
**FEW MIDDLE EASTERN AND NORTH AFRICAN
NATIONS WILL FULLY EXPERIENCE
THE INFORMATION REVOLUTION,
SOME MAY MISS IT ALTOGETHER**

The Middle East was once home to the world's most advanced societies, skilled at mathematics, astronomy, science, and medicine, and renowned for their poetry and arts. This coincided roughly with the maximum extent of the Islamic empire, the remnants of which today—with the exception of Turkey—are lumped together as the Middle East and North Africa (MENA), as listed in Table 11.1.¹

Many of these MENA nations—with the prominent exception of Israel—may miss the information revolution entirely, causing this region to fall even farther behind OECD nations.²

**IT PENETRATION IS GENERALLY LOW IN MOST
MENA NATIONS**

With a few notable exceptions, IT penetration is low (i.e., below world averages) in most MENA nations.³ The exceptions (with penetration well above world averages in 2001) are Bahrain, Israel, and the United Arab Emirates (UAE) for telephones; Bahrain, Israel, Kuwait, Qatar, and the UAE for PCs; and Bahrain, Israel, Kuwait, and the UAE for Internet users. Although often thought of as a wealthy, well-endowed nation, Saudi Arabia was well below world averages in numbers of telephones, PCs, and Internet users in 2001, as were most of the other MENA nations.⁴ Yemen, by far the poorest MENA nation and the only one classed as one of the world's "least developed countries" by the United Nations, has IT penetration numbers that rival the poorest nations anywhere in the world.⁵

Table 11.1
Countries of the Middle East and North Africa

The Middle East		
Levant	Arabian Peninsula	
Israel	Bahrain	Saudi Arabia
Jordan	Kuwait	United Arab Emirates
Lebanon	Oman	Yemen
Syria	Qatar	
The Persian Gulf		
Iran, Iraq, and six Arabian Peninsula countries bordering the Gulf		
North Africa		
Maghreb	Mashriq	
Algeria	Egypt	
Morocco	Libya	
Tunisia		

Moreover, irrespective of its magnitude, the pattern of IT diffusion and use in the region is irregular, favoring the wealthy and privileged. This could increase the economic and social disparities between the richest and poorest sectors of MENA societies as time goes on.⁶

MENA NATIONS CAN BE GROUPED INTO THREE CATEGORIES REGARDING THE INFORMATION REVOLUTION

None of the region's governments, except for Israel, has been installed as the result of what the United States considers "free and fair" elections. To compensate for the absence of a popular mandate, these governments maintain strong central control over most aspects of life and commerce.⁷

Control of information flows is central to maintaining control over the populace in the MENA nations—again, except for Israel—and is also central to commercial practices. So, technology that speeds and broadens the dissemination of information can be counter to the government's needs. As each new information technology (e.g., telephone, radio, television) appeared in the past, however, the authori-

ties came to terms with it and adapted the technology to their own purposes.⁸ So, too, the MENA governments are coming to terms with the Internet; but because this technology is more complicated than its predecessors, it is more difficult to harness effectively while at the same time limiting “inappropriate” uses.⁹ But that has not stopped any government in the region from trying.

Their attempts fall into three categories: those MENA nations that are “fearful,” those that are “driven,” and those desiring the “best of both.”¹⁰

The “Fearful” Nations

The fearful MENA nations include Algeria, Iraq, Libya, and Syria, countries that have limited Internet connectivity or have prohibited it altogether. They would rather forgo the potential benefits to ensure that they avoid any negative consequences of joining the networked world.¹¹

The “Best of Both” Nations

The “best of both” nations are Iran, Saudi Arabia, Tunisia, and the UAE, each of which has tried to develop a tightly controlled domestic Internet network that will enable it to reap benefits in commerce, academia, and government while keeping a close watch and maintaining strict limits on what can and cannot be done and what kinds of information are available.¹² Iran and Tunisia rely largely on regulatory measures, while Saudi Arabia and the UAE have, predictably, spent vast fortunes on technical solutions. None is foolproof, but the governments seem satisfied that their respective solutions ameliorate the dangers acceptably.¹³

