf region especially swear allegiance to the family, the clan, the tribe, religion, and nation<sup>7</sup>. Usunier (1993) made use of a notion akin to long-term orientation, and by which he was able to distinguish between two types of cultures: (1) ones for which history helps to better understand the present and in which culture and heritage are important and (2) one for which more weight is given to the present, and in which the past is considered the past and the future nothing but uncertainty. Usunier (1993) suggests that Arab and Muslim cultures tend to resemble cultures that are focused on the present and for whom the future (destiny) is inevitably predestined (Mektoub) by God (Inshallah: God willing). Cultures focused on the future suppose that man can master nature and the future; this is a North American tendency. For Patai (1973), fatalism is a predominant trait of an important part of the Arab world. If Patai and others are right in thinking that past-oriented cultures are more passive than future-oriented cultures, the Arabs should have an attitude that can be summarized as “if it is written then it will happen”, henceforth they will not feel the urge to go toward the technology and will expect it to come to them (just by judging the lack of cultural sensitivity of today’s GUI and icons, that technology is all but coming to the Arab culture).

## LIMITATIONS OF HOFSTEDE’S MODEL

### The Absence of Arab Dimensions

If in Hofstede’s model, the first four dimensions are applicable to other cultures, and if only three of the dimensions have been used in IS research, it would be useful to (1) more closely study Arab values in order to (2) include them in Hofstede’s model.

One could easily argue that due to globalization and the democratization of media one would expect that cultures would tend to come together, even converge. However, Hofstede (2001b) provided evidence to show that it is just the opposite that is likely to happen, that rather than converge, cultures are more likely to diverge from one another.

Hofstede’s model would therefore benefit from including Arab dimensions; otherwise it would risk being applicable only to those cultures for which it was developed or for the Arab culture to be perceived through the lens of another culture. This could be done following the example of taking into account of Far East cultures. Far Eastern cultures were really only taken into account with the addition of the fifth dimension, initially termed Confucian dynamism, thereafter called long-term orientation. Thus, in order to complete Hofstede’s model, the Confucian dynamism dimension was added since it was the dimension that most distinguished western and far-eastern cultures.

### Hofstede’s scores: In need of updating

The data collected between 1967 and 1973 to compute the scores for different cultures are today thirty years old, although some recent efforts have attempted to bring them up to date (Hofstede, 2001a). The assumption that national cultures remain somewhat stable may not always hold true as Oyserman, Heather and Markus (2002), for example, have shown that Japanese and Koreans now can exhibit more individualistic behavior than Americans, a finding which begs reassessment of Hofstede’s scores for these two countries.

During the three decades since the collection of Hofstede’s data several changes have affected Arab nations, including the wars of 1967 and 1973 against Israel, the Iran-Iraq war (1980-1988), the Gulf war (1990-1991) and the invasion of Iraq (2003), in addition to the aftermaths of the events of 9/11.

### The implicit cultural homogeneity

Not only are there significant cultural differences between developed nations and Arab countries, recognized differences exist among Arab nations (Solberg, 2002), and even between different regions of a same country. This peculiarity, which is not unique to Arab nations, calls for a level of analysis that is lacking in Hofstede’s model. For Arab countries this is even more noticeable as the borders between countries were often drawn arbitrarily during colonization.

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<sup>7</sup> Perhaps even in this order, especially if one takes into account the famous proverb in which an Arab states: “Me, against my brother; my brother and I against our cousin; my brother, my cousin and I against all others.” Was it not written of Ishmael (and by extension of all Arab children) in the Bible that “And he will be a wild man; his hand will be against every man, and every man’s hand against him; and he shall dwell in the presence of all his brethren.” (Genesis 16:12). This, however, does not seem to hold any longer given the events that took place between Iraq and Kuwait in 1990-1991 as well as since then.

According to Noland (2003) several rifts remain and between Sunnis and Shiites fundamental cultural differences exist, among them masculinity. Sunnis are considered more “triumphant” (sic.) while Shiites focus more on suffering. The two strains of Islam could therefore be considered at the two extremes of Hofstede’s masculinity dimension although scores for this dimension (Table 2) place the Arab world at the midpoint of the masculinity scale, hence a lack of variance in the analyses pertaining to the Arab Muslim cultures. However, even Sunnis bear certain feminine traits such as seeking good relationships with leaders, cooperating with colleagues in order to foster equally good relationships with them, and living according to what their rank and social status dictate (Weir, 2001).

Muslim scholars are not unanimous on the issue of fatalism. If by fatalism it is understood that humans have no say in their destiny, then the concept of time orientation introduced by Patai (1973) originates from a fundamentally inaccurate understanding of a large part of the Arab world. Islam is founded on the promise of salvation (Jenna) or the threat of damnation (Jehenna). Debates on the “kadha and kadar”<sup>8</sup> (destiny and predestination) continue to fuel the controversy that divides theologians on the issue, and which we do not wish to partake in our discussion here. Suffice it to mention that Arab societies do not necessarily neatly fit within cultures anchored in either the past or the present.

