

# **The Potentials of ICT infrastructure in a developing economy: the case of small businesses in Kurdistan Region, Iraq**

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## **Abstract**

It is often argued that information and communication technologies (ICTs) can have a leveling effect, giving poor countries access to markets, information, and other resources that would otherwise have been inaccessible. ICTs have the potential to improve efficiency and productivity in many areas and, therefore, have received significant attention and investment in many countries. However, given the underdeveloped and inaccessible nature of developing economies, there has been some doubt about the relevance of this technology. There are concerns that instead of providing a level playing field, ICTs are further reproducing and entrenching underdevelopment in certain developing economies. The paper examines the opportunities offered by ICTs infrastructure in developing economies with reference to the challenges faced by small businesses in Kurdistan region of Iraq. Currently, there is a limited number of studies in this area. The paper first examines the IT infrastructure in the region of Iraq, and then assesses the potentials opportunities and challenges of e-commerce to small businesses in the region. It is revealed that the region is rapidly catching up ICT development, even though small businesses are yet to exploit fully the potentials of ICTs.

**Keywords:** Information and communication technologies (ICTs); Electronic commerce (e-commerce); Internet; World Wide Web( www); Small to Medium-sized Enterprises (SMEs); developing economies; Kurdistan; Iraq.

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## Introduction

The versatility and capability of ICTs make it an ideal platform for SMEs to participate in global market; its use particularly suits the type and the nature of SMEs businesses. The Internet with its open and extendible network structure provides SMEs with an opportunity to introduce ecommerce into their business and compete on level terms with larger and more sophisticated competitors and trading partners. The Internet potentially provides a unique opportunity for SMEs to efficiently expose their companies, market and sell their products and services to a wider audience than they would have been able to afford to reach using the traditional methods. The Internet technology levels the playing field, enabling just about any company irrespective of size or location to participate and compete in the global market. The Internet and its related information and communication applications hold great promise for the ability of SMEs to bridge the traditional gaps that have often placed them at a disadvantage with their larger firms; governments are becoming more active in their efforts to accelerate the adoption of these technologies by SMEs.

Although the definition of what constitutes small and medium enterprise (SME) varies from country-to-country and from one sector of economic activity to another, the benefits of growth in the SME sector are significant. The size is generally measured in terms of the number of employees, assets, and/ or sales. The term Small to Medium-sized Enterprise (SME) incorporates two primary classifications that are small business and medium business. The Department of Trade and Industry (DTI, 2007) defines SME as a company employing between 1-249 employees. The current study based on DTI SME defines small business thus: as being independently owned and managed; being closely controlled by owners/managers who also contribute most, if not all, of the operating capital, having the principal decision making functions resting with the owner/manager; with total number of employees less than 50; while Medium-sized enterprise is defined as business that is larger than small business and smaller than large business with total employees greater 50 and less than 250.

The paper is structured as follows. First, a brief summary of Kurdistan region of Iraq then followed by a discussion about small to medium-sized enterprises and its participation in a global economy. The opportunities of using ecommerce and potential cost-saving and efficiency benefits that are likely to accrue to SMEs in Kurdistan from the use of information and communications technologies are then described, as are the challenges faced by SMEs, as they decide whether and how to adopt and integrate these technologies into their business. Finally, the conclusions will be presented.

