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## **Factors and Impacts of Low Utilization of Internet: The Case of Arab Countries**

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### **ABSTRACT**

*The Arab countries are greatly behind in terms of their levels of Internet usage. The Arab countries are under pressures to adopt and promote digital transformation. Data in Arab countries are hard to get, resulting in paucity of understanding the factors that affect the use of Internet in Arab countries. This paper combines research from academic and major international organizational literature to examine and synthesize the current use of Internet in Arab Countries. The obstacles and the factors that affect the use and growth of Internet are language, government policies, culture, cost and technology. They are discussed with their impacts.*

### **INTRODUCTION**

The adoption of modern information communication technologies (ICT) which is not the same between the developed and developing countries has widened the division between the information rich and information poor. Some countries have yet to taste the fruits of new technological inventions while the industrialized nations are pressing ahead with the Internet development. This problem is serious on a global level, especially, in the Arab countries.

Arab countries are under great global pressures to adopt and promote digital transformation within state and society. They face such pressures both in order to stimulate their fledgling economies, and in order to obtain foreign aid (Norris, 2001). Data with which to accurately assess economic development, user statistics, in addition to social, economic and political impacts in the Arab countries are hard to get. The need for understanding how and why Internet has or has not been used widely in Arab countries is important for researchers and policy makers alike. This paper combines research from academic and major international organizational literature to examine and synthesize the current use of Internet in Arab Countries. This paper is an attempt to answer the questions: what are the factors that affect the spread of Internet in the Arab countries and to what extent are the factors impacting the use of Internet in Arab countries?

## LITERATURE REVIEW

The Internet has led to the realization of the gaps in technology between developed and developing nations (Press, 2000). There are some considerable reports in literature on the use and spread of Internet in the world. Albirini (2008) examines the economic, cultural and political effects of the Internet within the historical context of developing countries, tracing the politically-inspired evolution of the Internet, its transfer to developing nations and the consequences. The implications of the digital divide have been documented in several reports (Flor, 2003). In 2004, one out of every two people in G8 countries uses the Internet (ITU, 2004). Many developing countries have less than 10 Mbps of international Internet bandwidth (ITU, 2004). One of the challenges facing service providers is how to provide broadband connectivity in an unfriendly environment and make Internet connection affordable to the people. In most of the developing countries, the cost of one hour of Internet access can wipe out a day's wage (Badamas, 2006).

Although the number of Internet users in the world grew from 74 million in 1997 to 513.41 million in 2001 closer inspections reveals that this population is spread very disproportionately (Nua, 2001). Data regarding online population of the world by region demonstrates that in 2001, Africa and the Middle East had less than two percent of the world's Internet users (Ngini, Furnell, & Chita, 2002). While the rate of growth in the number of Internet users has increased throughout the world, the rate for Arab countries is still low compared to Asia and the West.

Some Arab countries recognize the slow growth of Internet in their countries. Al-Jaghoub and Westrup (2003) describe strategies adopted by Jordan to develop a strong ICT sector which includes the Internet. Aladwani (2003) reported certain Internet characteristics and e-commerce issues in the Arab countries and brings some of the critical challenges facing the diffusion of the Internet and its applications in Arab countries to the attention of policy makers in these nations. Most Arab countries still have a long way to cover before being able to fully realize the benefits of the Internet.

Baker, Al-Gahtani, and & Hubona (2007) uses the theory of planned behavior (TPB) to predict intention to use computer technology. The theory of planned behavior (TPB), predicts human behavior based on relationships among attitudes, norms, beliefs, behavioral intentions and usage behavior. According to TPB, a person's attitude towards a behavior, coupled with prevailing subjective norms, and with perceptions of behavioral control factors, serve to influence an individual's intention to perform a given behavior (Ajzen, 1991). Despite the predictive power, of TPB, the model does not account for a large proportion of the variance in intention and usage (Morris, Venkatesh, Ackermann, 2005). Al-Gahtani (2003) investigated technological factors promoting IT adoption in Saudi Arabia, but he did not investigate the individual human factors' influence on technology adoption. Al-Gahtani (2004) reports on an empirical study of the applicability of the technology acceptance model (TAM) in the Arab world. The works cited are not specifically on Internet but on technology in general. Both Baker and Al-Gahtani did not seek to find out why the use of Internet is low in the Arab countries. Intention and the acceptability of a specific technology do not provide insight into why the use of that technology is low. This paper provides insight into the current situations on the use and spread of Internet without applying the theories of planned behavior or technology acceptance model.

The low utilization of Internet in any country is a significant phenomenon that policy makers must address. The relationship between low utilization of internet and economic freedom, using the Economic Freedom Index, had been studied. Nath and Murthy (2003) concluded that EFI is related to the diffusion of the Internet and countries must implement economic policies to increase utilization of the internet.

## METHODOLOGY

This research uses qualitative methodology involving multiple data collection strategies to derive rich descriptions. (Merriam, 1998; Patton, 1990). Qualitative methodology allows for in-depth information and description about the basic dynamics of Internet initiative in Arab countries. Most of the information used in the paper comes from internet materials produced by non-governmental organizations discussing the issues of Internet, Information Communication and Technology in Arab countries. Primary data on Internet usage in Arab countries provided by the UNESCO and the ITU and recent researches about Internet features and capabilities in the Arabic region, were used. The data collected provides historical insight into the introduction and the level of Internet penetration in the Arab countries. We used the data to support our analysis of the factors inhibiting the growth of Internet and the impacts on certain areas of the society.