The “Driven” Nations

The rest of the MENA nations can be characterized as “driven.” They want what the information revolution offers, and want it badly enough to be willing to risk some disbenefits that may arise from more open and possibly “unacceptable” communications.¹⁴ The wealthy countries, including Bahrain, Kuwait, and Qatar, have well-developed information infrastructures. The poorest country, Yemen,

has achieved very little. The middle-tier countries (Egypt, Jordan, Lebanon, Morocco, and Oman) have made interesting but unexceptional progress. Commercial relationships and personal influence are as important in these latter countries as the availability of investment funds.¹⁵

THE SOCIAL IMPLICATIONS OF THE INFORMATION REVOLUTION FOR THE MENA NATIONS COULD BE WIDE-RANGING

The social implications of these developments are potentially wide-ranging, particularly regarding the impact of global social familiarization and changes in the status of women.¹⁶

Global social familiarization is proceeding quickly in the MENA region, enabled primarily by the rapid proliferation of Arabic- (and also Farsi-) language satellite television transmission and reception over the past decade. This has given the MENA populations their first extensive look at Western (and other non-MENA) culture.¹⁷ This competition between Western and traditional cultures, particularly as they appeal to the young, is causing many people to feel that the continued vitality and possibly even long-term existence of their national (i.e., Arab/Islamic) cultures may be threatened.

Regarding the status of women, traditional mores are being challenged in all these countries as there are increasing demands for women to be more openly integrated into public life.¹⁸ The potential for information and communications technologies to empower women through better education, less-constrained communications, and the ability to generate their own incomes should not be underestimated.¹⁹ A new class of “information workers,” likely to be largely female, could emerge over time as a result of IT-related developments. This would have enormous social implications.²⁰

FEW MENA NATIONS WILL FULLY EXPLOIT THE INFORMATION REVOLUTION, CAUSING THIS REGION TO FALL EVEN FURTHER BEHIND OECD NATIONS

With the exception of Israel, which we discuss separately below, only a few MENA nations—principally Bahrain, Kuwait, Qatar, and the

UAE—are likely to fully exploit opportunities offered by the information revolution. Most of the others will lag behind, because of inadequate physical infrastructures and human capital, governmental policies that hinder development, or cultural impediments, causing this region to fall even further behind the OECD nations.²¹

The “Driven” Nations

The information revolution future for the “driven” countries promises more of the same, with each investing as much as it can and growing as rapidly as possible in order to achieve the full benefits of IT. The principal limiting factor will be money, but in many countries the Internet has proliferated widely enough to begin providing economic benefits significantly greater than the required investment. Private-sector investment will be the principal source of capital in most nations, although public-sector financing will remain important in Jordan, with a relatively weaker economy than the others, and in Kuwait, for supporting the educational sector.

Some driven nations will do better than others. Bahrain, Kuwait, and Qatar will continue to make the most progress toward information-centric futures as they seek to replace oil revenues that will decrease over time with other intangible products befitting their small size and lack of industrial base.²²

Jordan and Morocco will probably continue modernizing their IT infrastructures and perhaps enjoy some economic resurgence as a result but are unlikely to achieve anything particularly noteworthy insofar as the information revolution is concerned. The same is true of Egypt.²³

In IT as in other areas, Oman is likely to continue on the slow, well-considered and well-controlled growth path that it has been on over the past 30 years. This will leave Oman somewhat of a backwater, IT-wise, as it is today.²⁴

Lebanon is likely to achieve significant IT-related (and more broadly, economic) growth sporadically at best, as the government’s attempts to control information flows and the media wax and wane, and as long as Syria’s occupation of a portion of the country continues. Also,

the Lebanese economy's significant and lasting downturn may adversely affect private investment.²⁵

That leaves Yemen, by far the poorest nation in the MENA region and one of the poorest in the world. Absent reform, stability, and economic development, Yemen could continue to be a breeding ground for terrorists. This, combined with its lack of physical infrastructure (electricity, telecommunications, etc.)²⁶ should ensure it a dismal future, information revolution-wise.²⁷

The “Best of Both” Nations

Among the “best of both” nations, the UAE should make the most progress toward an information-centric future, while continuing its policy of promoting IT growth on the one hand and enforcing fairly strict censorship on the other.²⁸

Continued progress in Iran and Saudi Arabia insofar as the information revolution is concerned will depend on how well these regimes manage the popular pressures growing in both of these nations. The Iranian government's schizophrenic attempts to grow but control the Internet reflect the government's larger divisions between the “moderates” or “reformers” and the “hard-liners.”²⁹ How this division plays out—and how long it takes to play out—remains to be seen.