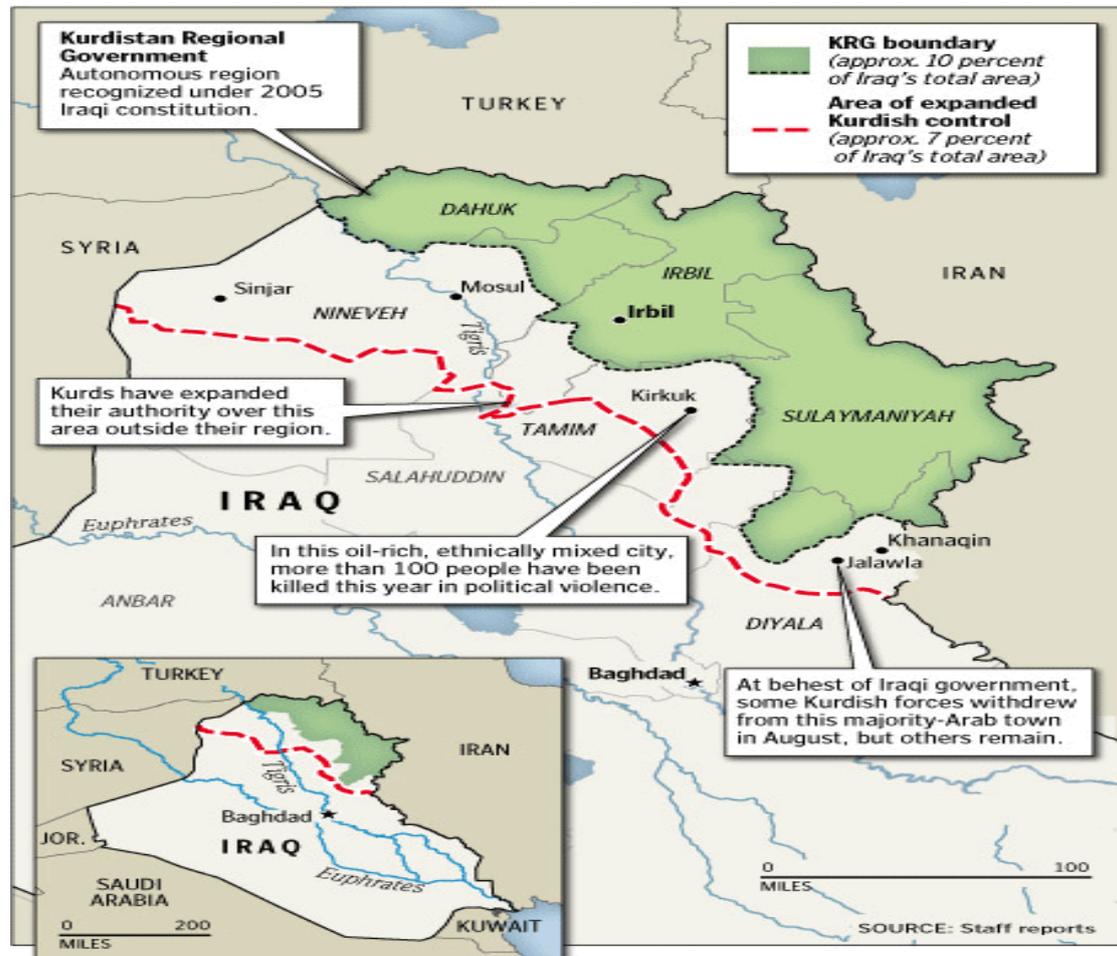
## Background: Kurdistan Region, Iraq

This section briefly describe the geographic focus of this paper: Kurdistan Region of Iraq. The choice of Kurdistan as the context of this study is motivated by the quest to understand why the region is lacking behind in the adoption of ecommerce.

Kurdistan is an autonomous Region of Iraq. It is one of the only regions which has gained official recognition internationally as an autonomous federal entity, with leverages in foreign relations, defense, internal security, investment and governance – a similar setting is Quebec region of Canada. The region continues to view itself as an integral part of a united Iraq but one which administers its own affairs in many spheres of public life.

Kurdistan has a regional government (Kurdistan Regional Government, KRG) as well as a functional parliament and bureaucracy. Kurdistan is a parliamentary democracy with a national assembly that consists of 111 seats. It borders Iran to the east, Turkey to the north, Syria to the west and the rest of Iraq to the south. Its capital and seat of Government is the city of Erbil, known in Kurdish as Hewlêr. Erbil is the largest city in Kurdistan, with more than half a million residents and it is the third-largest city in Iraq after Baghdad and Mosul.

**Figure 1: Map of Kurdistan Region of Iraq (2005)**



**Source:** available at: <http://media3.washingtonpost.com/wp-dyn/content/graphic/2008/09/13/GR2008091300327.gif> accessed June 21, 2011

Kurdistan is divided into three governorates of Duhok, Erbil and Sulaymaniya. Each of these governorates is divided into districts totaling 26 districts. Each district is divided into sub-districts. Governorates have a capital city, while districts and sub-districts have district centres. Within the three governorates of Duhok, Erbil and Sulaymaniya the population is 5.5 Million people. Kurdistan has a young population with an estimated 40% of the population being under the age of 15. The Kurdistan region has an increasing urban population with a significant rural population.

The ethnic and religious make-up of Kurdistan is diverse; it includes ethnic Assyrian Christians, Turkmens, Arabs, Armenians, Yezidis, Shabaks and Mandeans next to the Kurdish majority. The official language of instruction and institutions is Kurdish, which

is part of the Iranian linguistic branch of languages. Arabic still has some uses because of its domination under the former Iraqi regimes. Kurdistan has a diverse religious population. The dominating religion is Islam, adhered by most of its inhabitants. These include Kurds, Turkmen and Arabs being divided into Sunni and Shia branch of Islam for all of these three ethnic groups. Christianity and Yezidism are adhered to and also Assyrian and Chaldean Christians make up a large minority.

The Kurdistan region is allowed to have its own foreign relations without referring to Baghdad. Kurdistan houses numerous consulates, embassy offices, trade offices and honorary consulates of countries that want to grow their influence and have better ties with the Kurdistan Regional Government.

The Kurdistan's economy is dominated by the oil industry, agriculture and tourism. Due to relative peace in the region it has a more developed economy in comparison to other parts of Iraq. In 2004, the per capita income was 25% higher than in the rest of Iraq. Kurdistan has a vibrant media and an emerging civil society. The region is fast developing and modest progress is being made in industrialization, housing and transportation. The KRG has invested heavily in education, health, transport, housing, roads and social welfare. The region operates an open-door economic policy; it has opened up to foreign investment, particularly in mineral resources, construction, healthcare and transportation. However, a lot remains to be done in agriculture, banking, insurance, telecommunication etc.

## **The potentials of ICT to business organizations in a globalised economy**

SMEs are extremely important to many countries and their contribution to economy cannot be over emphasized. Small and Medium Enterprises (SMEs) account for an increasingly important share of domestic production in most developed countries, and have always played an important role in employment and production in developing countries. Businesses in this sector include those which are flexible to new working patterns and who are innovators in the adoption of new business practice. SMEs account for more than 59% of private sector employment in the UK and currently are contributing most of the private sector employment growth (BERR, 2008). According to the Observatory of European SMEs (2007), the average SME across all European enterprises employ 6.8 people. At both the European Union (EU) and national level, SMEs lie at the heart of policy making with the emphasis on encouraging enterprise and promoting business growth. They are an important link to boosting the levels of innovation in the national economy and fostering greater competition both domestically and increasingly, internationally.

In Hong Kong, for example, SMEs account for 98% of all enterprises (<http://www.tdc.org.hk/sme/approach.htm>). In the Asia-Pacific region, SMEs account for between 30% and 60% of domestic production and employ between 40% and 80% of the workforce (Hall, 1995). Although the distribution varies across countries, the bulk of employment today is found not in manufacturing but in services, where the overwhelming majority of businesses are small firms (Lawrence, 2002). SMEs continue to add jobs because much growth takes place in industries in which small businesses have relative advantage.