## CURRENT SITUATIONS OF INTERNET IN ARAB COUNTRIES

Stretching over two continents Africa and Asia, the Arab countries make up one of the world's most strategic areas. The Arab people, spread over a vast area, enjoy common bonds of history and tradition. The Arab world is a region in transition, developing, modernizing and building the foundation for its own development. The region is rapidly expanding its municipal services and communications. The Arab countries are devoting large funds to development programs especially communications. (CAC, 2008). For a better understanding of the current position regarding Internet in the Arab countries, we take an historical perspective that allows us to realize how far some of the countries have come. In 1991, Tunisia became the first Arab nation to have access to Internet. By the end of 1996, all Arab states had introduced the public to the Internet. The last Arab country to introduce Internet was Iraq in 1999.

Table 1 shows the year each country introduced Internet to the public and the year Internet started being used for commercial purpose. In 2000, there were 2,014,800 users of the Internet in all Arab countries combined. United Arab Emirate had about 735,000 users, representing 38.40% of the population, which was the highest number then. Iraq has only 12,500, representing only 0.10% of the population.

In terms of penetration, United Arab Emirates, Kuwait and Qatar have more than a quarter of their populations using the Internet. Since 2000 when data was collected, Syria had the largest growth, with the least growth achieved by United Arab Emirates.

**Table 1: Internet Introduction and Commercialization in Arab Countries**  
(Source: Madar Research Group)

Country	Internet Introduction	Commercial Internet
Tunisia	1991	1997

<b>Kuwait</b>	1992	1994
<b>Morocco</b>	1992	1994
<b>Egypt</b>	1993	1996
<b>Lebanon</b>	1993	1995
<b>Algeria</b>	1993	1995
<b>Palestine</b>	1994	1995
<b>UAE</b>	1995	1995
<b>Jordan</b>	1995	1996
<b>Bahrain</b>	1995	1995
<b>Yemen</b>	1996	1996
<b>Qatar</b>	1996	1996
<b>Oman</b>	1996	1996
<b>Saudi Arabia</b>	1996	1999
<b>Libya</b>	1997	1998
<b>Sudan</b>	1997	1998
<b>Syria</b>	1998	1999
<b>Iraq</b>	1999	2000

What this indicates, as shown in Table 2, is that while United Arab Emirates has the largest penetration, other countries have increased usage of Internet since 2000.

**Table 2: Arab Countries Internet Usage and Population Statistics.**

(Adapted from Data from <http://www.internetworldstats.com/stats5.htm> of 03/03/2008)

Arab Countries	Population (2007 Est.)	Usage in Dec. 2000	Internet Usage (Latest Data)	% Population (Penetration)	Use Growth (2000-2007)
<b>Bahrain</b>	708,573	40,000	157,300	22.20%	293.30%
<b>Iraq</b>	27,499,638	12,500	36,000	0.10%	188.00%
<b>Jordan</b>	6,053,193	127,300	796,900	13.20%	526.00%
<b>Kuwait</b>	2,505,559	150,000	816,700	32.60%	444.50%
<b>Lebanon</b>	3,925,502	300,000	950,000	24.20%	216.70%
<b>Oman</b>	3,204,897	90,000	319,200	10.00%	254.70%
<b>Palestine</b>	2,535,927	35,000	266,000	10.50%	660.00%
<b>Qatar</b>	907,229	30,000	289,900	32.00%	866.30%
<b>Saudi Arabia</b>	27,601,038	200,000	4,700,000	17.00%	2250.00%
<b>Syria</b>	19,314,747	30,000	1,500,000	7.80%	4900.00%
<b>United Arab Emirates</b>	4,444,011	735,000	1,708,500	38.40%	132.40%
<b>Yemen</b>	22,230,531	15,000	270,000	1.20%	1700.00%
<b>Total</b>	120,930,845	1,764,800	11,810,500	9.77%	569.22%

Compared with the rest of the world, the penetration of the Arab countries is lower than the rest of the world. However, the usage percentage of the Arab countries (1.86%) is nearly the same percentage of the Arab population (1.85%) in the world.

However there is a significant growth in the use of Internet in the Arab countries (569.22%) than in the rest of the world (259.60%), as shown in Table 3. This is a positive development and a pointer to the fact that the use Internet is growing in the Arab countries. Even though the use of Internet had grown appreciably in the Arab countries, the percentage of Internet users (1.86%) is still behind that of the whole world, if the overall population of the Arab countries in the world (1.85%) is taken into consideration. What are the factors that are dragging the Arab countries behind?

**Table 3: Internet Users in Arab Countries and the World.**

(Adapted from <http://www.internetworldstats.com/stats5.htm> of 03/03/2008)

<b>Arab Countries</b>	<b>Population (2007) Est.</b>	<b>Pop. % of World</b>	<b>Internet Users (Latest Data)</b>	<b>% Pop. (Penetration)</b>	<b>% of World</b>	<b>Growth 2000-07</b>
Total	120,930,845	1.85%	11,810,500	9.7%	1.86%	920.20%
Others	6,414,216,614	98.15%	1,286,361,609	20.05%	98.14%	259.60%
World	6,335,147,459	100.00%	1,298.172,109	19.88%	100.00%	265.60%

### **FACTORS AFFECTING INTERNET USE**

Internet use is affected by a complex set of factors that need to be studied. We identified five core factors: language, culture, government policies, cost, and technology. We discuss each of these factors in the following sections

#### ***Language***

The Internet was developed in the West with English as the main language for its content and its architecture. Although there are over 6,000 different languages in the world, only about 470 million people are English speaking, with ninety percent of information stored in English (Al-Badr, 1998). Language is a major barrier for many people who might want to read the material provided on the Internet. English language stands as a barrier to a more intensive use of the Internet (Vehovar & Batagelj, 1998). Most of the reading resources on the Internet are provided in English. This limits the effective use of the Internet to those with formal education and a working knowledge English (Seifkashani, 2003). Table 4 shows the top ten languages on the Internet and their usages. From Table 4, there are about 379,529,347 people using English on the Internet. This represents 30.1% of all users of Internet.

