

Analysis of the State of E-commerce in Algeria

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Abstract

This paper focuses on investigating and analysing the state of e-commerce in Algeria, determining the nature of the barriers that are preventing the country from taking off as expected and proposing some solutions based on Porter's diamond model of national competitive advantage. This incorporates cross-industry institutions and networks as key determinants of national competitive advantage. Following Porter's model, Algeria has made progress in building the technical infrastructure for e-commerce, but it still suffers from a lack of a comprehensive regulatory framework and poorly developed supporting institutions and social networks. While e-commerce in Algeria is still in its initial stages compared to other developing countries, there is great potential for rapid and sustainable growth in the coming years.

Keywords: Algeria, E-commerce, Porter's diamond model

1. Introduction

The considerable development in information and communication technologies in the past few decades has significantly changed the ways in which business is conducted around the world. Amongst these, e-commerce, brought about by the Internet, is one of the most significant scientific accomplishments since the industrial revolution, with a deep influence on mankind (Qin, 2009). It greatly increases the productivity and efficiency of economic operations, lowers economic operating costs and makes possible many things earlier deemed impossible. It also influences people's lifestyles and social aspects and therefore changes their world outlook and methodology (Qin, 2009).

E-commerce means different things to different people, rendering a clear-cut definition somewhat problematic (Yousefi, 2009). As such, there is no standard definition for the term and different organizations have defined it in diverse ways. From a trading perspective, e-commerce refers to the exchange of products and services via electronic networks that may include value-added networks (VANs), the Internet and corporate intranets and extranets (Le & Koh, 2002). From an information exchange and activity perspective, e-commerce encompasses a wide range of pre- and post-transaction exchanges that facilitate seller and buyer discovery, product and service search, payment settlement, order fulfilment and customer care. In other words, e-commerce refers to the electronic execution of all transactions supporting commerce among buyers, sellers and third-party intermediaries, such as financial institutions (Le & Koh, 2002).

E-commerce is no longer an alternative but an imperative. At the microeconomic level of retail, wholesale and labour market transactions, it has an enormous impact on the performance and productivity of companies and the economic welfare of consumers and workers. It lowers costs and increases the choices available to consumers and firms (Heil & Priege, 2010). These microeconomic changes work their way through the economy and ultimately influence macroeconomic conditions. Some of the macroeconomic gains from e-commerce are static in nature, whereas others are dynamic (Heil & Priege, 2010). The static gains come from the efficient allocation of existing resources; for example, increases in productivity increase a nation's GDP. In addition, the continued expansion of e-commerce may lead to downward pressure on inflation through greater competition, cost savings and changes in sellers' price-setting behaviour (Willis, 2004). Dynamic gains alter the path taken by national growth. By lowering the cost of transferring and employing knowledge, greater R&D and innovation efforts are enabled, which are crucial to long-term economic growth (Heil & Priege, 2010; Priege & Heil, 2010).

Algeria is the tenth largest country in the world by land area and has a population of approximately 35 million. The country's oil and gas reserves have made it one of the wealthiest nations in Africa. The Algerian economy is

heavily dependent on the petroleum and natural gas sectors; other sectors are less developed and suffer from negligence. However, the government began an economic reform programme in 1994, focusing on macroeconomic stability and structural reform, which has met with some success in certain sectors. In Algeria's case, giving more attention to the non-oil sectors, such as e-commerce, is very important because such sectors exert a great influence on economic growth and have long-term benefits. The country has one of the highest teledensities in Africa, with fixed-line penetration of around 8% and mobile penetration close to 100% (Lange, 2012). Meanwhile, the number of Internet users in Algeria has greatly increased, from 50,000 users in 2000 to approximately 6,700,000 in June 2014, with a broadband penetration rate of 17.2% according to Internet usage statistics for Africa (Internet World Stats, 2014). The development of e-commerce and building an effective platform for it presents a real opportunity for the country to become a member of the information society and make e-commerce one of its main, vital sectors. Therefore, this study aims to investigate the country's current status in e-commerce development and to identify the barriers it faces.

E-commerce has been widely discussed in the academic and practitioner literature, focusing on both developed and developing economies. These studies are a mix of empirical and non-empirical works. They have employed several theoretical frameworks from various disciplines, such as information systems (IS), management and social sciences. Nevertheless, there is a lack of literature investigating e-commerce in Algeria and defining the most significant prerequisites for successful development. Said (2011) focused on the role of e-commerce in the growth of the Algerian economy. Another study, conducted by Medjedel (2013), surveyed local SME managers' perceptions and attitudes towards e-commerce in the Ghardaia province in Algeria. Neither of these studies investigated the state of e-commerce in Algeria or defined the main factors for successful development. Therefore, the research questions addressed here are: What is Algeria's current position in implementing e-commerce? Why has it not taken off there as expected and what are the barriers that have caused the country to lag behind many others with similar economic conditions?

To answer the above questions, Porter's diamond framework is employed in this research to express and cover the main factors affecting the development of e-commerce in Algeria. The model has been widely used in the literature to determine the status and measure the competitiveness of particular nations, industries (Al-Mamun et al., 2013), mobile communications (Sun et al., 2003), e-commerce (Yousefi, 2009), education (Sum & Jessop, 2013), and firms (Rugman et al., 2012), as well to identify the barriers experienced by industries and companies which have failed (Aghdaie et al., 2012; Chen & Ning, 2002). Porter's diamond framework identifies four sets of factors that are necessary for the sustained performance of an industry in a nation: national factors; related and supporting industries; firm strategy, structure and rivalry; demand conditions. These determinants, individually and as a system, form the context in which a nation's firms can compete internationally. Thus, according to Porter, the availability of factors of production, strong demand, supporting industries and firm strategies that encourage innovation are prerequisites for a successful national industry. A deficiency in any of these determinants weakens the basis of the industry and its international competitiveness. Therefore, the framework can be used to evaluate the conditions required for an industry to be successful in a particular nation (Chen & Ning, 2002), such as e-commerce in this specific case.