Although the Saudi government has declared IT development to “be a centerpiece of national policy,”³⁰ access to the Internet remains strictly controlled by the state, which maintains the only international gateway.³¹ The requirement to connect to this single, government-owned gateway using the government-owned telecommunications network allows the Saudi government to keep Internet access costs quite high relative to the income of an average citizen. As long as this policy continues, IT-related growth and innovation in Saudi Arabia will lag behind other leading nations in the region (e.g., Bahrain, Kuwait, Qatar, the UAE).³²

Tunisia will probably continue on as it has in recent years, slowly and unspectacularly.³³

The “Fearful” Nations

The possible IT-related futures of the “fearful” countries are quite varied, and it is not possible to predict with any degree of reliability how they might play out. It is possible, however, to describe the limiting factors and the probable outcomes of any changes in them.

In Algeria, it is possible that the level of domestic violence and the regime’s repressive responses will diminish over time. If this happens, the economy will start to grow again, albeit slowly, in IT-related and other areas.³⁴

The prospects for any development (IT-related or otherwise) in Iraq are bleak as long as the regime of Saddam Hussein remains in power.³⁵ If and when there is a regime change—due to current U.S. efforts or other events—the nature of any successor regime will critically determine Iraq’s future course.³⁶ Given where Iraq is today, it should take it a long time to catch up in the information revolution, even in the best of (post-Saddam) circumstances.

Libya, however, appears to be emerging, slowly, from its exile from the world community, initially self-imposed but reinforced by international sanctions in response to Libya’s support for terrorism.³⁷ It is possible that the Al Qadhafi regime will continue to carefully loosen restrictions on commerce and Internet connectivity in an effort to boost foreign trade and hard currency earnings.³⁸

Syria is also emerging from self-imposed isolation, although its continued occupation of Lebanon and the lack of a regional peace settlement will continue to hinder foreign investment and cause the government security headaches. The “informatization” of Syrian society has been championed by the new president and spearheaded by the Syrian Computer Society, two senior members of which were recently appointed to ministerial positions. The government is not so concerned about restricting access to particular sources of information or entertainment as it is about limiting and monitoring the communications resources potentially available to the regime’s many enemies.³⁹

Israel

As with most everything else in the MENA region, Israel is a special case insofar as the information revolution is concerned. In early 2000, before the current intifada started, it ranked third in the world in the number of NASDAQ-listed companies.⁴⁰ During the latter half of the 1990s, Israel developed a venture capital industry, with investment capital flowing into the country from elsewhere in the world, particularly the United States. As a result, in 2000 the number of Israeli startup firms per capita was the highest anywhere in the world except for Silicon Valley.⁴¹ This led to Israeli strengths in a number of IT areas, including Internet telephony, an industry largely erected upon Israeli innovations.⁴² These were among Israel's strengths in 2000. Since then, the intifada has put all this at risk. Clearly, Israel's future as a world player in the information revolution is held at least partially hostage to the outcome of the Arab-Israeli peace process.^{43,44}

NOTES

¹Although a country of Muslims, Turkey is not an Islamic state by any metric; it is officially and aggressively secular. While Turkey shares in some of the information revolution concerns of the MENA region, its development process and prospects are unique and merit detailed examination separately. It is not considered further in this chapter.

²The chapter draws heavily on the data, analysis, and findings presented in Burkhart and Older (2003). As pointed out there, Israel is generally an exception to MENA norms; it can almost be said not to be a Middle Eastern country except for geography. Accordingly, we discuss Israel separately at the end of this chapter.

³The International Telecommunications Union (ITU, 2001, as reported in Burkhart and Older, 2003) gives the following compilation of IT penetration indicators for the MENA nations:

	Telephones per 100 Inhabitants	PCs per 100 Inhabitants	Internet Users per 10,000 Inhabitants
Algeria	6.36	0.71	19.27
Bahrain	67.15	14.18	1,988.65
Egypt	14.63	1.55	92.95
Iran	18.70	6.97	62.29
Iraq	na	na	na
Israel	128.46	24.59	2,304.86

Table—continued

	Telephones per 100 Inhabitants	PCs per 100 Inhabitants	Internet Users per 10,000 Inhabitants
Jordan	27.12	3.28	409.11
Kuwait	48.79	13.19	1,014.71
Lebanon	40.74	5.62	858.00
Libya	11.83	na	35.84
Morocco	19.60	1.31	131.45
Oman	21.34	3.24	457.49
Palestine	16.82	na	181.21
Qatar	56.76	16.39	655.74
Saudi Arabia	25.81	6.27	134.40
Syria	12.09	1.63	36.12
Tunisia	14.90	2.37	412.37
United Arab Emirates	111.66	15.83	3,392.39
Yemen	3.01	0.19	8.89
United States	110.87	62.25	4,995.10
World Averages	32.77	8.42	823.24

na = not available.