There are 46,359,140 Arabic speaking people using the Internet, representing 3.7 % of all the Internet users in the world. Out of the estimated 350,965,119 world population that speaks Arabic, only 13.2 % use the Internet. It must be noted the number of Arabic Speaking Internet Users has grown 1,575.9 % in the last seven years (2000-2007). According to a survey of Arab internet users released in March 1998, 40 percent could not read Arabic on their browsers (Elguindy, 1998). Arab users who are not familiar with English are disadvantaged. More recently, there are browsers that can reproduce Arabic text and display Arabic letters. Windows 95 has a special Arabic version. However, Arabic content remains low.

**Table 4: Top Ten Languages Used in the Web.**  
(Source: Internet World Stats. Nov. 30, 2007)

<b>Top Ten Internet Languages</b>	<b>% of All Internet Users</b>	<b>Internet Users (million)</b>	<b>Penetration By Lang.</b>	<b>Language Growth (2000-07)</b>	<b>2007 Est. World Population</b>
<b>English</b>	30.1 %	379.529	18.8 %	167.3 %	2,022,629,545
<b>Chinese</b>	14.7 %	184.901	13.6 %	472.4 %	1,356,701,170
<b>Spanish</b>	9.0 %	113.463	25.4 %	359.7 %	446,648,991
<b>Japanese</b>	6.9 %	87.540	68.7 %	85.9 %	127,433,494
<b>French</b>	5.1 %	63.761	15.6 %	422.7 %	407,819,872
<b>German</b>	4.9 %	61.912	64.2 %	123.5 %	96,403,511
<b>Portuguese</b>	4.0 %	50.828	21.4 %	570.9 %	237,003,607
<b>Arabic</b>	3.7 %	46.359	13.2 %	1,575.9 %	350,965,119
<b>Korean</b>	2.7 %	34.430	47.6 %	80.8 %	72,346,515
<b>Italian</b>	2.6 %	33.143	57.0 %	151.1 %	58,178,115
<b>TOP TEN</b>	83.7 %	1,055.868	20.4 %	221.4 %	5,176,129,939
<b>Other Languages</b>	16.3 %	206.164	14.4 %	534.8 %	1,430,840,227
<b>WORLD</b>	100.0 %	1,262.032	19.1 %	249.6 %	6,606,970,166

While many Arabs use English or French as their preferred language on the Internet, the majority of Arabs, particularly in Saudi Arabia, Egypt, United Arab Emirates, Kuwait, Bahrain, Qatar, Oman, and Syria use Arabic. Seventy percent of the material on the internet is written in English, a language understood by only about one-third of Arab internet users. About 100 million web pages are written in Arabic, 0.2 per cent of the total posted worldwide (New Scientist, 2006). Lack of knowledge of the English language affects the use of information technology and English language stands as a barrier to a more intensive use of the Internet (Vehovar, et al. 1998). This is evidence in the Arab countries.

### *Culture*

Many people in the Arab world see globalization through the Internet as a cultural invasion by European and American cultures. Internet in most developing countries has aligned with other mass media in reinforcing the current sociopolitical status quo as well as economic dependency on foreign nations. This is considered cultural domination (Albirini, 2008). Albirini (2006) further discusses emerging technological jargon that is replacing computer-related vocabulary in Arabic language. He believes that the emergent linguistic forms may, in the long run, obliterate any sense of cultural identity. (Albirini, 2008). Many in Arab counties need access to newly developed materials within a local context more than access to existing information from a culture that is foreign to them.

Culture affects technology acceptance (Zakour, 2004). Culture should not be overlooked when considering computer acceptance (Straub et al., 2001; Al-Gahtani, 2004). Cultural traits are significantly related to a nation's Internet diffusion rate (Nath & Murthy, 2004). The issue of culture cannot be separated from gender sensitivity. Al-Saggaf (2004) studied the impact of the

Internet in Saudi Arabia and noticed that new forms of private communication, like electronic mail, chat and online public discussion areas are for the first time enabling communication between males and females in this gender-segregated society. Recent studies of the Internet in Kuwait support the suggesting that in the conservative Gulf, it is the politics of gender that are most easily transgressed and subverted online (Wheeler, 2004). Elnaggar (2007) presents a gender sensitive assessment of ICT in the Arab Gulf region in general with particular emphasis on Oman. Wheeler (2004) gives a qualitative account of female Internet use habits in some Arab countries. She contends that the Internet is regarded as a solution for the lack of capabilities and opportunities, arguing that the Internet empowers women by providing a medium for their voice.

Given strict social sanctions against crossing gender boundaries outside of marriage and the family, the Internet is widening the interactions and experiences of men and women in the Middle East and North Africa. Many of those who develop relationships online eventually arrange to meet in real life, thus demonstrating the direct link between online and offline encounters. Some of these young people who participate in cyber courtships end up getting married to people they meet online, often to individuals from another country, or from beyond their normal social networks (Wheeler, 2006).

Culture-specific inducements and impediments to using the Internet in the Arab world have been studied as well and showed how culture can both inhibit and encourage technological innovation. When individuals are exposed to the beneficial uses of the Internet, they are more favorably inclined towards its adoption (Loch et al., 2003). Arab cultural beliefs are very strong predictors of resistance to Internet (Straub, Karen, & Hill, 2001).