Apart from the economic significance of SMEs, the sector's social significance is widely recognized. In many cases, SMEs reflect the more personal and unique characteristics of a community than larger firms do; they often serve specific market niches, the very presence of which can be a manifestation of special social and cultural characteristics. The greater independence and entrepreneurial nature of SMEs are thought to embody desirable social values and their presence is regarded as an important source of social stability (Lawrence, 2002).

However SMEs face several major challenges in their effort to maintain an important position in the global marketplace and meet the world-wide competition. SMEs particularly small businesses however, suffer from additional problem of limited resources such as financial, technological and human (Lawrence, 2008, 2002; Wymer and Regan, 2005). For this group of organisations, information technology and the direct use of information itself can be of crucial use, provided that they can be made use of readily, cheaply and without recourse to expensive expert assistance (Poon and Swatman, 1995). Behrendorff and Goldsworthy (1996) indicate that SMEs perceive the appropriate use of IT as an important factor to facilitate business growth and contribute to productivity and efficiency. Lymer et al (1997) concur that the use of IT is becoming increasingly important as a mechanism to increase productivity, reduce costs and facilitates flexibility in SMEs business.

The importance of SMEs' participation in a global marketplace has made more evident the need to improve their participation in a world that is quickly being transformed by new communication and information technologies. By encouraging the use of the Internet and through the use of ecommerce, SMEs could participate more actively in their domestic economies and raise the global competitiveness of their countries. For these reasons, governments around the world are actively engaged in developing policies to support SMEs' participation in the global economy.

In addition, SMEs have started to understand the importance of being a part of this dynamic process, as they see the need to participate in the global marketplace and the opportunity to overcome obstacles such as geographic distances. SMEs in APEC represent 95% of all enterprises and account for 35% of all export from the region. With the advent of new information and commerce technologies small companies can use the Internet as a source and a tool for international trade. The Internet is a medium that facilitates the search for available products and potential suppliers, as well as a medium that serves the marketing and advertising needs of firms.

Businesses both large and small in developing countries have been adopting ecommerce rapidly, although the overall rates of adoption are still lower than in other regions such as Europe and Asia. The growth expectations for the following years with respect to Internet use and ecommerce transactions are very optimistic, leaving SMEs with a big market to explore (IDC, 2000). SMEs using the Internet for the first time see this tool as a way to establish a corporate presence on the Web, as well as a way to advertise their products and to deal with customer inquiries. Lawrence (2002) found that 86% of the firms employed email for external communications with other firms, 44% of firms used email for finance related purposes, and 40% employed it in marketing. Most of the companies used the Internet to search for information and material that they could usefully employ in their businesses, such as technical information (UNCTAD, 1999).

## ICT infrastructure in Kurdistan Region, Iraq: public, private and non-governmental assets

Until recently the KRG region had a weak IT infrastructure base. With the establishment of the region's Department of Information Technology (DIT), the government has invested heavily in building one of the most robust IT systems of the Middle East region. The IT infrastructure in Kurdistan region could be divided into the following: (a) Public Sector infrastructure, funded by the government (KRG) (b) Private Sector infrastructure owned by big businesses and SMEs (c) Non-governmental infrastructure owned by development agencies and civil society networks. Our focus is mainly on the first two; however, the last category is also important for instance in terms of synergies for integrated IT solutions. The KRG has adopted an integrated IT Strategy known as "KRG-wide strategy" that includes a robust IT architecture which aims to cater for all sectors of the economy and society.

The key objectives of the infrastructure design include:

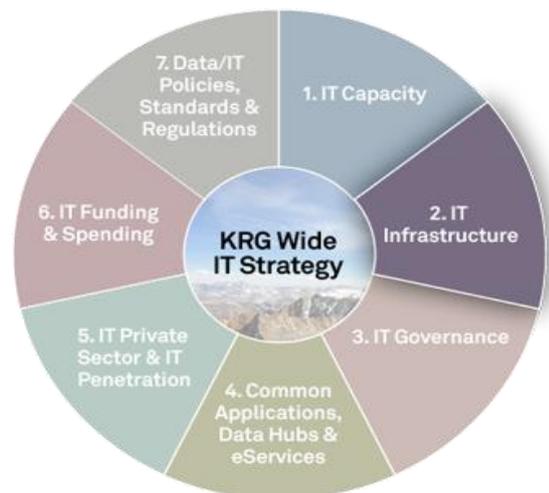
- All government entities and offices connected through a secure network.
- Shared infrastructures to serve the entire government
- Communication and productivity applications provided to government employees
- Established IT infrastructure in all government entities.

### (a) Public IT Infrastructure:

KRG's IT Infrastructure has evolved in terms of what the government terms as "strategic areas" to achieve its defined Vision for public sector, one capable of creating conducive climate for businesses and entrepreneurship to thrive in the region. The KRG emphasises that the strategy captures the Government IT Infrastructure needs for the Kurdistan Regional Government (KRG) and its entities and recommends IT infrastructure initiatives to achieve the objectives that have been defined for Government IT Infrastructure earlier. The fundamental goal of KRG's Information Technology (IT) Infrastructure is to make available the KRG IT resources so that the KRG entities can carry out their work efficiently, and in a cost effective manner (KRG, 2011b).

The key components of KRG's integrated IT architecture include: capacity; infrastructure; common applications/datahubs/e-services; private sector; funding; standards and regulations. Each component aims to contribute to the integrated IT architecture of the region (see Figure 2).

The role of the IT Infrastructure in the IT Strategy of the KRG is important and significant as it is required to support KRG in delivering business services to customers reliably and securely. Department of IT through KRGIT Strategy project focuses on identifying target reference architectures and the related initiatives to achieve strategic objectives in the area of IT Infrastructure and detailing each of these initiatives. The strategy also outlines the implementation roadmap for these initiatives.