⁴According to Burkhart and Older (2003), the most widespread IT presence throughout the MENA nations is television, spurred on by the proliferation of Ku-band satellite television channels that can be received by small and relatively inexpensive—even in the poorest countries—antennas. Every government in the region has established at least one national satellite television channel, in part to spread its message throughout its own population but also to compete with neighboring countries; *Al-Jazeera*, based in Qatar, is the best known of these. In addition, a number of offshore satellite television channels based in London or elsewhere in Europe also serve the MENA region.

⁵See UNDP (2001).

⁶See Burkhart and Older (2003).

⁷Besides being necessary from the government's point of view, rule by a strong central leader or group is a cultural norm in most of these societies. (See Burkhart and Older, 2003.)

⁸For example, telephones not only allowed people to talk to one another at a distance but also provided the government the potential to listen in on conversations that might otherwise have taken place in person, which is less susceptible to eavesdropping. Similarly, radio and television became propaganda and socialization tools in the MENA nations. (See Burkhart and Older, 2003.)

⁹The definition of “inappropriate” has usually included antigovernment and pornographic information. Countries with strong Islamic leadership, such as Saudi Arabia, also prohibit access to information denigrating Islam or extolling or proselytizing for other religions. (See Burkhart and Older, 2003.)

¹⁰Burkhart and Older (2003) created these three categories. Much of what follows is drawn from them.

¹¹Syria recently made some cautious steps toward the Internet, and Libya is testing the waters also. See Burkhart and Older (2003) for more details regarding these nations.

¹²Today the UAE is among the leaders in the MENA region in IT penetration and usage. Iran, Saudi Arabia, and Tunisia all lag well behind. (See endnote 3.)

¹³See Burkhart and Older (2003) for more details regarding these nations.

¹⁴The information revolution is occurring at a time when the MENA nations are suffering from rapid population growth and economic stagnation. The job markets have not kept pace at all with the increasing numbers of young people entering them, leading to increased social tensions. The governments and commercial sectors of the “driven” countries in particular understand that the information revolution can create jobs, revive local economies, and help ameliorate this situation. (See Burkhart and Older, 2003.)

¹⁵Again, see Burkhart and Older (2003) for more details.

¹⁶See Burkhart and Older (2003) for further discussion of the social implications of the information revolution for the MENA nations.

¹⁷The elites in the MENA region have been exposed to Western culture for many years. Only recently has this exposure spread to the bulk of the population. (See Burkhart and Older, 2003.)

¹⁸The current status of women in Arab nations, the advances they have made in recent years, and the long way they still have to go in most Arab nations are discussed in the *Arab Human Development Report* (AHDR) recently issued by the United Nations. (See UNDP, 2002.)

¹⁹Trofimov (2002) presents a recent picture of how the status of women is improving in Qatar, which until 1995 was one of the most culturally conservative MENA nations.

²⁰Burkhart and Older (2003) discuss the possible emergence of a new class of female information workers in the MENA region in more detail.

²¹According to the AHDR, the MENA region’s lagging participation in the information revolution is likely to result in a major brain drain. The AHDR found that 51 percent of all adolescents and 45 percent of preteens expressed a desire to leave the MENA region altogether—presumably for the Western world. (See UNDP, 2002, and Hunaidi, 2002.)

²²The IT infrastructures in Bahrain, Kuwait, and Qatar will fully meet demand within the next five years, although the degree of Internet use will depend on the pricing poli-

cies of the public sector-dominated Internet service providers. (See Burkhart and Older, 2003.)

²³Jordan and Morocco do not contribute significantly to regional politics or economy, so whether or not they do well in the information revolution is of little consequence. Egypt is quite different, however. Its continued IT development is critical for economic expansion and continued social stability, which is in turn critical for regional peace. (See Burkhart and Older, 2003. In their words, “Egypt’s disaffected cannot all be arrested and won’t stay at home forever.”)