There are clear cultural constraints on the use of the Internet in Arab countries. Some of these constraints come from religious conservation and others from social norms and traditions. Many Arabic governments control access to sensitive political and religious discussions as well as sex-related material. There are many examples: Bahrain installed an expensive system to block access to certain Internet-related sites; Jordan installed a special screening facility to control sexually explicit material; Kuwait ensures that no pornography or politically subversive commentary is available; Abu Dhabi's Internet clubs ban sex, religious and political materials; Morocco secures the service and targets it at the banking and insurance sectors, universities, and multinational corporations; Saudi Arabia confines Internet access to universities and hospitals claiming that the people are protected from pornographic and other harmful effects.

### ***Government Policies***

The World Summit on Information Society's Plan of Action has as one of its goals for individuals, organisations and communities to benefit from access to information and knowledge. This goal can be supported through government policy and legislation, such as the liberalization of telecommunications services through deregulation, licensing of new operators, privatization and the establishment of Government portals enabling citizens to find information or to obtain forms previously available only from government offices (WSIS, 2005). Initially, many Arab governments formulated state policies encouraging government bodies to use the Internet and exempted computer equipment from import tariffs. These policies were changed when it was recognized that the Internet does not differentiate between the government and the



dissident, the state officer and the human rights activist, the religious and atheist, man and woman (HRINFO, 2004). Then a new phase began when Internet users were cracked down. As a result some Arab countries have blocked access to certain content, sites or services.

Indications are that this trend of limited diffusion continues for various reasons. Saudis tightly control the use of the Internet in an effort to limit access to pornography (Ambah, 1995). Internet access is also limited in countries such as Egypt, Bahrain, Kuwait, Jordan and the U.A.E. (Albrecht, 1996). Yemen filters what users can access through the use of a proxy server and "censorware." A proxy server is a device that is interposed between users and the Internet; in response to user requests and according to the criteria it is programmed to follow, the proxy examines material requested by a user and either delivers it or blocks its delivery.

According to Netlingo (2006), "Information traveling on the Internet usually takes a circuitous route to its destination computer, through several intermediary computers. ...each intermediary computer presents risk that someone will eavesdrop and make copies". Most Arab governments do not exclude the Internet from the restrictions they impose on the media, and the constraints placed on political activity have a negative impact on Arab Internet websites and users. Some countries impose censorship through centralized filtering systems that block particular content (Zarwan, Goldstein, Ghaemi, Stork, PoKempner, & Saunders, 2005). Tunisia has enacted Internet-specific laws regulating online communications according to certain national standards (Goldstein, 1999).

In effect the Internet has been used, on the state level, primarily to augment the political power of the governments (Albirini, 2008). However, few governments admit that curbing freedom of expression is their objective in imposing controls on the Internet. The argument is that the controls are needed to protect children from harmful content, preserve religious values, safeguard local cultures, protect national security, and thwart terrorists, silence racists and pornography (HRW, 2008). Some Arab countries have set up monitoring or filtering programs. Others have laid out ground rules and provided general access.

### *Cost*

A major factor inhibiting the growth of Internet in the Arab countries are the local prices of computer equipment and services. These prices which are reflections of government attitudes to Internet are set, taxed or subsidized by the governments. Throughout the Arab countries, Internet and telephone costs are more expensive than they are in the United States (HRW, 2008). The low bandwidth in Arab countries leads to high cost of international telephone calls charged by telecommunication companies in the Arab countries discourage Web use (Anderson, 1977).

"Overall, Internet bandwidth costs in the region remain at much higher rates than those in the United States or even Europe. Being small operators on the global scene, the ISPs/operators still lack any peering arrangements with international backbone providers. As such they continue to pay the complete cost of full-circuit connections to the international Internet backbone operators. Add to this the existence of cross-subsidization (local rates by international

rates) by monopoly operators and the cost becomes even higher." (Abbassi, 2001)

In a report for Arab Advisors Group on cost and affordability of Internet in the Arab countries, it was revealed that Egypt has the lowest total cost of residential Asymmetric Digital Subscriber Line (ADSL) service in the region. Syria has the highest cost of ADSL service. The regional average cost for a 256 Kbps residential ADSL connection stands at US\$ 956 per year (US\$ 80 per month). This figure is high by global standards limiting the availability of broadband Internet in the Arab World. In addition some Arab countries do not have the ADSL broadband Internet service. (Arab Advisors Group, 2004). Those countries that currently have ADSL services are: Algeria, Bahrain, Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, and the UAE.

“In the Arab markets where there is competition amongst ISPs, Internet service providers (ISPs) either act as resellers of the incumbent’s DSL infrastructure (like in Jordan), or have their own DSL infrastructure and even their own international gateways (like in Egypt). The first scenario exists in the majority of the Arab countries, while the second scenario currently exist in Kuwait and Egypt and will be soon the case in Saudi Arabia as a result of the recent liberalization of the fixed data communication market with the award of two data licenses. Of course in monopoly markets like the UAE, Qatar and Oman, the ISP is also the monopoly operator” (Sunna, 2004).

High speed internet users in the Arab world pay on average six times more for their services than users in Europe, a new study has found. A residential high-speed internet service costs, on average, US\$40 (Dh146.9) per month in Europe. Users in the UAE pay \$92, more than double that price, while in the Arab world; consumers pay an average of \$264 (Gara, 2009).

