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The impact of information and communication technology (ICT), education and regulation on economic freedom in Islamic Middle Eastern countries

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ABSTRACT

Our study investigated the impact of ICT expansion on economic freedom in the Middle East (Bahrain, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen). Our empirical analysis used archival data from 1995 to 2005; it showed that ICT expansion in the Middle East has been effective both in bridging the digital divide and also in promoting economic freedom in a region that was vulnerable to political, social, and global conflict. However, differences between countries, such as the educational attainment of their citizens and institutional resistance to technology acceptance, both enhanced and restricted the relationship between ICT and economic freedom.

1. Introduction

The declaration of principles at the World Summit on the Information Society [13] noted a strong link between the proliferation of ICT and socio-economic development. ICT can be a powerful tool in increasing productivity, creating jobs, generating economic growth and increasing international cooperation in finance, trade, and Foreign Direct Investment (FDI), etc.

The growth and expansion of e-business, online transactions, and e-government have resulted in increased demand for ICT products in domestic and global markets ICT will improve the industrial infrastructure in developing countries, enhancing their overall economic performance and strengthening their competitive capacities in the global market [18].

The empirical literature has focused primarily on explaining the role of ICT in productivity growth; however, little attention has been paid to its potential impact on the development of economic openness. Gwartney and Lawson [12] defined four components of economic freedom:

- personal rather than collective choice,
- voluntary exchange coordinated by markets rather than allocation via the political process,
- freedom to enter and compete in markets, and
- protection of persons and their property from aggression by others, including the government.

Despite the importance of IS research to developing countries, there is a paucity of literature in this area; specifically, with the exception of [17,19,25]. The ITU has also pointed out that there is little research on the impact of ICT expansion in developing countries [15]. Bollou and Ngwenyama [3] argued that demonstrating ICT value, especially in the context of developing countries, is important because of challenges in developing ICT policy as well as inability of the UN to confirm that there are benefits in such investment.

The aim of our study was to analyze the extent to which ICT expansion has influenced economic freedom in the Middle East. To this end, we investigated two issues:

(1) The extent to which ICT expansion has contributed to economic freedom; and
(2) how differences in educational attainment and institutional resistance to technology have influence this.

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To investigate these, we analyzed data from eleven Islamic Middle Eastern countries (Bahrain, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates (UAE) and Yemen) for the period 1995–2005.

2. Background

In the last decade, the Middle East experienced a large expansion of ICT; this had a positive influence on the creation of digital communities and societies, despite the fact that the countries suffered many regional conflicts. Seven of the eleven countries in our study, Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE, are the main producers of oil and natural gas in the region. The rise in oil prices and production increased their GDP and their investment in infrastructure, including ICTs.

The oil and gas production accounted for an average of 76% of the countries' total exports. The leading exporter of oil was Saudi Arabia, at 90%, while Bahrain exported the least at 60%. Government-generated revenues from the export of oil and natural gas averaged 71.3% for the region. This represented a substantial increase in the economic wealth of the Middle East, placing the governments in a strong fiscal position, and providing the means and opportunities to support their continued growth and investment in ICT infrastructure.

While some of these countries, such as Kuwait, Bahrain, Qatar and the UAE rank high on the 2006 Human Development Index Report [27] and have GDPs per capita on a par with those of developed nations, others, such as Iran, Syria, and Yemen, have not developed at the same pace. For example, the Iranian government has not been able to attract foreign investors in oil and natural gas, two sectors that are highly dependent on such investment.

Between 1995 and 2005, the Middle East's average GDP per capita, increased from $7930 to $15,164, a growth of 191%; its ICT growth for the same period was 541%. During this time, three countries (Bahrain, Lebanon and Yemen) improved their status in political rights and civil liberties from "Not Free" to "Partly Free", according to the 2006 Freedom House Annual report [6]. The status for the others listed in Table 1 did not change.