This research is exploratory in nature: it is based on a literature study and contains no direct empirical research. The research issue is investigated based on qualitative information and early evidence related to e-commerce in Algeria. The data used for the analysis were collected from secondary sources and were taken from different time periods. The main sources are statistical survey reports on e-commerce, such as Internet World Statistics reports, the academic literature, industry reports and reports taken from some other governmental organizations, such as the National Office of Statistics and research centres in Algeria.

The rest of this paper is organized as follows. Section 2 illustrates the research framework and provides a literature review. Section 3 adopts Porter's model to provide an appropriate framework for the economic analysis of e-commerce in Algeria. Section 4 presents conclusions and some recommendations.

2. Literature Review and Research Framework

The diamond model is an economic model introduced by Michael Porter (Porter, 1990) in a volume in which he expressed his theory of why some industries become competitive in particular locations (Bruce & Eamonn, 1998). This model cleverly integrates the important variables determining the competitiveness of a particular nation, industry, or a firm into one model. Most other models designed for this purpose represent subsets of Porter's comprehensive model, which makes this model the most appropriate for exploring e-commerce development in Algeria, including its current state, constraints and future development strategies.

Porter's framework, or variations of it, has been used in a wide range of contexts. Chen and Ning (2002) in their study of China suggest a revised framework based on Michael Porter's diamond of national competitive advantage to examine the development of e-commerce in less-developed countries. Aghdaie et al. (2012) have used Porter's diamond model to identify the barriers to Iran's saffron exports to international markets in order to maintain Iran's position as the world's biggest producer and exporter of saffron. In Mamun et al.'s work (2013), an attempt has been made to illustrate the status of ICT in Bangladesh using Porter's diamond model. Yousefi (2009) used Porter's model to capture the driving forces of e-commerce, as well as to facilitate the assessment of e-commerce and to identify the global competitive advantages of firms in developing countries.

As shown in Figure 1, the diamond model has four interrelated determinants: (1) national factors; (2) demand conditions; (3) related and supporting industries; (4) firm strategy, structure, and rivalry. According to Porter these four determinants mutually affect each other and a change in one of them influences all other three determinants (Aghdaie et al., 2012).

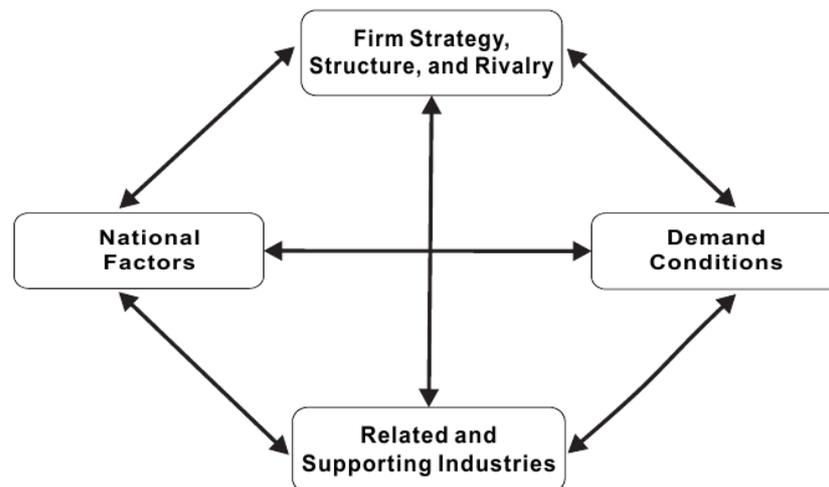


Figure 1. Porter's diamond model

Based the literature review conducted for this study, the main factors in the four sets of prerequisites that affect e-commerce development are defined as follows.

1) National factors: these include basic factors (e.g., natural resources, physical resources, human resources, technological resources and capital resources) and advanced factors (e.g., communication infrastructure, sophisticated and skilled labour and research facilities). Specialized resources are often specific to an industry and important for its competitiveness. However, advanced factors are the most significant for competitive advantage and they are also a product of investment by individuals, companies and governments. In this research, national factors refer to telecommunications infrastructure, government regulations and availability of talent, which are closely connected to state strategies and measures.

2) Related and supporting industries, in general, refer to raw materials suppliers, distributors and retailers, research organizations, financial organizations, transportation systems and industries which use specific technology, raw materials and laboratory facilities. Relationships and collaborations with these industries affect the development of products and services, improve the quality of products and services and also help to increase competitiveness. The related and supporting industries of e-commerce are mainly connected with the presence of associated industries that are critical to e-commerce, such as logistics and financial industries.

3) Firm strategy, structure and rivalry relate to the ways in which organizations and firms are founded, managed and organized, all of which greatly affects competitiveness. Thus, the strategies and structures used for managing a firm or an industry have a direct influence on performance and competitiveness. In order to gain competitive advantage, certain strategies are suggested to show how firms might manage and organize their business to adopt and promote e-commerce.

4) Demand conditions determine the circumstances of domestic demand for the products of an industry. Increased demand has a considerable influence on competitiveness. Porter believes that a large and growing domestic market encourages producers to develop technology and efficiency. Customers' expectations regarding the quality of products and services can be an important incentive driving the competitiveness of firms, industries or countries. In this research, demand conditions explore the nature of the demand for e-commerce products or services from consumers or businesses.

