Chapter 1.1
History of E-Commerce

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INTRODUCTION

E-commerce or electronic commerce, also known as e-business, refers to the transaction of goods and services through electronic communications. Although the general public has become familiar with e-commerce only in the last decade or so, e-commerce has actually been around for over 30 years. There are two basic types of e-commerce: business-to-business (B2B) and business-to-consumer (B2C). In B2B, companies conduct business with their suppliers, distributors, and other partners through electronic networks. In B2C, companies sell products and services to consumers. Although B2C is the better known to the general public, B2B is the form that actually dominates e-commerce in terms of revenue.[1]

The concept of e-commerce is related to notions of Internet economy and digital economy. All these concepts relate to the use of new information and communication technologies for economic activities, but with different focuses. Internet economy refers to the economic activities that generate revenue from the Internet or Internet-related products or services (Costa, 2001). Therefore, pre-Internet e-commerce, as will be detailed in the following section, cannot be called Internet economy. On the other hand, some activities, such as building Internet connections for commercial purposes, are a part of Internet economy, but they are not necessarily e-commerce. Digital economy is based on digital technologies such as computer, software, and digital networks. In most cases, digital economy is the same as e-commerce. However, not all activities in the digital economy are e-commerce activities. For example, purchasing computer gear from a storefront retailer is not an activity of e-commerce, although it certainly is a key component of the digital economy. Hence, e-commerce, Internet economy, and digital economy are closely related but have different concepts.

E-commerce has been perhaps one of the most prevalent terms in this digital era. Although e-commerce was once looked upon simply as an expressway to wealth, it has actually transformed the way people conduct business. An historical analysis of e-commerce will provide insights into

the evolution of the application of information and communication technologies in the commercial arena. Furthermore, an analysis of the evolution of e-commerce in the past as well as its present state will enable us to project future trends in e-commerce.

THE INFANCY OF E-COMMERCE: BEFORE 1995

E-commerce was made possible by the development of electronic data interchange (EDI), the exchange of business documents from one computer to another in a standard format. EDI originated in the mid-1960s, when companies in transportation and some retail industries were attempting to create "paperless" offices. In the mid-1970s, EDI was formalized by the Accredited Standards Committee of industry representatives, and more varied companies began to adopt EDI through the 1970s and 1980s. As the first generation of e-commerce, EDI allowed companies to exchange information, place orders, and conduct electronic funds transfer through computers (Sawanibi, 2001). However, the diffusion of EDI was slow. By the late 1990s, less than one percent of companies in Europe and in the United States had adopted EDI (Timmers, 1999). The huge expense for getting connected to an EDI network and some technical problems limited the diffusion of EDI.

The second generation of e-commerce is characterized by the transaction of goods and services through the Internet, which started as a research tool, but has generally evolved into a commercial tool. The inception of the Internet can be traced back to the 1960s, when the Advanced Research Projects Agency Computer Network (ARPANET), the precursor to the Internet, was established for research in high technology areas. The nodes of ARPANET increased from 4 in 1969 to 15 in 1971. The term *Internet* actually did not come into use until 1982, when the number of hosts on the ARPANET rose to 213. Then, in 1983, the Internet Protocol (IP) became the only approved way to transmit data on the Net, enabling all computers to exchange information equally. In 1986, the National Science Foundation (NSF), a government agency, launched the NSFNET, with the purpose of providing high-speed communication links between major supercomputer centers across the United States. The backbone of the NSFNET then became the cornerstone of the TCP/IP-based Internet (Anthes, 1994).

By the end of the 1980s, the Internet had still maintained its noncommercial nature, and all of its networks were based on the free use of the NSFNET backbone, directly or indirectly. The primary users were still scientists and engineers working for the government or for universities. As a matter of fact, academics or researchers were the only ones capable of using the Internet, because a sophisticated understanding of computer science and a high level of computer skills were necessary for Internet use at that time (Eccleson, 1999).

It was the development of a graphical user interface (GUI) and the navigability of the World Wide Web (WWW) that changed the nature of Internet use. In the early 1990s, the creation of the hypertext markup language (HTML), with specifications for uniform resource locators (URLs) enabled the Web to evolve into the environment that we know today. The Internet was therefore taken "out of the realm of technical mystique and into common usage" as it became usable for ordinary people without sophisticated understanding of computer science and techniques (Eccleson, 1999, p. 70). Hence, with the increasing number of Internet users, the Internet became attractive to the business world.

Perhaps the most significant milestone, however, came in 1991, when NSFNET decided to lift commercial restrictions on the use of the network, and thereby opened up opportunities for e-commerce. Advanced Network & Services (ANS), established by IBM, MCI Communications Corp., and Merit Network, Inc., provided Internet connection to commercial users without govern-