**Figure 2: The Key Components of KRG's ICT Architecture**

**Source:** KRG (2011)

Nevertheless, even though the government's IT plans are robust and strategic, it is important to note some key problems. First, the planned IT is yet to take full course. Many government Departments are still operating out-of-date computers, and most are using computers only basic functions such as word processing and computations. For instance, there is no dedicated network linking all government departments.

### **Private Sector Infrastructure:**

There are a burgeoning number of private enterprises in the KRG region. There is no solid data on the number of companies, but it is fair to claim that there are up to 50 foreign investment firms – operating mainly in the IT; petroleum prospecting, drilling and servicing; construction; housing; hotel; and merchandise sectors among others. Most of these companies – especially subsidiaries of Transnational Companies - have state-of-the-art IT facilities, and networks systems connected to mother companies. The KRG region also has a growing number of SMES operating in diverse business areas of the economy. With the exception of those working on IT solutions, most SMEs are yet to embrace IT, but some are beginning to pick up.

### **(c) Non-governmental and Development Agencies and their IT facilities:**

There are a number of non-governmental and developmental agencies operating in Iraqi/Kurdistan – such as UN and its subsidiaries; United States Diplomatic Services and, in particular, agencies such as US Agency for International Development (USAID) and Regional Reconstruction Team (RRT); European Diplomatic Missions; International non-governmental organisations such as Red Cross; Mine Advisory Group (MAG) etc – have decent IT services, mostly connected to external networks. There are also local civil society groups that have acquired IT capacity, largely through foreign funding and capacity building programmes.

**Table 1. Private and Public IT Infrastructure in Kurdistan Regions, Iraq**

Sector	Examples	Scope of Service/operation
Public	KRG Department of IT; Presidency: Parliament; Ministries; Governorates; Municipalities; Federal agencies operating in the region	<ul style="list-style-type: none"> <li>• Organisational services</li> <li>• Capacity building for public sector workers and Institutions</li> <li>• Regulation</li> <li>• Funding</li> <li>• Legislations</li> <li>•</li> </ul>
Private	Multinational Corporations; Small Businesses (SMEs)	<ul style="list-style-type: none"> <li>• Intra-networking</li> <li>• Inter-Networking</li> <li>• Capacity building</li> <li>• E-commerce</li> </ul>
Developmental/Non-governmental	Diplomatic Services Developmental agencies Non-governmental organisations	<ul style="list-style-type: none"> <li>• Intra-networking</li> <li>• Inter-Networking</li> <li>• Capacity building</li> <li>• Service provision</li> <li>• Philanthropy</li> </ul>

**Source:** Authors, 2011

We have noted some problems associated with the IT Infrastructure in the KRG region. First, there is no synergy or complementarity between the various sector identified above. Second, there is high cost of acquisition and maintenance, particularly because of the remote nature of the region associated with geographic access and transportation. Thirdly, government's strategy for integrated IT solution remains a lip service at the moment; no serious effort has been made to advance or promote IT in the region. Nevertheless, there is optimism that progress will be made in the coming years.

## Potential opportunities and challenges of using ICTs by businesses in Kurdistan

In this section we focus on a conceptual, evaluative and prescriptive analysis of the potential of E-Commerce for businesses (in particular SMEs) in Kurdistan. It is beyond the scope of this paper to focus on other sectors or services. The aim is to provide a more robust analysis of the chosen theme.

*Internet as a tool for export promotion:* The Internet can serve as a means for expanding business internationally by reducing distance from markets, especially in terms of

information exchange. It also enables small companies to enter international markets at lower costs, and allows companies involved in international business to diversify their markets to which they export their products. Easy access to international supply chains and production and distribution networks by means of Internet may encourage firms to reallocate resources towards export production. In a world where technology changes constantly and very rapidly, introducing communication and information technology to small businesses is a factor that can significantly influence the competitiveness of a business in Kurdistan.

*Internet as a tool for logistical support:* One of the most important components to the success in the retail business is probably the ability to maintain an efficient flow in the supply chain. New technology enables companies to make this process more efficient by facilitating the integration of systems that keep all the components of the supply chain synchronized. With the Internet as a platform, companies can make use of many software packages available in the market applicable to management of logistics such as receiving and sending orders, inventory check and delivery management. This technology can be particularly useful to SMEs, as it improves operational efficiency and speeds up their integration into supply chains.

*Lower costs and better communication:* Information technology innovation has not only removed geographical boundaries but has also reduced the costs of communications. Globally, the average cost of phone calls has decreased over time while the efficiency for transmitting voice and data has improved. Companies with access to networks have been benefiting from email to communicate and to exchange information for the past 20 years. The growth of email has opened up opportunities for SMEs to look at different ways of direct marketing or communicating directly with customers. Research shows (Shape the Future, 2008; Lawrence, 2002; Lawrence and Hughes, 2000) that email is the Internet service used most in business. It provides SMEs with the ability to communicate electronically at relatively low-cost compared with the cost of a courier and it is much speedier delivery compared with postal services. Companies can now use ecommerce to shorten sales and distribution cycles and to optimize their operations as functions such as communication and information transfers occur easier and relatively seamlessly while lowering the total costs for trading across borders. Costs can also be reduced by replacing paper, telephone and fax based transactions for electronic based transactions. Orders can be taken, confirmed, processed, monitored, paid for and invoiced electronically, thus reducing the cost of personnel, postage, logistics, storage and payment transfers. By using new channels of distribution, SMEs can also keep less product inventory, reducing the cost of warehousing.