Table 1. E-commerce development influence factors

The porter factors	The subset of factors for e-commerce	Guidance from literature review
The National Factors	Telecommunications infrastructure	Laisuzzaman et al. (2010)
	Government regulations Access regulation Domain name registration Encryption The secrecy regulations Personal data privacy and Security Consumer protection regulations	Aghdaie et al. (2012), Chen & Ning (2002), Jones (2003), Li & Suomi (2006)
	Talent supply	Chen & Ning (2002), Li & Suomi, (2006), Yousefi (2009)
The related and supporting industries	Payment systems	Heil & Prieger (2010), Laisuzzaman et al. (2010), Li & Suomi (2006), Yousefi (2009)
	Logistics systems	Li & Suomi (2006), Yousefi (2009)
The strategy, structure and rivalry perspective of the firm	Increased personalization and customization of product offerings	Piller et al. (2004)
	Building confidence (Trust)	Coles & Smart (2011), Du et al. (2010), Head & Hassanein (2002)
	Building virtual communities with consumers	Pitta & Fowler (2005), Stylianou et al. (2003)
	Fostering loyalty with rewards	Chang & Chen (2009), Srin et al. (2002)
	Increasing consumers' social sharing behavior	Liu & Sutanto (2011)
	Enhance consumer privacy and security	Chang & Chen (2009), Head & Yuan (2001), Smith & Shao (2007)
	Content and information provision	Egger (2001)
	Interface properties (branding and usability)	Chang & Chen (2009), Egger (2001)
The demand perspective	Business demand for e-commerce	Prieger & Heil (2010)
	Consumer demand for e-commerce	Prieger & Heil (2010)

Table 1 summarizes the main factors for e-commerce extracted from literature review, where they are discussed in detail in the following section.

3. Analysis of E-commerce Situation in Algeria

3.1 The National Factors Perspective

Telecommunication infrastructure construction, comprehensive government regulation, and the availability of highly skilled talent are the key factors for the national economy's growth in general, and for the development of e-commerce in particular.

3.1.1 Telecommunications Infrastructure

The telecommunication network is a major physical infrastructure for the implementation of e-commerce. High-speed, competitive international broadband access coupled with high density of local telecommunication facilities are essential for the growth of e-commerce (Laisuzzaman et al., 2010). In Algeria, telephone density, mobile phones, wireless communication, a nationwide IP backbone etc., must be seriously considered in the development of e-commerce. In this section we will cover the telecommunication infrastructure situation in Algeria.

As a result of significant infrastructure investments during Algeria's boom years, the country has a relatively well-developed telecommunications infrastructure, including a fiber optic national backbone network and one of

Africa's first FTTH (Fiber to the Home) deployments. It has one of the highest teledensities in Africa, with fixed-line penetration of around 8% and mobile penetration close to 100% (Lange, 2012).

Though the Algerian government has put great effort into infrastructure construction, an imbalance in infrastructure construction in various areas exists as a result of the country's geography, which includes the huge Sahara desert and two significant mountain ranges. Most infrastructure (including the Internet) is concentrated in urban areas. In rural areas, there is little access to information by virtue of the fact that they are not even connected to the network. This will result in unbalanced diffusion of e-commerce across the country's immense territory.

The Ministry of Posts and Telecommunications (MPT), which is the operating as well as the regulatory entity, had a monopoly on all telecoms services until August 2000. This monopoly came to an end with the passing of the new telecoms law, law No.2000-03 (Lange, 2010). This law was passed with the aim of reforming the MPT and telecom industry. It broke the state's monopoly by opening the telecom market to new public and private operators. It seeks to establish competition rules, promote service quality through competition, guarantee universal service, and set up a legal system that can sustain an open market.

Several measures were laid out for liberalizing the telecoms sector, including the separation of postal and telecommunication activities, creating Algeria Telecom (AT) and also creating a separate regulatory authority, the Post and Telecommunications Regulatory Authority (ARPT) (International Business Monitor, 2011). ARPT is in charge of regulating both the post and the telecommunication markets. It was established in 2000 and started operations in August 2001. It is the sole government entity to issue telecoms licenses, introduce access networks (through offering access network licenses), and impose obligations (such as quality of services obligations) on telecommunication service providers (ITU, 2012).

To facilitate Algeria's entry into the information society, the following national ICT initiatives have been designed: a project by the Ministry of Education to equip all schools with computers by 2005; a distance education project; a virtual university project; a research network to be put in place by the Ministry of Higher Education and Scientific Research; a health network developed and maintained by the National Health Development Agency (ANDS).

In October 2009, AT announced plans to invest US\$6 billion in fixed-line and mobile operations over the next five years as part of a US\$150 billion government program to upgrade the country's infrastructure. Priorities were the improvement of network coverage and capacity and the roll-out of high-speed Internet services (Lange, 2010). The government recently revealed a new strategic plan for developing ICTs in the country. The e-Algeria 2013 initiative is supposed to accelerate ICT use in the country, including the government's application of technology to increase access to government information. The e-Algeria strategy is based on several goals: boosting the use of ICTs in public administration and businesses; developing incentive mechanisms and measures to give citizens access to ICT equipment and networks; stimulating the development of the digital economy; strengthening high and very high-speed telecommunication infrastructure; developing human capacities; strengthening research, development and innovation; updating the national legal framework; recognizing the value of international cooperation; and establishing e-monitoring and evaluation mechanisms.

Furthermore, building effective Internet connections is also a fundamental building block for e-commerce. Internet service needs to be evaluated by its quality, availability and price. The state-owned Research Center for Scientific and Technical Information (CERIST) was the first institution to offer Internet service and provides Internet facilities to most research organizations. It was also opened to private operators in 1998 and more than 70 Internet service providers (ISPs) have been licensed in the ensuing ten years. By 2007, there were 71 licensed ISPs, but only 39 were actively operating. Since then, only one more new license has been issued: the total number stood at 72 in May 2010.