Differences can also be pointed out between the cultures of the Gulf and other nations of the Arab world. Over and above variations in GDP, a variable whose importance Hofstede (2001b) empirically supported, other differences are often omitted. The discovery of oil in the 1930s resulted in an odd mix of traditional and tribal cultures with modern cultures. This mix did not manifest itself similarly in Middle Eastern countries as it did in those of North Africa. Furthermore, North African countries have not always had Arab identity. They became Arabs at the same time as Muslims did, while Gulf countries were Arab during the pre-Islamic era. We consider these differences to be significant.

What has become disconcerting is the use of the scores and dimensions attributed to Arab countries (only seven countries in all, as shown in Table 2) as a starting point for research assuming that all Arabs score highly on power distance, are relatively collectivist, and so forth. Such scores would perhaps be more informative had they been published along with variances, which, in light of the above, we hypothesize to be quite large.

## CONCLUSION

The management culture that is in effect today is based on authors such as Fayol, Ford, Barnard, and Simon, not on Kheireddine Tounsi, Ibn Rushd (Averroès), or Ibn Khaldun, one of the most famous Arab sociologists. Rare are studies on or that include the Arab culture referring to Arab cultural and scientific heritage.

Significant contradictions may exist between how Arabs perceive themselves and how they are perceived by others. For example, Hill et al. (1998) argue that the adoption of technologies is rarely in quest of imitating the West or the way in which it is used. These authors assume that cases in which the transfer of technology was successful were often when the technology was compatible with the pre-existing culture. On the other hand, Ibn Khaldun maintains that imitation is characteristic of Arabs. Ibn Khaldun “does not conceive of technology as a body of knowledge independent of those who possess it. Technique, though understood as something at once practical and intellectual (*amr amali fikri*), is reduced to a skill that may be learned only by observation and imitation (*naql al-mu ayana*).” (Cheddadi, 1994, p. 5).

Is it possible to reconcile these different points of view?

Many unanswered questions and unexplored avenues remain:

- Is it possible that their desire for independence and autonomy, combined with their recent memories of colonization are the source of Arabs’ dread of cultural imperialism (Mani, 2002) or the possible danger of dependence hidden in IT? Does a collective Arab programming exist?
- Given that Arabs tend to prefer face to face interactions, will the acute use of IT result in more or less social contact? Do communication technologies improve communication between individuals, no matter their culture?
- Another interesting research stream could explore the differences that may exist between interactive (telephone) and non-interactive (multimedia presentations) technologies, or between synchronous (electronic chats) and asynchronous (electronic mail) technologies. Rowe and Struck (1999) are confident that electronic mail is a relational technology. Given that Arabs tend to prefer social aspects of exchanges, it follows logically that they should prefer this technology to others.

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<sup>8</sup> This highly philosophical issue revolves around the overly simplified question that if God had already decided on much of what we humans will do on Earth even before we were created, what is the Last Judgment about?

- If wasta is a product of collectivism, or the opposite of individualism, previous research dealing with individualism and IT (Hofstede, 2001b) could perhaps be extrapolated to the Arab culture and IT adoption, offering interesting hypotheses to test.

Several theories can be used to address some of these questions.

Weisinger and Trauth (2003) apply a theoretical framework which acknowledges that cultural understanding is locally situated and embedded in everyday, socially negotiated work practices. Such frameworks could help to study situations that an Arab computer scientist working in a multinational organization may encounter: the national culture of his country of origin, the host country's national culture, the IT industry culture, the organizational culture, etc. Bollinger and Hofstede (1987) use the term cultural layers to describe this, where each level would represent a different programming (social, national, regional, religious, contextual, organizational, etc.). Social Identity Theory (SIT) recognizes this in that it accepts that individuals are subject to a set of cultures, of sub-cultures, some of them ethnic, others national (Straub et al., 2002).

The second theory is the Value-Expectancy Theory (Feather, 1995). Abdul-Gader and Kozar (1995) borrowed the construct of technological alienation from psychosociology to explain certain purchase and use decisions of IT for Saudis and Americans. The results showed that alienated individuals resist any kind of technology adoption. More generally, this theory promises to enrich the debate on IT adoption by Arabs since it addresses the issue of the value attributed to things by individuals and their expectations, founded or not, such as their resistance to the possible danger of technological and cultural dependence.

Of highest importance is to not use or depend on an imported model in an attempt to understand the lag of a culture in the adoption of an innovation that is itself of another culture.

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