*Low barriers to entry into new markets:* Ecommerce simplifies, makes more efficient, reduces costs, or alters the process by which an existing transaction takes place. It allows the development of new products and services, thereby opening up new business opportunities for SMEs. The easy entry into new markets is a great opportunity to SMEs, especially geographically remote markets, as the playing fields become more level between companies of different sizes and locations. Ecommerce creates or facilitates new industries and products not previously available. For example, MP3 both enables consumers to play music downloaded from a computer and enables musicians to upload music directly to the internet, thereby creating a new medium to produce and consume music. They can enter into any type of business, such as retailing, and banking, where new entrants can set up shop for a fraction of the cost of a traditional brick-and-mortar operation. All sites on the Internet are equal irrespective of company size. Big companies do not gain any edge from their presence on the Internet over their smaller counterpart.

With the ability of the Internet to perform ecommerce anywhere at any time, SMEs may be able to enter and participate at less cost and more efficiently in new markets, and large companies will be able to evaluate, select, and work with other companies more readily than is possible today.

*Facilitation of existing activities:* Internet offers opportunities for SMEs to add value to their businesses by improving the existing activities. It can improve efficiency and allow processes to be streamlined by reducing the time and effort required for communicating and processing information; it can also improve responsiveness and shorten delivery times by enabling the transformation of business processes and by assisting in organizational change. This can be achieved by speeding up processes, reducing cost and reducing potential for errors or adding flexibility by allowing quick changes. It also allows for new products to be created or existing products to be customized in an innovative ways. A large source of business value that the Internet can provide comes from changing the products themselves, in addition to the way they are advertised, ordered or delivered. This is mainly due to the potential of collecting information, which can be used to customized products.

*Easier access to valuable information:* SMEs can use the Internet to make better use of the information available on products, competitors, markets and customers. Time and resources are the major constraint for most small business operators. Yet the needs to remain flexible and innovative are the criteria for survival and success for most SMEs. The availability of new ideas and the ability to seek opportunities are essential if small businesses are to remain flexible and innovative. The Internet offers SMEs the opportunity to discover new markets and business possibilities. It can be a useful tool to find out about the movements and trends in a business marketplace, the actions of business competitors and partners, resources of value to the efficient operation of data intensive tasks. The sources of new ideas and opportunities are often freely accessible on the Internet with little time delay, which in turn allows them sufficient time to react to business situations and exploit such opportunities (Lawrence, 2002).

*Better customer service:* The Internet opens up a new range of possibilities for enriching interactions with customers. The ability to provide on-line answers to commonly encountered problems, email interaction on a 24-hour basis, 365 days a year, builds customer confidence and retention. SMEs can use the web to support customers by providing 'help desk' type facilities on-line that can be available to customers as and when they need them. Dell Computer has succeeded in attracting customer orders and improving service by placing configuration, ordering, and technical support capabilities on the web. This use of the Internet is particularly valuable where a company has technical information to distribute or information that needs frequent updating, the most up-to-date version can always be made available on-line. Through the use of online databases, SMEs can be constantly aware of customer needs, and consequently are in a better position to adjust to changing, tastes and demand for services and products, and to provide them with better quality and more efficient services. In the same way, databases can be kept updated for suppliers and competitors. By customizing services and products, SMEs are able to develop strong and long-term relationships with customers and suppliers. In addition, new opportunities appear for SMEs as suppliers of bigger companies in global chain of production. Easy access to information allows companies to identify niches for penetration and be more focused when creating customer and product strategies. By allowing companies to target the customers' needs and markets, ecommerce enables the diversification of existing products and the possibility to develop new ones.

*Internet as a tool for tourism:* Tourism is an area dominated by SMEs in OECD countries, some small tour operators, hotels, restaurants and travel agencies have been active in fostering cross-border Internet ecommerce. The Internet allows travellers direct access to travel recommendations, reviews and local tourism information, many of which was previously only distributed through the physical offices of large travel agencies. Small players with a Web page can now attract those preferring personalised and possibly less expensive services. Some small travel agencies, making the most of ICT, take advantage of direct on-line sales of discounted airline tickets and travel packages, while others, both small on-line and off-line agencies, have shifted towards selling leisure products entailing higher commissions, such as cruise packages. Since the Internet and many travel-related sites allow on-line customers to compare the price of air tickets and other travel services, small firms offering best/better prices can win price-sensitive travellers.

*Global reach of ecommerce:* It is a versatile medium which has general accessibility and vast geographic reach, coupled with the ability to overcome political barriers and bureaucratic frameworks. While traditional borders still matter in the world of international trade, ecommerce diminishes their importance. No longer do customers need to be physically present to see or hear what they are buying, as a result, companies on the Internet instantly become international. The electronic marketplace is currently free from explicit trade barriers. The absence of international tariffs or other barriers on ecommerce encourages more people to try and to continue using the internet marketplace, creating a greater level of efficiency and economic benefit for its participants. It enables SMEs to reach out in its presentation of their companies, products and service to a wider audience in a way that no other mechanism could allow at so little cost. This is particularly important for small businesses, which are heavily involved in business activities with clients who are geographically dispersed. A small company with a suitable product or service to sell can create as much of an impact in its own domain as a large business with a much larger budget. This improved reach can also be achieved for relatively little cost compared with other methods available to achieve similar results.