However, the development of the Internet sector in Algeria has been relatively slow due to the limited reach of AT's fixed-line network and relatively high prices which have delayed the growth of e-commerce. Over the past decade, the number of Algerian Internet users has increased more than 100 times, from 50,000 users in 2000 to approximately 6.7 million users in June 2014 (Internet World Stats, 2014). The penetration rate is still low, at 17.2% according to Internet usage statistics for Africa (Internet World Stats, 2014); this is due to the high cost of computers and Internet connection and a lack of interesting web content. However, the establishment of thousands of cybercafes and public telecentres throughout the major cities and towns has had a positive impact on Internet and e-commerce use and awareness. AT has also connected more than half of the country's 22,000 schools to the Internet and the government aims to connect all schools to the Internet by 2013 as part of the e-Algeria 2013 project (Lange, 2010).

In addition, Algeria's broadband market remains dominated by ADSL. ADSL broadband services were introduced in 2003, along with significant cuts in charges for dial-up access. However, Algeria has some of the lowest ADSL prices in Africa, but AT's wholesale pricing has been criticized as anti-competitive, leading some ISPs to roll out their own WiMAX wireless broadband infrastructure. The full liberalization of Voice over Internet Protocol (VoIP) Internet telephony is enabling them to become players in the voice market as well. Furthermore, the country's three mobile network operators have entered the Internet market by offering access via mobile data services such as GPRS and EDGE. They provide transmission speeds of up to around 200Kb/s (Lange, 2010).

3G will offer a new opportunity of development of ICT in general and e-commerce in particular. The introduction of 3G technology will likely introduce changes to online usage, as consumers will shift part of their time (and spending) to mobile Internet. Algerian telecom regulator ARPT has at last awarded the 3G licenses to the mobile operators (Nedjma, Djezzy and Mobilis) in December 2013 after a delay of more than two years; other countries in the region are already moving on to 4G. Nevertheless, the government has gone about it in an odd way: all three mobile operators will compete in Algiers and in three provinces, but in each of the other 45 provinces one of the three will have a local 3G monopoly at the beginning, which require the citizens to have more than one SIM card when they travel. In addition, the regulatory authority required a new separate number for 3G, therefore, the current subscribers have to give up their old numbers and old SIM cards to get access to it. Moreover, the price of the 3G service will not be affordable for all mobile subscribers, which has had a negative impact on the implementation of mobile commerce (m-commerce).

In spite of the significant progress of technical infrastructure in Algeria, Internet access—including its speed and cost—is still a severe constraint for e-commerce development.

3.1.2 Government Regulations

The Internet can serve as a development tool that permits government to simultaneously address the needs of internal and international integration and faster and wider diffusion of public services such as education and training, health care, and assistance for business creation and management (Goldstein & O'Connor, 2002).

There is currently a debate over whether or not these views on governmental non-interference are applicable to e-commerce and international trade conducted over the Internet. Some argue that individual countries should impose regulations to protect their own economies, while others argue that an international organization such as the World Trade Organization (WTO) should be in charge. The WTO has, in fact, established programs and issued declarations regarding cross-cutting issues in e-commerce.

However, there are also many compelling arguments for allowing the e-commerce industry to be kept free from regulatory control. One of these arguments is that governmental interference will reduce e-commerce usage and thereby slow the industry's growth potential. Another argument against efforts to restrict electronic trade is that governmental bodies are incapable of keeping up with the rapidly developing e-commerce technologies. Some proponents of government regulation have emphasized the idea that such regulation is necessary to protect the privacy of individuals who wish to conduct transactions on the Internet.

The rapid advance of technology poses new challenges for the legal and regulatory frameworks of all countries. Laws that have traditionally developed at a leisurely pace must now catch up with technology's incessantly rapid progress. Internet business is not fundamentally different from traditional forms of commerce. It simply uses a new medium to link customers and suppliers. But compared with the legal problems arising in the traditional business activities, the problems arising from e-commerce can be unique. The disputes that we may encounter during an e-commerce process may be very different from those we meet during traditional business process, though some of them may be very similar.

Thus, e-commerce needs specific laws that can settle the disputes arising in an e-commerce process. These legal problems cover areas such as e-contracts, e-payment, e-commerce security, intellectual property, consumer rights and privacy protection, and legal liability. Some of these problems have not been given sufficient attention by the Algerian state, while initial solutions to others have been provided.

The purpose of these regulations is to encourage greater use of e-commerce by breaking down barriers and to boost consumer confidence by clarifying the rights and obligations of businesses and consumers. The Algerian government is working to make it easier and more reliable to use electronic communications in business and personal transactions. This includes a commitment to provide government services online wherever possible.

1) Access Regulation

In 2005, the MPT was assisted by a United States funded project, the Internews Network Global Internet Policy Initiative (GIPI), which is a project aiming to assist the policy and regulatory actions needed to address the identified constraints on access to and use of the Internet in Algeria. At that time, the MPT and ARPT had been focusing on important policy and regulatory decisions aimed at liberalizing the telecommunications sector in order to expand Internet access.

In addition to the MPT and ARPT, the Ministry of Higher Education has also played an important role in the ICT field, especially through the Scientific and Technical Information Research Center (CERIST). In 1994, the state-owned CERIST was the first institution to offer an Internet service before market liberalization. It also provides Internet facilities to most research organizations. In 1998, the government started licensing private ISPs in order to keep up with the increasing demand. By 2007 there were 71 licensed ISPs, but only 39 were actively operating. In 2011, almost half of the country's ISPs lost their licenses due to unpaid license fees (Lange, 2012). Most ISPs in Algeria buy their international bandwidth from AT. The major ISPs in Algeria are: CERIST, Djaweb, EEPAD, IcosNet, SLC, and Swan Informatique (Lange, 2010).