2.1. ICT development in the Middle East

ICT investment in the Middle East intensified after a decade of conflict in the region. Its growth in areas such as the use of the Internet, cell phones, cable television, main telephone line connections, and international incoming and outgoing bandwidth via a network of integrated fiber optic cables and satellite communication systems reshaped communication among citizens in the Middle East. A review of data from the ITU and results from Orbicom [21] showed that Bahrain, Kuwait, Qatar and the UAE were able to invest significantly in their ICT infrastructure from 1996 to 2005 due to their liberal approach towards ICT development, resulting in a high ICT index (on a par with developed countries). However, there was a digital divide within the region, as the four most developed nations in terms of ICT reaped the benefits of a high level of ICT usage internally. Syria and Yemen, however, had the lowest rate of ICT development (see Appendix A). In addition, not only were the UAE, Bahrain, Kuwait and Qatar actively investing in their ICT Infrastructure, they were also becoming specialized as ICT providers. Indeed, the UAE acts as an important network hub in connecting to the Internet in the region while Qatar's "Al-Jazeera" news network is the most known and controversial television broadcaster in the Arab world and Kuwait, the third-largest investment developer, has made immense improvements in its mobile telecommunication systems; revenue from Kuwait's oil/petroleum resources were used to create an expansive mobile network system which provided both local services and was extended to make Kuwait an important mobile provider for Bahrain, Jordan, Iraq and Lebanon. Between 2002 and 2005, the Mobile Telecom Company (MTC, which currently operates as Zain) grew from a single to an 18-country operation, servicing more than 9.5 million customers.

2.2. ICT and economic development in the Middle East

There were two different approaches to ICT development in the Middle East. One implemented strict controls over Internet, radio and television broadcasting. Syria and Iran imposed this approach; they owned and operated the services, through the PTT. The other, was employed by countries like Bahrain, Jordan, Kuwait, Qatar and the UAE. In 2001, Bahrain, introduced privatization in ICT, opening its telecommunications sector to private sectors and foreign investors. The process of partial privatization of the telecom sector in other Middle Eastern countries started in the late 1990s to early 2000s, with Qatar Telecom (Q-Tel) privatizing its services in 1998, and, more recently, Oman Telecom (OmanTel) privatizing in 2004.

In 2003, Jordan had the highest rate of telecommunication revenue, 8.4% of its GDP. In the same year, telecommunication revenues totalled 6.6% of the GDP of Bahrain and 3.6% of the GDP of the UAE. This increase in revenues was attributed to the unique economic landscapes of both Jordan and Bahrain. Specifically, Jordan is not categorized as an oil exporting country, while Bahrain recently shifted from being an oil exporting economy to a mixed economy of oil processing and refining, banking, and ICT. As a result, the share of its GDP that is categorized as ICT revenue is much higher than that of other Middle Eastern countries, since oil production plays a more dominant role in their economies than in Bahrain.

3. Estimation framework

Our main objective was to analyze the impact of ICT on economic freedom (EF), controlling for the effect that other variables may have on the dependent variable. Drawing on previous literature, we discuss these variables in more detail.

According to the digital divide report conducted by UNCTAD [28], there is a strong correlation between a country's development in ICT, its income, and the level of human development as measured by its GDP per capita and the level of education of its citizens. For example, a person in a high-income country is over 22 times more likely to use the Internet than a person in a low-income country. The Internet is highly expensive in low-income countries, about 150 times the cost of a comparable service in a high-income nation. Literacy also remains a pervasive barrier to access in developing nations.

Ngwenyama et al. [20] found that complementary investments in healthcare, education, and ICT significantly affected human development measures in five West African countries. Moreover, they suggested that the relationship between the investment variables (ICT, health, and education) is complex and requires more sophisticated statistical analysis than ordinary regression.

Generally, there are two categories of investments. First-order ones address the immediate needs of individuals (food, clothing, housing, improved healthcare and education). On the other hand, second-order investments, including investment in ICT, post-secondary education and/economic literacy, help people escape poverty and marginalization. A recent study by Gholami et al. [7] revealed that second-order investments also had an impact on measures of human development, and suggested that national policymakers should not undermine the importance of investment in such areas as ICT. Their findings implied that a central focus on ICT on development would not always bring the results that the promoters of ICT for development (ICT4D) expected unless they