*Internet as a tool for advertising:* Effective advertising and marketing campaigns can be expensive and require marketing experts with a profound understanding of the industry involved. For SMEs, access to such expertise is demanding of resources and potentially unattractive. On the other hand, localised marketing campaigns are effective in broadcasting the image and products of a small business, but coverage is limited and such campaigns do not necessarily reach their target audience. However, through the use of the Internet, SMEs can mount the same aggressive advertising as the big companies. A small company with a suitable product or service to sell can create as much of an impact in its own domain as a large business with a much larger budget if the technology is used appropriately. This improved reach can also be achieved for relatively little cost compared with other methods available to achieve similar results (Lawrence, 2008). The Internet provides the cheapest form of advertising relative to the number of people that it can reach. Internet technology is significantly different from other conventional print or TV/radio mediums, which are static in that once created, advertisements designed for these are difficult and costly to change in any way. While advertisement on the Internet does not suffer from this limitation as changes can be incorporated into the design easily and with immediate effect. Advertisement on the Internet can include colour graphics, sound and photo and it can be tailored to fit the need of small business of any size. SMEs can use Internet to produce a colour catalogue every day and send it out to thousands of people all over the world without ever printing a page or buying a stamp. It potentially offers SMEs participation in a market where distribution costs or cost-of-sale

shrinks to zero especially those SMEs that are in the business of publishing digital products (e.g. Software) or information services.

## Challenges of using e-commerce by SMEs in Kurdistan

*Cultural Barriers:* Cultural factors play a significant role in the use and adoption of ecommerce. In Kurdistan, shopping is seen as a social environment where friendly conversations between the vendor and the customer take place. Most people prefer to shop directly from known merchants that help to reduce uncertainty regarding product quality and maximize product value. People like to talk in person, hear each other's voice, exchange gazes, and touch each other. The success of doing business depends heavily on the quality and sometimes the quantity of personal relationships. A strong individual relationship and long term association between the parties provide a sense of community and enhances social bonding. In general, trust issues loom large in the context of ecommerce.

Establishing trust in the eminently impersonal environment of the Internet is not straightforward. In Kurdistan and many parts of the developing world, trust is established and reinforced through family association, repeated personal contact and interaction. The developed countries have devised ways of extending the basis for trust through the impartial enforcement of the law and its adaptation to a new technological environment. This is the basis of the trust that underpins ecommerce in the developed world. Where legal and jurisdictional institutions are underdeveloped, as in Kurdistan and much of the developing world, e-companies find themselves at a disadvantage because of insecurity, whether real or perceived.

The idea of buying goods that one cannot see and touch and from sellers thousands of miles away may take some "getting used to" for those who are used to face-to-face transactions, familiarity with the other party, (strong individual relationship and long term association between the parties), and getting satisfaction from winning business negotiations (they are willing to employ a variety of tactics to get the best deal). There is a fear that merchants might sell products with defects; that merchants could be disguised thieves; and that online payments cannot be recovered even if the product is not delivered, thus fermenting a culture of trust in products and merchants?. As one person stated in Lawrence (2002) survey "I like buying over the Internet, but it does not beat going to an actual shop where you can see what you are buying and make sure it's what you want". All of these long standing cultural traits are undermined by and are contrary to the depersonalization associated with ecommerce and business systems designed to sell products online.

The interpersonal relationships with people located at a distance when shopping online is an alien culture to most people in Kurdistan. The face-to-face contact is irreplaceable, you can't replace going to see people; you can't beat having face-to-face interaction for selling or buying products. The limitation on personal contact as a barrier to ecommerce adoption is a reflection of people in Kurdistan that prefers more direct and individual contact with their merchants (Lawrence, 2002). In Kurdistan, there is still a suspicion of technology that is perceived to destroy their culture and way of life – this tendency is endemic amongst not the masses of society, but even merchants and educated elites. It is argued in Lawrence (2002) that the decrease in human interaction with customers could lead to less understanding of the customers' needs, as they are not always able to express comments, criticisms or request for new products while interacting with machines. Most

entrepreneurs in Kurdistan rely substantially on personal contact to build confidence with their customers, particularly when the relationship is in the establishment phase. Most of the business is conducted through small enterprises and it is local. A typical company in Kurdistan is a socio-economic entity and not just a pure economic one: many companies are owned by families as in BRZ hypermarket, owned by the Barzinji family. These entities strive to preserve collective honour, and not just seek to maximize profit.

*Lack of public awareness:* A lack of awareness of the use and potential benefits of ICT can also hinder the growth of e-commerce. In Kurdistan and much of the developing economies, many people are only aware of limited ecommerce applications such as chat, email and browsing websites (Lawrence and Tar, 2010). As a result, many organizations have not considered exploiting the potential of ecommerce to improve their business operations. Surveys developed in Europe, North America and Asia show that a lack of awareness of the benefits and use of ecommerce is a common obstacle to its adoption (Chappell & Feindt, 1999). Uncertainty regarding the benefits tends to delay the development of ecommerce. Despite the dissemination of information through the media over the past few years, some SMEs are not fully aware of ecommerce related activities that will bring benefits to their business. Lack of familiarity with the tools provided for ecommerce and their use is common among SMEs in general, particularly here in Kurdistan.

*Limitation of basic infrastructure:* Ecommerce success relies heavily on a number of technological infrastructures. Telecommunication infrastructures are required to connect various regions and parties within a country and across countries. The Internet connections in Kurdistan/Iraq, particularly in the rural areas of the region, are unreliable because of poor telephone communications, relative absence of wireless communication facilities such as masts, and the erratic power supply. In the absence of an adequate basic infrastructure, it is possible that the potential advantages of the use of ecommerce turn into disadvantages for SMEs.

The outmoded and unreliable telephone connections result in narrow bandwidths offered by many Internet Service Providers (ISPs), with consequent low connections. A weak telecommunication infrastructure can cause a concentration of the technology in urban areas, which makes the participation of rural SMEs more difficult. The predominant model for pricing local calls in most developing countries is the measured service. In other words, the cost of use increases in proportion to the duration of the calls. These costs inevitably affect the use that SMEs can make of the Internet as well as the business model that they will adopt based on its use. Flat-rate ISP pricing and affordable leased lines still do not exist in Kurdistan..