Only Algerian citizens are allowed to provide Internet services for commercial purposes. Requests to provide such services must be addressed to the Minister of Telecommunication setting out details of proposed services and modes of access. A technical study will specify the architecture, facilities, software, partners as well as modes of connection.

Although Internet access in Algeria is not restricted by technical filtering, the state controls the Internet infrastructure and regulates content by other means. Internet users and Internet service providers (ISPs) can face criminal penalties for posting or allowing the posting of material deemed contrary to public order or morality.

2) Domain Name Registration

Dot.dz is the country code Top-Level Domain (ccTLD) for Algeria. It is administered by Network Internet Center (NIC.DZ), a subdivision of CERIST. NIC.DZ is the body approved by the Internet Corporation for Assigned Names and Numbers (ICANN) for the management of ccTLD.dz. The two-letter country code "dz" is derived from Dzayer, the local name for Algeria.

However, the Algerian domain name registry is operated by NIC.DZ, and CERIST oversee the management of the Algerian domain name registry. An application for a .dz domain name must meet certain requirements (NIC-DZ, 2012): (1) it must be an organization with a permanent presence in Algeria; (2) individuals cannot apply for domain names—only company names or trademarks are allowed for domain names; (3) the registrant must have completed trademark registration in Algeria—this can be a local Algerian trademark or an international trademark designating Algeria; (4) the requested domain name must match the company name or trademark name, and generic names or those which are offensive, misleading, or contrary to Algerian law is prohibited; (5) Algerian domain authorities require name-servers located in Algeria.

The valid registration is carried out through entities of registration delegated by the NIC.DZ and called the *registrar*. The registrar transmits the requests to the NIC.DZ and manages domain names on behalf of its customers' accounts. The procedure of registration must be done online through the NIC.DZ website and it takes approximately three weeks. NIC.DZ does not support internationalized domain names.

Algeria's domain name system faces some problems. Firstly, due to the popularity of (.com) domain names, some Algerian companies prefer a (.com) registration to a (.dz) one. Secondly, individuals can not apply for a domain name only company names or trademarks are allowed. Thirdly, the registration of a (.dz) domain takes approximately three weeks, which is a long period compared to other registration authorities.

3) Encryption

Encryption is considered as an important element of the infrastructure for e-commerce (Li & Suomi, 2006). Encryption technology offers both substantial benefits, by protecting the confidentiality, authenticity, and integrity of business, and personal information, as well as substantial risks, by making it easier for criminals and terrorists to conceal communications regarding illegal behavior.

While most countries recognize the benefits of encryption, the associated risks have led many governments to impose controls on the import, sale, use, and/or export of encryption software, hardware, and technical information. Algeria's is one of these governments. In Algeria, the ARPT is the organization responsible for authorizing and controlling the import, sale, and use of encryption software and hardware. The Algerian legal framework of encryption still lacks regulations that define encryption products and monitor their domestic use.

4) The Secrecy Regulations

In terms of legislation, Algeria passed its first cybercrime law in August 2009, law No.09-04 on the prevention and fight against crimes related to ICT (ARPT, 2009). Prior to that, no provision was made for crimes committed through the Internet. The law gives the government powers to place computer networks and websites under surveillance if it is suspected that they pose a threat to national security.

Concerning online content, ISPs are responsible for all published content hosted on their servers, and they are required by the same law to control and swiftly remove content deemed to be illegal or contrary to public morale.

5) Personal Data Privacy and Security

The challenge for regulation is to promote favorable market conditions in which competition can flourish and foster innovation, while at the same time ensuring that consumers' interests are protected. Privacy and security are two critical concerns for both consumers and e-commerce websites (Jones, 2003). How to get private data security and effective privacy protection on the Internet should be solved in the development of e-commerce in any country by the legislator. Currently there are no legal guarantee of privacy on the Internet in Algeria. Developing a strong e-commerce platform relies heavily on issuing legal privacy policies in order to protect consumer privacy and security.

6) Consumer Protection Regulations

In e-commerce, consumers can be at risk. Some illegal behavior in e-commerce can infringe on consumers' benefits, e.g., fraud, bad quality of products or services offered by online sellers, and so on. Algeria has a framework consumer protection law, namely the Consumer Protection Law (CPL), issued in 1989 (Mehta, 2006). The law provides general rules for consumer protection and covers several areas for protecting consumers' interests, and it covers both products and services. Further consumer protection rights are provided by additional acts and regulations, including acts on responsibilities for product quality, obligation to guarantee and aftersales service, obligations in relation to product compliance and the obligation to inform the consumer of any particular conditions or limitations. The law also empowers the government to issue decrees to regulate specific areas. Moreover, a national council for consumer protection has been created, the role of consumer organizations has been determined, and a system of enforcement has been established. The majority of these measures applies to online trading and provides the basis for the fundamental legal guarantees on the protection of consumers' rights.

Despite the laws and organizations available to protect consumer benefits, they cannot solve all the problems related to consumer benefits that arise from e-commerce. Issuing detailed consumer protection laws or regulations regarding e-commerce is important in protecting consumer rights in e-commerce.

