Chapter 1.7
An Overview of E–Commerce Security and Critical Issues for Developing Countries

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ABSTRACT

Deficient information and communication technologies (ICT) infrastructure, lack of awareness on e-commerce issues, network payment and secure transaction services present enormous challenges to developing countries. For e-commerce to be a viable tool for trade in developing countries (DC), a "secure infrastructure" which makes possible the electronic exchange of financial transactions is a necessary prerequisite. There has been significant research on e-commerce security, although most of these studies have focused on developed countries. Less attention has been paid to underdeveloped countries that face different circumstances due to the above challenges. From technological perspectives, this work discusses important issues of e-commerce security for developing countries in regards to lack of fraud repression and justice in those countries.

INTRODUCTION

When the Internet broke with its military origins and its use for interconnecting researchers among university campuses, it offered all kind of services (Tiako, 2003a) such as multimedia from where one can read newspapers, listen to radio, purchase products, etc. Almost all countries in the world adopted the Information Technology and Communication over the Internet. It is the most effective means and economic way to get information, to be trained, to advertise, to buy products and services at lower prices.

United Nations Children's Fund (UNICEF), United Nations Educational, Scientific and Cul-

tural Organization (UNESCO) and several other structures of United Nations (UN) consider ITC as an integral part of the strategy to reduce poverty. United Nations Conference on Trade and Development (UNCTAD) report on electronic trade and development published in 2003 defined the sectors in which developing countries are able to exploit the possibilities of electronic commerce to maximize their profits. Electronic commerce will provide developing countries with the possibility to increase their market space by offering online services to international customers, without traditional intermediaries.

The Internet provides developed countries with opportunities to de-localize services requiring heavy labor in developing countries. The benefits are then used to diversify their economy and to improve the living standard of their citizens.

Currently, e-commerce revenue in developing countries is miniscule in comparison to that found in advanced economies (Hoffman, 2000). Most e-commerce transactions occur between customers and sellers in the progressive economies of the United States, Canada, and Western Europe (Montealegre, 2001). Most of the world's population, however, exists outside the borders of these countries. The state of e-commerce in developing countries is similar to what it was in the United States in the mid-90s (Hawk, 2001). Predictions are variable, but they tend to point to significant growth of Internet access among businesses and consumers in many developing countries within the next five to ten years (McConnell, 2000).

E-commerce is one of the Internet's applications that include Internet services (Tiako, 2003a) for trade and finance. E-commerce is done among companies or between companies and individuals, and involves crucial financial transactions (Gritzalis & Gritzalis, 2001). The economic stakes are so significant during financial transactions that e-commerce systems must sufficiently be protected to prevent possible financial embezzlement. Such fraudulent activity can cause losses of a company's money (Zhu, 2002), equipment or

goods to profit other companies or individuals. That is a crucial factor that can heavily discourage developing countries' businesses to join the e-marketplace (Tiako, 2003b).

Because emerging countries do not have enough structures to track, reprimand and use the law to compensate for the loss of funds (Summers, 1994), equipment or goods, an Internet system for preventing or reducing any kind of fraud that could appear during e-commerce transaction is necessary. For this reason, dealing with confidentiality and security issues (Mukti, 2000; Nugent & Raisinghani, 2002) are essential in e-commerce infrastructure for developing countries.

Consequently, an exploratory study conducted in the Brazilian market (Critical Success Factors, 2004) shows that the factors regarding security provided by the online stock broker was ranked as the single most important factor in the process of choosing an online stock broker. In the same investigation, 85% of respondents classified security certification of the electronic broker's Web site as very important. This supports the idea that security issues are fundamental in e-commerce for developing countries (Jennex, Amoroso & Adelakum, 2004). Several works have been done in all facets of e-commerce for developing countries, but very few tackle issues of e-commerce security technology in order to pre-empt the weakness of justice and arbitraries in these countries.

This work presents an overview of e-commerce securities and its critical issues for developing countries from technological perspectives.

BASES AND PRINCIPLES FOR E-COMMERCE TRANSACTIONS

In order to buy goods or services over the Internet, e-commerce transactions are qualified as business-to-business (B2B) when they involve companies, business-to-consumers (B2C) when transactions are between companies and consumers. The transactions are also qualified as private-

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