Broadband connectivity is a key component in ICT development, adoption and use. It accelerates the contribution of ICTs to economic growth, facilitates innovation, and promotes efficiency. The development of broadband markets, efficient and innovative supply arrangements, and effective use of broadband services require policies that promote effective competition and liberalisation in infrastructure, network services and applications across different technological platforms (OECD, 2004). Fuller and Jenkins (1995) reported that technical problems' concerning connectivity was an important, if not actually critical factor for success. These technical problems can become potentially insurmountable barriers for SMEs wishing to use the Internet for business activities and operations. The existing telecommunication infrastructures in Kurdistan are too slow to warrant full-scale ecommerce transactions in such a context.

*Poor logistical infrastructure:* Ecommerce relies on efficient logistic infrastructures within a country. Kurdistan lacks a well developed transportation system – particularly roads, rails and air network; however, the regional government is investing heavily in developing the transport sector – over the years, the government has increased its expenditure in transportation. Logistic and administrative changes need to occur in order to create an appropriate environment for the effective participation in ecommerce. Inefficiencies in essential services such as postal service along with delivery and administrative procedures required in an international transaction can frustrate the success of the transaction itself.

The distribution and delivery systems are key components to developing e-commerce. It is not sufficient to have a name and a product to adopt ecommerce successfully. It is also necessary for an enterprise to have in place the distribution and delivery channels capable of meeting customer expectations. Speed is one of the most important manifestations of ecommerce. Overnight delivery, just-in-time processing, 24/7 operations are examples of how much faster and more precisely timed economic activities are in the ecommerce world. The inefficient distribution and cumbersome delivery systems and the lack of good transport, and postal system are primary obstacles to the growth of ecommerce. There is a very important link between the effectiveness of the distribution and delivery systems and the incentives for the SMEs to innovate and invest in new technology. For example, suppose the SMEs spend money on internet technologies, but cannot get products to customers because of distribution and delivery barriers. Burdensome customs procedures can further hinder the seamless fulfillment of a cross border ecommerce transaction. Compliance with different quality regulations and standards are other issues that can be an obstacle for SMEs entering international markets, especially if they are discriminatory and non-transparent.

*Incompatibility in technology and software applications:* Kurdistan's computer infrastructure is far from state-of-the art: a number of organizations and individuals rely on dated and pirated computers and communication facilities. Old computers and outdated versions of software make the implementation of ecommerce very difficult in most developing countries. The high cost of PCs and other accessories in the region forces small companies to buy cheaper PCs and particular brands not suitable for their business, incapable of supporting sophisticated applications, and incompatible with those used by their suppliers and customers. This limits the extent to which SMEs can be integrated into global supply chains. In addition, the software used by SMEs is sometimes different from software used by customers and/or suppliers, or the software applications are incompatible due to older or different versions, which can disrupt the effective flow of operations that ecommerce supposedly offers.

*High cost of access:* A combination of deficient telecommunication infrastructures and policies that favor incumbent operators, often monopolies that control access to the infrastructure and the provision of telecommunications services, have tended to maintain the high costs of Internet access and use in Kurdistan/Iraq. The cost of access makes it inaccessible to most SMEs in the region. These costs inevitably affect the use that SMEs can make of the Internet as well as the business model that they will adopt based on its use. The cost of accessing the infrastructures influences the growth and usage of ecommerce. As we argued elsewhere, the priority for Kurdistan regional government is to put in place the necessary infrastructure and a competitive environment and regulatory framework that support affordable internet access for SMEs (see Lawrence & Tar, 2010). Internet access prices are a key determinant of internet and ecommerce use by individuals and businesses alike. According to Lawrence and Tar (2010) countries with

lower access costs typically have a greater number of internet hosts, and ecommerce has developed rapidly in countries with unmetered (flat-rate) access. The availability of a wide range of Internet connections and other communication services, preferably at competitive prices, may affect SMEs' decisions to adopt ecommerce and allows users to choose different and appropriate services according to their specific needs (OECD, 2004) and expectations from on-line activities. Broadband faster speeds improve the overall on-line experience for both individuals and businesses, encouraging them to explore more applications and spend more time on line.

*Cost of investment:* SMEs are likely to be more price sensitive towards IT investments than larger, more established companies. This is partly a reflection of the fact that larger companies are more likely to have the financial capability to invest in IT whilst small businesses are more wary of committing their limited funds. Lawrence (2002) reports that a frequently cited barrier is the high investment cost associated with the introduction of innovation in organization. Costs were often the first element considered when evaluating the use of new technologies because of SMEs' limited financial resources. These financial constraints mean that SMEs may have difficulty in investing in new technologies even if they know that it can provide benefits later. The cost of investment in IT had been justified on the basis of 'if we don't we will get left behind or we need to get the equipment to project a professional image to the clients.

In order for SMEs to fully explore the potential of the new information technologies, and in light of the barriers identified above, it is clear that there remains significant scope for investment in at least three areas: the acquisition of technology (hardware and software), human resource development, and basic infrastructure. In developed markets, the mechanisms for generating and allocating financial resources are generally better developed than in developing countries. Basic infrastructure needed to develop ecommerce in an efficient way is not always available, which increases the need for large-scale investment, not generally engaged in by SMEs.

The access to human resources capable to develop and maintain the new technology involves investment that SMEs are for the most part not in a position to afford unless there is a certainty of higher revenues. The initial investment for introducing new technologies in small companies usually takes more than a basic investment for adoption of the technology. The training of staff on the use of the new technologies and integrating it with other internal applications often requires modifications or even development of new applications thereby adding significantly to the initial cost. There are also costs associated with changing a company's strategy and the implementation of an electronic business environment within the company that may require dramatic changes in the internal structure of the business, as well as the introduction of new skills and operations, a sizeable and continuing investment is necessary to educate and train staff to make effective use of the technologies. A small company might have to upgrade the skills of existing personnel or hire personnel capable of maintaining and operating the new equipment. This can lead to an increase in the fixed costs of production.