3.1.3 Talent Supply

Development of e-commerce depends mainly on the availability of highly skilled professionals. Although Algerian higher education institutions have cultivated a considerable amount of talent in the e-commerce field during the past several years, there is a gap between the supply and the demand of e-commerce professionals in both quality and quantity aspects. Moreover, their knowledge cannot meet the requirements of enterprises. Some of them are good at technology without managerial knowledge, or versed in business without knowledge in technology, which eventually results in the coexistence of supply over demand and demand over supply for e-commerce talents in Algeria.

Facing this reality, Algerian higher education institutions must perform a reality check and reform their e-commerce programs. Here are some suggestions:

- 1) the programs should be guided by market demand and should offer students the opportunity to specialize in different areas;
- 2) the program should be practice-oriented and make fostering students' application skills a top initiative;
- 3) the program should foster students' innovation ability and should encourage them to start up their own businesses.

3.2 The Related and Supporting Industries Perspective

The development of e-commerce needs substantial support from the financial industry and logistics industry, and depends mainly on the continuous development of both of their infrastructures. In Algeria, the payment systems and logistic services still cannot meet the requirements of e-commerce. The e-payment platform is still in the

development stage. Moreover, the logistics system in Algeria is inefficient, which impedes e-commerce development as well.

3.2.1 Payment Systems

There are 20 banks in Algeria today: 14 of them are private sector banks which are subsidiaries of large international banking groups. The six public banks are : Banque Exterieur d'Algerie (BEA), Banque Nationale d'Algerie (BNA), Banque de l'Agriculture et du Developpement Rural (BADR), Caisse Nationale d'Epargne et de Prvoyance (CNEP), Credit Populaire d'Algerie (CPA), Banque de Developpement Local (BDL), and Caisse Nationale de Mutualite Agricole (CNMA). BEA and BNA are the two largest banks in the country, holding half of the banking sector's total assets.

There are currently around ten pending requests for banking licenses and the government decided in 2008 to freeze new authorizations.

The banking sector in Algeria is still in its development stage. The Bank of Algeria is responsible for regulating the money supply, directing and supervising the distribution of credit, supervising the proper management of financial commitments with regards to foreign countries, and regulating the foreign exchange market.

The Society for the Automation of Interbank Transfers (SATIM) is the entity responsible for developing and managing payment platforms and operates Algeria's national Interbank card (CIB) debit card scheme and national ATM and EFTPOS networks. Currently, 16 banks and the Post of Algeria participate in SATIM. The initial goal of SATIM was to develop a strong e-payment platform in order to meet the requirements of major companies, such as Algerian airlines, hotels, and so on, and satisfy their need to complete transactions online.

In 2009, Algeria tested its new e-payment platform using a CIB card (Oxford Business Group, 2010), which allowed consumers to pay monthly bills online for the first time. By the first quarter of 2010, there were a total of 656,833 CIB cards in circulation nationally, more than 621 ATMs in operation, and 2,750 points of sale (Oxford Business Group, 2011).

Despite the initiatives undertaken by the state in order to modernize the banking sector and the development of payment systems, people have limited access and/or a lack of desire to use banking services, especially after Algeria's biggest financial scandal (the al-Khalifa scandal) which minimized their trust in the country's banking sector. It remains, essentially, a cash-based economy.

Nevertheless, the banking sector in Algeria offers promising opportunities. Given the small percentage of the population currently using banking products and services, along with the growing population, of which over 68% are under 35 years old (Oxford Business Group, 2012), the sector expects higher demand for banking services in the years to come. The biggest challenges for the banking system are regenerating consumer confidence and creating a culture of e-payment.

3.2.2 Logistics Systems

The logistics industry is still in its early stage in Algeria. Its primitive and unreliable distribution capabilities present additional difficulties and constraints on the development of e-commerce for large-scale B2B and small-scale B2C transactions. The Algerian post office, which covers all cities in Algeria, is one alternative channel. When shopping online, people usually prefer to choose low-priced delivery methods. Postal delivery seems to be the best alternative for consumers in Algeria. However, it seems unable to meet the requirements of e-commerce, because the Algerian postal system is inefficient and lacks staff with the necessary skills to work in an e-commerce environment. Some foreign competitors have joined this industry, but the prices they charge are excessively high for ordinary online shoppers or enterprises.

Underdeveloped transportation infrastructure, fragmented distribution systems, limited use of technology in the distribution and logistics sector, regulatory restrictions and local protectionism all result in inefficiency and unreliability of logistics in Algeria. The logistics service needs more time to develop in order to meet the requirements of e-commerce.

3.3 *The Strategy, Structure and Rivalry Perspective of the Firm*

Organizational factors, such as perceptions of e-commerce, the degree of information technology application, management model, executive support, and so on, exert a strong impact on e-commerce development (Stylianou et al., 2003). There were more than one million companies in Algeria at the end of 2012 (Ambassade de France en Algerie, 2012). For Algerian companies, developing a good e-business is a critical and significant step in order to achieve competitive advantage and generate profit.

E-business can help companies reduce transaction costs, enhance communication with suppliers and consumers and reduce intermediary links between them, improve new product development and service capabilities, reduce inventory, shorten the production cycle, and so on. In any business it is not what you sell that brings consumers back; it is what you give away. Therefore, a qualitative approach was taken in order to define the most important variables that Algerian companies should consider in developing an e-business. There are eight basic guidelines extracted from e-commerce development strategies in literature, which we will discuss in detail in the following subsections.

3.3.1 Increased Personalization and Customization of Product Offerings

Increased personalization and customization of product offerings is one of the major emerging trends distinguishing products in electronic marketplaces from their traditional counterparts. The ultimate objective is to provide customized products and services according to individual preferences, whether expressed or inferred (Bakos, 1998). Increased selling effectiveness comes from being able to design appropriate products to satisfy the needs and the desires of individual consumers at the purchasing moment.