The total annual cost of residential ADSL services ranges from US\$ 290 per year in Egypt to a maximum of US\$ 1,620 per year in Syria. Syria is the most expensive followed by Kuwait, Sudan, Saudi Arabia, Bahrain, Algeria, Jordan, Qatar, UAE, Morocco, Oman, and ending with the lowest ADSL cost in Egypt. The total annual cost of ADSL in a country was calculated as a percentage of that country’s GDP per capita. This calculation indicates that Sudan has the least affordable service, followed by Syria, Jordan, Morocco, Algeria, Egypt, Saudi Arabia, Bahrain, Kuwait, Oman, UAE, and ending with most affordable in Qatar. Clearly, the income level of a country is also a major determining factor in addition to the absolute price level. For instance, while Egypt’s rate is low by regional and international standards, the price remains steep for many middle and low income Egyptians (Arab Advisors Group, 2004)

Buying a PC to use for connecting to the Internet is a heavy burden for low to moderate income families. While the cost of a PC for a European in the low income category might be the equivalent of one month’s salary, it’s the equivalent of one year’s salary for an Egyptian in the low income category. For many in the Arab world the cost of connecting to the Internet is high. Table 5 shows GDP (Gross Domestic Product) per capita and the Internet usage in Arab countries. The WSIS Plan of Action calls upon Governments and other stakeholders to establish

“sustainable multi-purpose community public access centres, providing affordable or free-of-charge access for their citizens ...” (WSIS, 2005).

**Table 5: GDP per capita and Internet usage in Arab Countries.**

*Sources: World Bank & Internet World Stats, 2008*

Arab Countries	Population (Est.2007)	Internet Usage	GDP Per Capita US\$
<b>Bahrain</b>	708,573	157,300	43.2
<b>Iraq</b>	27,499,638	36,000	2.9
<b>Jordan</b>	6,053,193	796,900	5.5
<b>Kuwait</b>	2,505,559	816,700	78.9
<b>Lebanon</b>	3,925,502	950,000	13.8
<b>Oman</b>	3,204,897	319,200	29.5
<b>Palestine</b>	2,535,927	266,000	N.A.
<b>Qatar</b>	907,229	289,900	124.3
<b>Saudi Arabia</b>	27,601,038	4,700,000	32.7
<b>Syria</b>	19,314,747	1,500,000	3.7
<b>U.A.E..</b>	4,444,011	1,708,500	N.A
<b>Yemen</b>	22,230,531	270,000	2.0

### *Technology*

Governments in the Arab countries have not adopted affirmative policies by building backbone telecommunications networks, providing initial funding, regulations, and standards, and by encouraging private investment and computer literacy (HRW, 2008).

There is a strong relationship between telecommunication infrastructure and the development of Internet (Bazar & Boalch, 1997). Al-Sulimani (1994) and Bukhari and Meadows (1992), attribute difficulties in information technology transfer, among other things, to technical, organizational, and human problems. The rapid growth of the Internet is due to the unprecedented advances in computer and communication technologies. The extent of Internet connectivity in any country is determined by the state of the country’s telecommunications infrastructure, including the number of telephone lines per capita and the international connection bandwidth (HRW, 2008). The bandwidth is the amount of data that can flow over a network in a fixed amount of time. A slow bandwidth will need longer online time to perform tasks, increasing the cost to users paying by time segments. The more multimedia the Web becomes, with graphics, animation and sound, the greater the bandwidth demanded. There is a low bandwidth in the Arab countries (Anderson, 1997).

The Internet has grown rapidly due to the unprecedented advances in computer and communication technologies. Eighty percent of the world populations do not have telephones. New wireless technologies have played an important role in the access to the Internet. ADSL is one of the new technologies that allow more data to be sent over existing copper telephone lines (POTS). ADSL, with a special modem, supports data rates of from 1.5 to 9 Mbps when receiving

data and from 16 to 640 Kbps when sending data. ADSL requires a special ADSL modem. Third-generation mobile services have been launched in some countries, providing Internet access via mobile networks at speeds higher than a dial-up telephone line. Table 6 shows the number of telephones, cellular subscribers and Internet users in Arab countries. The world production of Information and Communication Technology (ICT) equals 1.2 trillion dollars. The Arab World's share of this global technology production should be 48 billion dollars. However, in real terms, production of ICT in the region is only a fraction of this-Egypt: \$418 million; Saudi: \$642 million; Lebanon: \$400 million (2000 estimates). In order to use the Internet there are must be a telephone connection, a computer with a modem, and electricity. Such prerequisites are the exception rather than the norm in some Arab countries. In addition, many countries in the world allow the new technology of telephony. But most of the Arab countries restrict the availability of VoIP and other new services because of the concerns of the impact of these new technologies on the existing Internet Service Providers. These restrictions hinder the development of cheaper applications and Internet connections in Arab countries (ARTIS, 2001).

**Table 6: Telephone mainlines, cellular subscribers and Internet users.**

*Source: UNDP Human Development Report 2007 Data*

<b>Country</b>	<b>Telephones (000)</b>	<b>Cell Phones (000)</b>	<b>Internet (000)</b>
<b>Kuwait</b>	201	939	276
<b>Qatar</b>	253	882	269
<b>U.A.E.</b>	273	1000	308
<b>Bahrain</b>	270	1030	213
<b>Libya</b>	133	41	36
<b>Oman</b>	103	519	111
<b>Saudi Arabia</b>	164	575	70
<b>Jordan</b>	119	304	118
<b>Lebanon</b>	277	277	196
<b>Tunisia</b>	125	566	95
<b>Algeria</b>	78	416	58
<b>Palestinian</b>	96	302	67
<b>Syria</b>	152	155	58
<b>Egypt</b>	140	184	68
<b>Morocco</b>	44	411	152
<b>Sudan</b>	18	50	77
<b>Yemen</b>	39	95	9

