

Chapter I

E-Commerce Standards: Transforming Industry Practice

Stephen Hawk

University of Wisconsin-Parkside, USA

Weijun Zheng

University of Wisconsin-Parkside, USA

ABSTRACT

This chapter introduces XML-based e-commerce standards that have emerged within the past decade. The chapter describes the history of e-commerce standards, and then presents representative horizontal and vertical e-commerce standards by detailing their functionality, and how their development has been shaped by various stakeholders. The chapter also describes the potential for these standards to transform B2B practice by providing three industry examples. The chapter finishes by suggesting directions for future research by describing factors that could influence the future of these standards. Due to the central role these standards are likely to play in future e-commerce activity, most firms will at some point need to become aware of their capabilities, their application, and potential impact. This chapter is intended to provide an overview of the situation as it is understood today, and

presents likely scenarios for how these standards may progress.

INTRODUCTION

E-commerce (electronic-commerce) refers to business over the Internet. The two major forms of e-commerce are business-to-consumer (B2C) and business-to-business (B2B). While B2C caters mostly to consumers, B2B e-commerce refers to one business selling to another business via the Web. According to the Gartner Group, B2B e-commerce is expected to grow from \$145 billion in 1999 to more than \$7 trillion by 2004, which will represent more than 7% of all sales transactions worldwide.¹ Traditional electronic data interchange (EDI) standards are well developed and are what have been used for decades as the basis for pre-Internet B2B e-commerce. However, it has been widely recognized that traditional EDI

will eventually be supplanted by newer Internet-based B2B standards. These standards have only begun to be significantly adopted in select industries the past few years so their impact can be discussed mostly in terms of potential. As a great majority of e-commerce revenue comes from B2B transactions, and most of that comes from transactions carried out via traditional EDI (Knorr, 2002), the newer standards have the potential for becoming a foundation technology for generating a majority of e-commerce revenue in the not-too-distant future.

The mission of this chapter is to introduce these newer e-commerce standards. We begin by describing some basic background and history of e-commerce standards. The chapter then presents representative horizontal and vertical e-commerce standards by detailing their functionality, and how their development has been shaped by various stakeholders (e.g., formal standards bodies, vendors, etc.). The chapter also describes the potential for these standards to transform B2B practice in industries where they are adopted by providing three industry examples. The chapter finishes by suggesting directions for future research by describing factors that could influence the future of these standards. Although we have tried to reduce the technique jargon, there are still a number of basic terms that are necessary in order to discuss these standards, how they have developed, and are beginning to be used.

BACKGROUND

E-commerce is fundamentally changing both companies' business processes and the value chains in which they operate. Greater automation speeds up business processes and makes them more efficient, promising productivity gains—and greater prosperity—both now and in the future. In order to enable e-commerce, common format conventions, or standards, are fundamental to the success of e-commerce.

A standard is a framework of specifications that has been approved by a recognized standards organization (*de jure* standard), is accepted as a *de facto* standard by the industry or is one of the open standards (Hawkins, Mansell, & Skea, 1995). Standards provide a blueprint for the future of industries, offering both stability and neutrality to a set of specifications. By providing a target for development, standards reduce the time and cost needed to develop systems and services, increase market access and acceptance, and reduce administrative and materials overhead. In today's e-commerce, standards have become a strategic tool for delivering innovation, reducing costs, improving the quality of goods and services produced, and opening new business opportunities (Kotok, 2002a, 2002b).

To better understand why standards are crucial to business, consider a relatively simple process: requesting a quote. Typically, the customer requests a product quote by sending its supplier a message with different kinds of specifications. After receiving the message, a supplier could respond by performing three different activities: checking availability of the product in its inventory; sending back the quote to the customer if its inventory matches the specification; and if not, referring the customer to another supplier. These activities are normally carried out by the supplier's own internal systems that are not visible to the customer. Without a clearly defined dialog between trading partners, the electronic exchange of messages for this transaction would be very difficult to accomplish. Similar to this case, many other transactions and information relevant to e-commerce must also be depicted (or "mapped") electronically in ways so that they can be exchanged between companies. There could be multiple companies in collaboration with one another along a supply chain. These companies normally have very different internal systems, but need to share some aspects of their business processes and exchange many different types of business documents as part of their interactions,

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