However, the consumer should be offered supplementary products and complete personalized packages. The concept of *choice-boards* (also known as *design systems*, *toolkits*, or *co-design platforms* in literatures (Piller et al., 2004)) that was introduced by Slywotzky (2000) allows customers to design their own products and services (Slywotzky et al., 2000). More specifically, choice-boards are interactive online systems that permit individual customers to customize and design their own products by choosing from a menu of attributes, prices, components, and delivery options. As customers gain control over the design of products, competition within and among industries will take a whole new shape.

In addition, in the process of tailoring products in accordance with the consumers' preferences, Algerian companies should control the scope of personalization and customization of product offerings in order to generate benefits from it and avoid consumer confusion from the huge array of choices and price increases which accompany it.

3.3.2 Building Confidence (Trust)

Trust is a foundation of e-commerce (Du et al., 2010). It is a long-term proposition that may be tough to build and easy to lose (Head & Hassanein, 2002); in other words, the growth and success of e-commerce relies heavily not only on the great convenience of conducting transactions over the Internet, but also on consumers' willingness to trust an online merchant.

There are four reasons why consumers may fear conducting transactions online: firstly, misuse of personal information, such as using it for marketing solicitations or sharing it with other parties; secondly, concerns about product quality; thirdly, the high rates of bank account or credit card fraud; finally, concerns about vendor promise-keeping related to delivery time and the full refund or replacement of products which are returned. Hence, the seller should apply various functions and services in order to generate trust: for example, reputation mechanisms, matching services, personalization options, authentication features, quality assurance, payment processing, and secure communications (Bailey & Bakos, 1997; Bakos, 1998; Coles & Smart, 2011; Sarkar et al., 1998; Verhagen et al., 2005).

3.3.3 Building Virtual Communities with Consumers

Companies of any size can use virtual communities to open lines of communication with their customers in a mutually beneficial way (Stylianou et al., 2003). In these virtual communities, individuals share their thoughts about product offerings and gain the insights of other knowledgeable users (Pitta & Fowler, 2005), and satisfied consumers will attract more consumers to the proposed products and services, which helps the company achieve its business objectives and increases loyalty to it and its product line. The growing number of people sharing their product or service interests, preferences and experiences presents a potential opportunity for companies to improve their future offerings and build brand awareness and loyalty, and on the other hand to help customers get more value in the future.

3.3.4 Fostering Loyalty with Rewards

Building a perfect website and offering the best deals in order to attract the consumer are only the first steps in a successful e-commerce relationship. The real challenge lies in ensuring that the customer returns to the website time and time again. Therefore, it is important to develop an appropriate reward system to keep customers, reward them for their loyalty, and reward those who bring in other customers. Reward programs could be in the form of lower prices and transaction costs, free shipment, VIP customer services, and so on.

Eventually, all reward programs are strategies to foster loyalty, not create it, which is great if the company already has a base of loyal followers. If the company wants to create loyalty, it has to do good business. The confidence in the firm felt by customers after years of positive transactions will drive loyalty and revenue more than any other tactic (Chang & Chen, 2009; Srini et al., 2002).

3.3.5 Increasing Consumers' Social Sharing Behavior

Motivating consumers to share e-commerce information such as product details and discounts on social networking sites (Facebook, Twitter,...) is critical opportunity for companies to benefit from social media traffic, especially if we consider that the number of Facebook users in Algeria exceeded 3.8 million users in September 2012 (Internet World Stats, 2013), according to latest statistics from the company. It is simple for website administrators to add several social sharing buttons on their web pages; these shares can generate traffic back to the site, which is important for e-commerce websites. This method is more efficient compared with traditional sharing media such as email or messengers, which are normally used as point-to-point communication channels (Liu & Sutanto, 2011).

3.3.6 Enhance Consumer Privacy and Security

Security and privacy concerns in relation to transactions are not new concepts; many consumers are afraid to provide personal information or use their debit or credit cards over the Internet due to the risk of privacy violation. Privacy violation refers to the illegal or unethical acquisition, storage, sale, and use of private information without the awareness and/or consent of the consumer. These actions can result in personal or monetary harm or damage (Head & Yuan, 2001).

Although information collection is necessary to provide many valuable business services, the excessive and inappropriate collection of personal information may damage customer confidence and drive them away. It is important to maintain a balance between the legal collection of information and protecting the privacy of consumers. However, strong consumer data privacy protection rules and strong secure mechanisms are critical steps towards user acceptance and adoption of an electronic marketplace (Head & Yuan, 2001; Smith & Shao, 2007).

3.3.7 Content and Information Provision

Ensuring the website is unique, original in content, easy to use and navigate, and frequently updated are key factors of successful e-commerce websites. In addition, information should be shown in a form that is clear, understandable, and sufficient for the consumer. Sellers should provide the following information to everyone accessing the website: seller identity, location, and any accreditation sufficient to enable consumers to verify the seller's legitimacy; any geographic limitations regarding where a product or service is for sale; fair and accurate descriptions of products or services for sale; level of privacy protection; security mechanisms available to consumers to protect the integrity and confidentiality of the information being exchanged; the complaint handling procedure, and so on (Working Group on Electronic Commerce and Consumers, 2011). Consumers should be confident that they can find information and assistance on the site.

3.3.8 Interface Properties (Branding and Usability)

The user initially evaluates the site via its interface properties (Coles & Smart, 2011). These are the surface, "make-or-break" cues considered in the first impressions of a website (Egger, 2001). The appeal of the interface, in terms of graphic design and layout, can directly affect acceptability and usage of the system. The two factors under consideration here are branding and usability. The most specific attributes of branding are the easy identification of the company and its activity sector by means of a prominent logo and slogan. Only very strong brands enjoy a constant flow of consumers without massive marketing. The aspects related to usability are the architecture of the information, the familiarity of metaphors, the transparency of terminology, and the reliability of the system. Generally, ease-of-use is perceived as a sign that the company understands, cares for, and respects its customers (Egger, 2001).