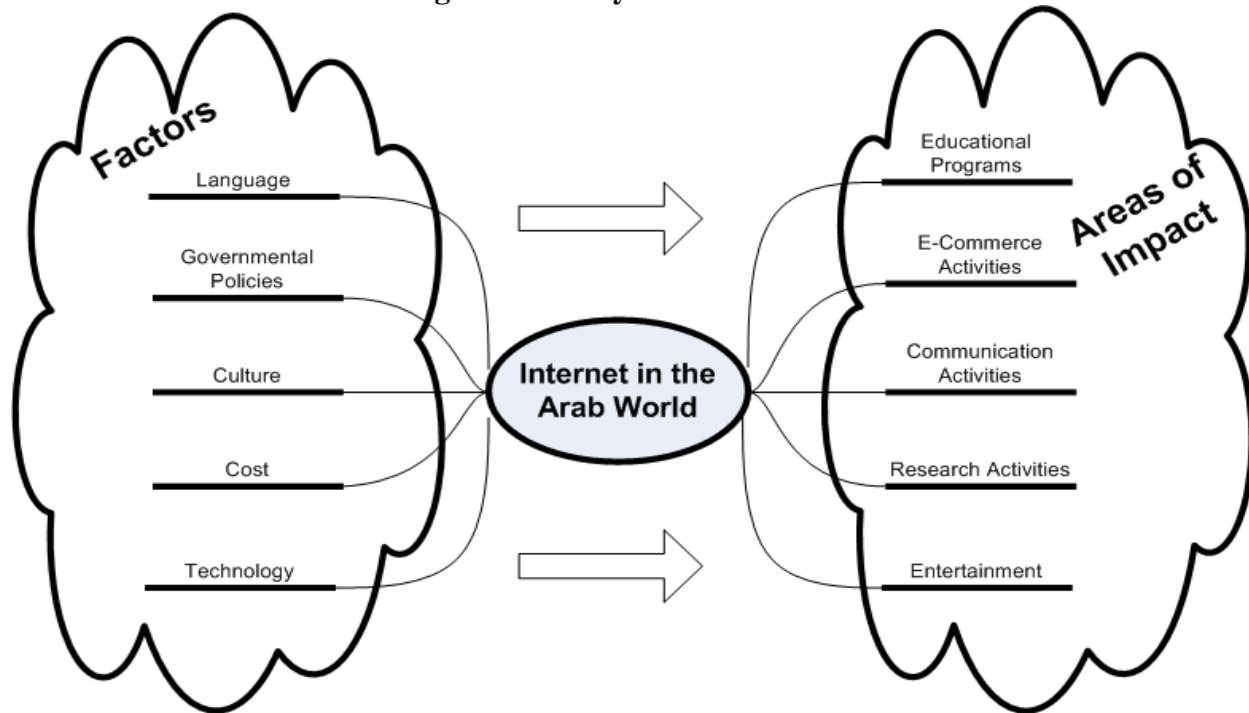
### **IMPACTS OF LOW UTILIZATION OF INTERNET**

The business community, the academic community, and the government are key players in the use of Internet. The user-community is composed mostly of people from each of these groups.

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The identified factors, language, culture, government policies, cost and technology have some impacts on educational programs, business (e-commerce), communication, research and entertainment. Figure 1 illustrates the analytical framework for these factors and their impacts on education, business, research, accessibility to information and entertainment.

**Figure 1: Analytical Framework.**



**Figure 1- Analytical Framework**

### *Impacts on Educational Programs*

We discuss impacts of these factors affecting low utilization of Internet in the following sections:

In a report issued by the Organization for Economic Co-operation and Development (Organization for Economic Co-operation and Development ([OECD], 2001) on the impact of ICT in schools the rationale for integrating ICTs in education was stated. Some of these rationales are:

- The needs of the economy and the requirements to meet the skill and learning needs of the information economy,
- To participate in an information society and employment, ICT competence is an essential life skill, and

- The role of ICT in teaching and learning and how ICT can increase the breadth and richness of learning, motivate learning to support the development of thinking skills (OECD, 2001).

Generally, the impact of paucity of Internet result in non integration in education which reduces the effectiveness of curriculum delivery by teachers as facilitators and lack of improved learning to raise curiosity; Low level of technological literacy among students; non expansion of educational access to remote communities that are deprived of education due to distance, culture, economic needs and inability to prepare students for the world of work.

The overall educational achievement in Arab countries remains low on average. Illiteracy rates in the Arab world are still higher than the international average and are even higher than the average in developing countries. Moreover, the number of illiterate people is still increasing, to the extent that Arab countries embark upon the twenty-first century burdened by over 60 million illiterate adults, the majority of whom are women. Arab countries are not expected to catch up with the industrialized countries' mid-1990s enrollment levels for all three levels of education before 2030 (AHDP, 2002). The restriction on Internet access is not helping to improve literacy in the Arab countries.

The Arab Human development Report of 2002 stated that:

“private tuition has become indispensable in order to obtain high grades on public qualifying examinations for enrollment in higher education, especially with respect to the disciplines considered most likely to lead to better professional and career prospects. The result is that these disciplines are becoming almost exclusively the preserve of financially privileged groups. Thus, education has begun to lose its significant role as a means of achieving social advancement in Arab countries, turning instead into a means of perpetuating social stratification and poverty.”