²⁴See Burkhart and Older (2003) for further discussion of Oman.

²⁵See Burkhart and Older (2003).

²⁶The infrastructure in Yemen in general is so poorly developed and unreliable that the late editor of the *Yemen Times* speculated that the principal impediment to the spread of information technology was the lack of reliable electrical power. (Goodman et al., 1998, as reported in Burkhart and Older, 2003.)

²⁷See Burkhart and Older (2003) for further discussion of Yemen’s IT situation and prospects.

²⁸According to Burkhart and Older (2003), the government of the UAE has thus far been able to blunt public criticism by continued investment aimed at keeping network growth in line with demand. As long as the general public in the UAE can do what it wants for the most part and the Internet-related services are relatively rapid, the public does not seem to mind censorship too much. And, also according to Burkhart and Older, those who do mind seem adept at finding ways around the censorship.

²⁹Iran’s security and religious watchdogs clearly seek tighter controls and more limited access, while the educational and private sectors are attempting to achieve the opposite, and the public at large—that segment of the public that has the education and means potentially to use the Internet—is generally in favor of unrestricted access. (See Burkhart and Older, 2003.)

³⁰See Kashkoul and Ba-Isa (2002).

³¹This gateway is heavily guarded by multiple, redundant firewalls in what must be the most complex and expensive attempt at content filtering in the world. (See Burkhart and Older, 2003, for more details.)

³²See Burkhart and Older (2003).

³³According to Burkhart and Older (2003), internal pressures in Tunisia are unlikely to grow significantly, the prospects for “business as usual” are good, and the regime’s policy toward the Internet should generally reflect the degree of tension between the government and citizenry at any given time.

³⁴Algeria caught the first wave of the information revolution, but further development was quickly curtailed by the government in the face of domestic terrorism and open insurrection. Economic stagnation and the lack of pluralism fed extremist responses that were answered in kind by the regime, generating an economic downturn and tighter government controls. (See Burkhart and Older, 2003.)

³⁵Saddam's control of the media and other information sources has been nearly as absolute as Kim Jong-il's grip on North Korea, allowing the government to propagate its own version of recent history and current events. The information infrastructure within Iraq and between Iraq and the outside world has been virtually eliminated. Only parts of the northern Kurdish regions have less restricted access to the outside world, but these areas have other problems that also preclude any IT-related progress. (See Burkhart and Older, 2003.)

³⁶These words were written in late 2002, before the war in Iraq.

³⁷Despite the sanctions, Libya purchased and commissioned its first digital cellular telephone network in the mid-1990s. Its attempt to commercialize that company, however, failed, as did a faltering attempt to privatize the state telecommunications monopoly. Although Libya has oil income, it is not well distributed and the bulk has been spent on a massive water distribution project spanning more than a decade—with little left for IT-related investment. (See Burkhart and Older, 2003.)

³⁸Although there have been several minor insurrections in recent years, the Libyan government faces no organized resistance and appears to understand that the best path to continued domestic peace lies in economic development, which, in turn, relies on trade and foreign investment. (See Burkhart and Older, 2003.)

³⁹See Burkhart and Older (2003).

⁴⁰See Hiltzik (2000).

⁴¹According to Lipschultz (2000b), in 2000 most of these Israeli high-tech firms had only their corporate headquarters and research and development operations located in Israel, with the majority of their operations (marketing, manufacturing, distribution, etc.) based outside the country.

⁴²Hiltzik (2000), Lipschultz (2000a), and Sugarman (2000) discuss these and other aspects of Israel's IT industry.

⁴³Opinions differ regarding how fragile Israel's high-tech industry is. According to Hiltzik (2000), while with continued peace Israel's emerging high-tech industry is likely to stay, prosper, and grow, without peace, or even worse, with the reemergence of conflict, much of this industry will leave Israel, going elsewhere in the world (primarily to the United States). However, Lipschultz (2000b) finds Israel's high-tech industry to be much more robust, with no companies likely to leave in the absence of full-scale war. (How close the events of the past two years come to "full-scale war" is another question.)

⁴⁴Israel's information revolution (and more broadly, economic) future may also be hampered by its large and growing number of Arab citizens who represent a significant underclass unlikely to make much progress in the near term. (See Burkhart and Older, 2003.)