3.4 The Demand Perspective

Demand can be classified into two types in the e-commerce market: demand from enterprises (B2B) and demand from individual consumers (B2C). Increase in demand has a great influence on competitiveness.

3.4.1 Business Demand for E-commerce

The potential revenues for B2B e-commerce are impressive and the benefits are numerous, but business demand for e-commerce is still very rare in Algeria. Information services are the main content in the B2B arena. The main barriers to B2B e-commerce in Algeria are: resistance to change, costs of implementing e-commerce (costs

include planning, procuring hardware and software, maintenance and telecommunications charges), security risks, lack of trust, and supplier issues if they do not support or have an e-commerce platform. In addition, following the technology is another barrier, new technologies often emerge and companies that choose to build a certain e-commerce platform will lose out if new standards are adopted.

Therefore, it has been shown that three things are necessary for the adoption of Internet-based trading: firstly, businesses need to clearly see the potential benefits; secondly, they must be organized so as to be able to take advantage of these benefits; and finally, external pressure or influence may be required (Mehrtens et al., 2001).

3.4.2 Consumer Demand for E-Commerce

The demand for e-commerce from individual consumers is still in its early stages, though it will have great potential in coming years. Consumption behavior and the attitude of Algerian individual consumers have a great impact on B2C acceptance and development in Algeria. According to statistics on the purpose of Internet use taken from WebDialna (WebDialna, 2012), 74.5% of Internet users in Algeria use the Internet as an information source, 78.2% for e-mails services, 39.8% for advertising, 15.7% for e-Government services, and 20% for doing business, while there is no specific number for the use of online banking services. Individual consumers still prefer traditional channels to purchase products and services because of a lack of available credit cards and trust in the banking sector, a lack of awareness of their rights and responsibilities as consumers, and the security risks.

Meanwhile, the cost of a computer is high in proportion to the average income in Algeria, and no more than 1.07% (Oxford Business Group, 2010) of the people have computers to access the Internet. Furthermore, lower-paid workers often cannot afford the cost of Internet subscription, where the fixed Internet subscriptions was 0.58 per 100 inhabits (Oxford Business Group, 2011), fixed broadband was 2.54 per 100 inhabit (United Nation, 2012), and the ADSL prices range from 1,028 DZD (USD 12.77) for 256 Kbs to 2,019 DZD (USD 25.08) for 1 Mbs per month, and it acceded 10,600 DZD (USD 131.71) per month for 8 Mbs (Algerie Telecom, 2013). In order to increase the number of PCs and Internet access across the country, the MPT launched operation OUSRATIC in 2005, which aimed to equip every household in Algeria with a PC or laptop by the end of 2010 in order to increase Internet penetration in the country, thereby moving Algeria towards becoming an information society. Following the success of operation OUSRATIC, which was operational between 2005 and 2010, the MPT signed a framework agreement to roll out OUSRATIC II by the fall of 2012. Computers are being made available to the general public through an initiative involving financing arrangements on three-year payment contracts. When the majority of people do not have computers and Internet access, e-commerce becomes difficult.

In addition, levels of consumer knowledge of IT and education levels also play a big role in influencing purchasing behavior over the Internet and the acceptance of e-commerce. Younger generations are more likely to make a purchase using e-commerce than older generations because they have more knowledge in the field of computer technology compared to the older generation. Therefore, it is important to continue promoting and enhancing consumers' awareness and knowledge of their rights and responsibilities, government policies, and IT use in order to improve their skills and their recognition of e-commerce benefits. Recognition of the risks and benefits of e-commerce is a strong driver for consumers' acceptance and use of it.

4. Conclusion

The development of successful e-commerce relies largely on a number of different factors. This study focuses on the current condition of e-commerce development from four set of perspectives introduced by Porter. The study shows that the factors that hinder e-commerce development in Algeria are: (a) lack of a reliable and secured backbone, in terms of a widely accessible and fully interconnected high-speed network that will guarantee the availability of bandwidth sufficient for the requirements of e-commerce, (b) lack of a comprehensive regulatory framework that supports and controls the adoption of e-commerce in the country and clearly defines and protects the rights of all parties, (c) the lack of highly skilled professionals, (d) the limited use of credit cards due to the lack of existing culture and awareness of the usage of credit cards, as well as the lack of trust in electronic means, coupled with an insecure financial platform, and (e) unreliability and inefficiency of logistics infrastructure.

Even though Algeria is aware of the role that can be played by ICT and e-commerce in the economic development, but this awareness as well as the reactivity for the implementation took place differently. The majority of North African countries (such as Egypt, Morocco and Tunisia) has made a significant progress in the area of e-commerce because they considered it as an important component of their ICT strategies. Whereas in Algeria, it is relegated to a secondary stage reliant on the results achieved by the ICT strategies. In addition, the

previous neighbor countries have already succeeded in the integration of e-commerce in many fields, whereas Algeria is still at the stage where it studies the legal environment prior to the development of e-commerce.

For policy makers and corporate leaders, this study gives insights as to why Algeria is so far from a real implementation of e-commerce. By understanding the reasons behind the lack of e-commerce in the country, appropriate procedures and incentives system can be better provided to encourage e-commerce adoption.

One limitation of this study is the lack of literature on the adoption of e-commerce in Algeria markets. Finally, in Algeria, the development of e-commerce has been relatively slow, but is expected to pick up speed in the coming years.

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