The availability of Internet can reduce if not completely remove this disparity. Active participation in the electronic economy requires functional literacy. Any country with a significantly higher literacy rate than another would be at an advantage in this new economy. Mounsey (2002) pointed out that although, it has long been believed that many developing countries have relatively low levels of illiteracy when compared to countries in similar income groups. The advent of electronic economy had brought about the development in functional literacy. This gives them an enablement to participate in this new economy. It is established that there are several benefits in the use of the Internet in the classroom and that the introduction of computers and the Internet effectively enhances learning, enriches teaching and learning environment (Al-Mekhlafi, 2004).

The internet is useful where there is a scarcity of teaching resources. Teachers use information technology (IT) to develop pupils' language skills. There is now a wide range of opportunities open to classroom teachers and students for promoting collaboration through computer-mediated communication. The introduction of the Internet into the classroom can bring about many changes in the way instructors approach their teaching. The World Wide Web helps students to

understand the basic commands for operating the web browser, the software that accesses the web. The web is an important resource location with infinite searching capabilities. Without the internet in schools and homes students will not gain Internet competence through practical experience. Web searching helps students who are looking for information and should be the sole activity of students in an internet society.

### *Impacts on eCommerce Activities*

Numerous studies have examined the digital divide between various parts of the world, measuring it through a barrage of statistical indices. The Arab world ranks low on some of these indicators. For example, Arabs represent 5 per cent of the world population but only 0.5 per cent of Internet users. Websites and Internet users are the two indices that are more relevant to the level of information development and representative of society's involvement in information and communication technology. The Internet through its reduction in distance-related costs is a potential source of economic revitalization. The Internet economy has continued to grow at an unprecedented rate. No doubt, many countries of the world including the developing ones, are taking this advantage to develop their nation's economy (Adekunle & Tella, 2008).

According to Awad (2000), electronic commerce can be viewed and defined in several perspectives:

- From *interface* perspective, e-commerce involves information and transaction exchanges; business-to-business (B2B), business-to-consumer (B2C), consumer to-consumer (C2C).
- From a *communications* perspective, e-commerce is the ability to deliver products, services, information payments via networks such as the Internet.
- From a *business process* perspective, e-commerce includes activities that directly support commerce by means of networked connections.
- From an *online* perspective, e-commerce is an environment that makes it possible to buy and sell products, services and information on the Internet.
- From a *structural* perspective, e-commerce involves various media, data, text, web pages, Internet telephony and Internet desktop video.

There are currently about one million Internet-based jobs that did not exist prior to 1994/1995. In addition, companies have re-engineered existing jobs to meet the challenges and opportunities of the Internet economy. An estimated 5.9 million Americans work in the broadly defined high-tech field, of which 20% were associated with the Internet economy as of 1998 (Barrua, Pinnel, Shutter, & Whinston, 1999). As Internet players flourish and as traditional businesses become more dependent on Internet related technologies for their daily business operations, new jobs will continue to be created and existing jobs will continue to be reshaped in the new economy. Those who are not connecting to the Internet shall lose out of these opportunities.

A basic requirement for a firm that is doing on-line business is access to the Internet. With a dedicated access, services are unlimited and that the customer does not connect by 'dialing-up' to Internet service provider (ISP). The low rates of telecommunications and Internet access in Arab countries limits the potential for doing business on the Internet, and on e-commerce.

### ***Impacts on Communication Activities***

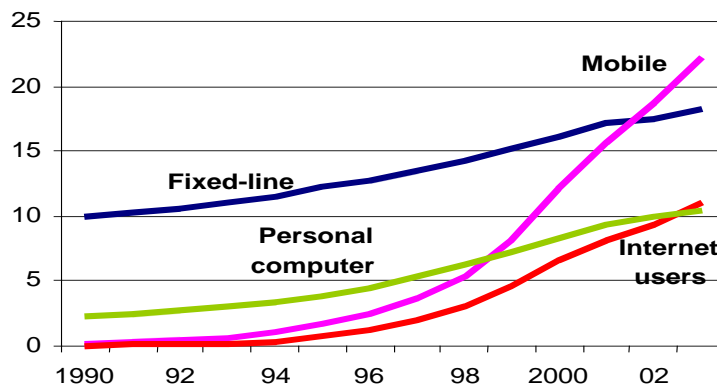
Then e-mail is in the forefront setting up friendly connections; with emphasis on authentic communication and the speed of production for written text. The high prices of Internet connection hinder the penetration of broadband internet in the region. Access to high-speed internet is seen as a key metric of success for countries wanting to capitalize on information technology for social and economic development. Broadband penetration rates are closely correlated to metrics covering quality of life and economic competitiveness.

Nations without solid ICT foundations do not improvement in broadband penetration. High-speed Internet connectivity opens the door to the enormous possibilities enabled by Internet communications, which can help grow economies and improve the lives of citizens. Without the electronic exchange of information, people's confidence, awareness and understanding of their own and other cultures cannot be enhanced in an intercultural and cross-curricular world. Information technology is used as a tool not only to develop confidence, language skills and creativity, but also to develop sense of awareness of intercultural concerns, in an international global community.

Telecommunication is the backbone of the Internet. The lower a country's rate of telecommunication penetration is, the lower its chances of competitive participation in the Internet economy. The low rate of telecommunication penetration in Arab countries would therefore prove to be a disadvantage in exploiting the opportunities presented by the new economy. Figure 2 shows numbers of telephone subscribers, Internet users and personal computers as percentages of world population.

**Figure 2: ICT Users Worldwide.**

*Source: ITU World Telecommunication Indicators Database*



**Total number of telephone subscribers, Internet users and personal computers, as a percentage of world population, 1990–2003.**

### ***Impacts on Research Activities***

The number of scientific papers per unit of population is used to measure science and technology output. The average output of the Arab world per million inhabitants is roughly 2 per cent of



that of an industrialized country. While Arab scientific output more than doubled from 11 papers per million in 1985 to 26 papers per million in 1995, China's output increased eleven-fold from one paper per million inhabitants in 1981 to 11 papers per million in 1995. The Republic of Korea increased its output from 6 to 144 papers per million inhabitants over the same period. India's output, by contrast, barely changed over the period 1981-1995: its output increased from 17 publications per million inhabitants in 1981 to 19 per million in 1995.