*Lack of ICT and ecommerce skills:* Sufficiency of skills, both in ICT generally and ecommerce specifically, are generally thought to be a major issue for SMEs. They depend critically "on the job" competence and are competing with larger enterprises in a market where there is an overall skills shortage. SMEs generally do not have the appropriate ICT skills, understanding or resources to train their employees on the use and potential benefits of ecommerce, especially smaller companies. In addition, they do not have the ability and the resources of the large organization to attract qualified staff. The lack of

personnel with appropriate broad knowledge and understanding of new technologies is seen as a significant barrier to the adoption of ecommerce in business. Lawrence (2002) reports that most SMEs viewed the Internet as a useful business tool, but were unable to exploit it as fully as they could, because they lacked the expertise within their company to understand how the Internet and its technology works. Lawrence argues that SMEs with little experience or knowledge will have difficulty making judgments of its richness and may be inhibited from exploring the potential of the Internet technology. This is consistent with the broader IT adoption literature (Boynton et al, 1994; Cragg & King 1993) that has found lack of knowledge as an inhibitor to adoption and use of information technology.

*Uncertainty over payments:* Concerns of customers about security and confidentiality of payments reduce the incentive for businesses to invest in the adoption of ecommerce, because of the risk, even if the product or service offering is competitive, consumers may not be comfortable about making on-line payments. The costs associated with establishing trust and reducing risks weigh more heavily on SMEs than on larger enterprises. An institutional environment that facilitates the building of transactional integrity is critical to the development of ecommerce in developing countries (Oxley and Yeung, 2001). This infrastructure makes payment over the Internet possible (through credit, debit, or Smart cards, or through online currencies). It also makes possible the distribution and delivery (whether online or physical) of those products purchased over the Internet to the consumer. Its growth further requires the establishment of reliable and secure payment infrastructures to avoid frauds and other illegal actions. The efficiency of the payments system itself can help or hinder the development of ecommerce in developing countries.

Few people in Kurdistan have credit cards and most banking sectors lack a national clearing system and potential customers are suspicious of being cheated (Lawrence & Tar, 2010). Indeed, Kurdistan's banking and financial services sector are one of the least developed in the Middle East region. Here, users may be unable to purchase online because credit cards are not accepted without a signature, or merchants lack the facilities for electronic transaction. Beyond individual transactions, full efficiency and realization of the benefits of ecommerce depends on rapid authorization, payments, and settlement of accounts.

*Legal and regulatory issues:* Uncertainty with respect to several regulatory issues, particularly in the absence of a clear international regulatory framework, can inhibit to some extent the operation of SMEs in a global environment. In Kurdistan, businesses engaged in international trade have to bear in mind multiple taxation rules, customs procedures, rules of origin, and other administrative difficulties. In the absence of robust local legal instruments, these businesses lack adequate awareness or sensitivity to local and external regulatory mechanisms. In addition, the fact that online transactions occur in a global electronic marketplace creates a concern regarding the application of different national laws. In many areas of relevance to ecommerce, laws are by and large national in scope. For example, the validity of electronic contracts and digital signatures must be assured for the parties to an electronic transaction to know that their commercial rights and obligations are legally enforceable. Most existing contract law is based upon paper instruments and physically written signatures.

The lack of universal best practices for online security constitutes an additional obstacle for SMEs and individuals transacting over open networks. Companies bear the responsibility to distribute information relative to the level of security they offer for online transactions, as well as the extent to which they protect the privacy of their

customers. There are expenses related to implementing security and privacy solutions, and the costs to SMEs may be significant in terms of acquiring the best technology for secure online payment processing, and for developing adequate privacy policies.

## Conclusion

This paper offers conceptual and empirical reflections the potential opportunities and challenges of ICTs, particularly ecommerce, for small businesses in Kurdistan region of Iraq. The versatility and capability of the Internet technology was demonstrated as an ideal platform for SMEs to participate in global market. The literature would seem to suggest that the use of the Internet and participation in ecommerce particularly suit the type and the nature of SMEs. The availability of universal and low cost access to the Internet and World Wide Web and non-proprietary technology, was widely seen as providing the basis for development of major global business opportunities and enabling the widespread use and implementation of cost-effective electronic commerce for SMEs.

The study has demonstrated that SMEs has a potential to trade extensively over the Internet. By advertising their products on the web, these entrepreneurs could expand their markets. In addition, they could also shop around for cheaper sources of raw materials, and they could (in addition) use the Internet to download all kinds of helpful and relevant information. The Internet delivers a low-cost 24 hours a day/ 7 days a week access to a global IT infrastructure, which provides SMEs with on-line information sources on a global basis. SMEs would benefit from this growth by allowing them to gain an increase market share and attract prospective customers, placing them in a competitive position to large organizations. SMEs can gain substantial benefits by using this open and relatively low-cost information infrastructure to gain competitive advantage against their less entrepreneurial competitors.

Literature suggests that the potential of the Internet to be exploited by SMEs is enormous and the benefit to be gained is only limited by the imagination of the business users. Although it has been suggested that the use of the Internet present exciting opportunities to companies of different sizes, however, for Internet to be deemed suitable for commerce, many technical and economic barriers must be overcome, including security and the limitation of infrastructure. The major issues, facing SMEs is how to manage this changing technology in such a way as to realize the opportunities whilst avoiding the risks.

The papers reveals that Kurdistan is developing a robust ICT infrastructure, but due to a bevy of legal, logistic and attitudinal constraints, businesses are yet to tap into the vast opportunities offered by ICTs. Nevertheless, with sufficient regulatory and public relations initiatives, it is envisaged that business will start patronizing the full potential of ICTs in the near- and long-term

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