Technological development is rather weak in the Arab countries. This is evidenced by the relative position of Arab countries on the UNDP technology achievement index (TAI). The TAI could be calculated for only few Arab countries. This is an indication of the poverty of data on knowledge acquisition in Arab countries.

A robust system of national and international linkages among practitioners helps to increase research and technological output. Arab countries have not established system linkages and policies that allow them to benefit from their knowledge base. They have not adopted technology policies that will enable them to sustain a high rate of growth combined with a high rate of technology acquisition, which Internet will accelerate to some extent.

The connectivity of Arab scientists within the Arab world is poor. Until such connectivity is established, not much can be contributed to the scientific and technological development of the Arab world.

### ***Impact on Entertainment***

The entertainment industry is one of the fastest growing sectors in the digital economy. A recent survey on the online purchasing habits of Britons (Hijazi, 2000) reveals that the category of purchases with the second highest frequency by both males and females was the compact disc and video category. For instance Nigeria as a country populated by peoples of diverse ethnic and cultural origin is thought by many to be a great repository of cultural assets. These endowments place the country at a strategic advantage to exploit the growing entertainment industry in the digital economy.

## **CONCLUSION**

The development of multilingual domain names would help eliminate the language barrier that prevents non-native English speaking population from using the Internet (Diab, 2003). By allowing the use of native languages of each country, the Internet will be more accessible, enabling more people to use it and be exposed to the various opportunities it offers, especially textual resources. As the Arab world is considered a knowledge base society, it is important to use the Arabic language as a means of accessing information (Accascina, 2006). The development and adoption of the Unicode in computer software and fonts makes it possible to send, receive, and read text electronically for hundreds of languages, including Arabic, all in their original scripts.

Among the efforts in making the Internet more accessible to the Arab speaking audiences are creations of Arabic search engines, Internationalization of Domain Names (IDN), and machine

translations of various languages into Arabic. There are a number of suggestions for both Arabic generic Top Level Domains (gTLDs) and Arabic country code Top Level Domains (ccTLDs) (Al-Zoman, 2004). Efforts are underway by companies to introduce Arabic search engines. Seekport, a search engine firm in Munich, Germany unveiled its plans for the Arabic search engine called Sawafi that will challenge the rudimentary Arabic search facilities offered by Google, MSN and Yahoo (New Scientist, 2006). Opportunities should be available to enable users to publish in the Arabic language on the Internet. These developments should help open the Internet to an increasing number of users. Internationalization of domain names (IDN) and other efforts by international organization as well as development of multilingual websites will address some of the linguistic issues.

There is the need for urgent consideration of certain key Internet policy issues in order to expand the availability of Internet in the Arab countries. There must be an environment that shall encourage competition in the ISP market by setting up additional telephone operators. This will increase the level of services provided by the existing providers. There must also be free Internet access without an ISP charge where users pay only for local telephone usage charge. ISPs must be encouraged to have Points of Presence across the countries so that users will not have to pay long distance charges. IP Telephony should not be banned and universal access to facilitate access for those who do not have equipment should be encouraged. Open access to the Internet content under government control in many Arab states must be relaxed. Efforts must be made to create relevant and compelling Arab content for users

Internet depends on the telecommunication infrastructure. Therefore, Arab countries must explore advances in wireless technologies, specifically for rural areas. Wireless technologies are easier to deploy and help to eliminate some geographical barriers and costs associated with wired telecommunication systems. Wireless Internet via Mobile Technology are possible in Arab countries as those factors associated with its acceptance exist (Lu, Liu, Yu, & Yao, 2005). It is also necessary to increase investments in basic transmission infrastructure. While low speed access is still prevalent in most Arab countries, some have introduced high speed access. The use of information and communications technology can overcome traditional barriers to better education by presenting information online and providing opportunities for e-learning. The Internet can help remove walls of cultural, political and geographical separation.

Governments that are wary of information access must appreciate the opportunity to improve the socio-economic situation which will eventually make such access less threatening to the governments. Governments should take a pro-Internet stance and promote the services in their countries to promote growth and increased access. Governments should realize that there can be misuse, but they should take advantage of the new opportunity to increase communication, data exchange, and information flow for the benefit of the people.

Access costs remain high in the Arab countries and many potential users are not able to access the Internet. The bandwidth problem affects the Arab world. The initial bandwidth in the region was much smaller and with more users come severe limitations in speed of connection and transmission of data. More access options, lower access cost, an increase in Arabic sites, and more computer equipment purchases should continue to drive growth in Internet users within the Arab countries. Arab businesses should realize the value of a web presence from the experience

in the West. When business enterprises in the Arab countries familiarize themselves with the Internet technology, and present pages in Arabic, the use of Internet shall grow. The issue of gender in online shopping cannot be ignored by businessmen. Gender is an important moderating factor in e-commerce (Zhang & Prybutok, 2003). While this paper investigates factors affecting the use of Internet in the Arab countries, future study is necessary to determine what those with access to Internet uses the Internet for. There are various activities that can be undertaken to broaden knowledge on the Internet. The Arab countries users of Internet must be surveyed and data collected for possible content analysis. More empirical data on emerging information societies in the region is needed if we are to accurately assess the technology driven changes in the Arab countries.

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