Chapter One Introduction

1.1 Research Motivation

Since 1990s and entering the 21st century, Internet technology and electronic commerce (EC) have brought up a complete overhaul on the information and communication technology infrastructure to do business in a new manner where companies try to leverage new technologies to enable a set of complex cross-enterprise business processes allowing entire value chains to share decision-making, workflow, capabilities, and information with each other (Deloitte Research, 2001). This business-to-business (B2B) integration and collaboration improves inter organizational processes, efficiency and competitiveness by enabling rapid, effective real-time between business partners. However, B2B companies often have problems in making their internal information technology (IT) systems communicate with those of their suppliers, customers, and partners (Wangler, Persson, and Söderström, 2001). The eXtensible Markup Language (XML) has become the most promising and used data exchange standard. It represents the most versatile and robust format for exchanging business information. Nevertheless, creating IT support for B2B integration is a complex process, entailing more than using XML to define communication between business partners (Wangler, Persson, and Söderström, 2001).

A self-describing message format is not enough. This requires an integrated platform capable of generating, extracting, and routing business messages across heterogeneous environments (Baum, Dessaux, and Talukar, 2000). There is a need for process integration standard that enables processes to be modeled, deployed, executed, and managed. Recently, international standard organizations, such as RosettaNet, Organization for the Advancement of Structured Information Standards (OASIS), United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), make efforts in the development of process integration standards such as RosettaNet and Electronic Business using eXtensible Markup Language (ebXML).

Due to the different characteristics, conventions and practices of business processes, not all the standards fit the needs of Taiwan corporations. How to define a business process model and framework that utilize existing business-to-business integration (B2Bi) standards and adapt to the domestic characteristics of EC is the most important issue.

1.2 Research Issue

In the application integration of collaborative-commerce (C-Commerce), process-level integration can maximize interoperability and flexibility, but it is very

challenging and time-consuming to define a common business process model. A process modeling standard is required that enterprises can represent processes in models to gain a further understanding of organizational processes and related data, and also build their electronic businesses and collaboration efficiently and effectively. After a closer examination of a well-known B2B integration standard ebXML, we find that a common, agreed-upon and domain-specific process model is needed.

ebXML defines a standard framework for C-Commerce that allows trading partners from different industries to conduct business based on well-defined XML messages within the context of standard business processes governed by standard or mutually-negotiated partner agreement. ebXML adopts UN/CEFACT Modeling Methodology (UMM) as its consistent modeling methodology, the UMM provides a procedure for modeling business processes involving information exchange. It is applicable to most commercial domains. However, it lacks a common process model that is agreed-upon and implies business logic in a specific industry.

1.3 Research Objective

We develop an alternative that combines modeling methodology with domain-specific process model. Through in-depth case study, expert interviews, and literature references, analysis, and comparison, we identify and specify the inter-enterprise business processes of an example industry. Based on UMM, we use ebXML Business Process Analysis Worksheets as a modeling aid to discover, analyze, and construct business process and information model of an example industry. Consequently, Unified Modeling Language (UML) is a formal descriptive technique to record and represent business process and information model. The ebXML Business Process Analysis Worksheets facilitate the discovery and representation of business processes from the top-level step (Business Reference Model) to the lowest-level step (Business Transaction). The objectives of this research can be categorized in four parts:

1. Developing an alternative that combines B2B integration standard and B2B processes of an example industry.

2. Applying standard modeling tools such as UML and ebXML Worksheets to record and represent analysis results.

3. Devising a common process model of a specific industry.

1.4 Research Flow

There are eight steps to conduct this research as shown in Figure1.1. First, we determine the scope and scale of this study on an ebXML-based collaborative commerce business process model. Second, we study the literatures of global logistics to understand the industry background, examine relevant business process modeling standard of C-Commerce and B2Bi to be the research foundation. After deciding the research approach, we proceed to collect and analyze data, develop the process model, and design the system implementation based on this model. We verify the correctness and comprehensiveness of the process model by interviewing with domain experts. Finally, we conclude this research with a few remarks and the future research directions.

1.5 Organization of Thesis

The thesis is organized as follows:

Chapter one introduces this thesis and describes the research motivation, issue, objective, flow, and organization of the thesis.

Chapter two reviews the detailed background of global logistics industry and its related technologies. It presents C-Commerce and B2Bi as well as related integration standards.

Chapter three is the research model, description of analysis methodology and aids, and the data-exchange standard.

Chapter four details analysis result, the process model and framework of global logistics.

Chapter five is the implementation of prototype system.

Chapter six discusses the managerial and technical implications of this research and results.

Chapter seven provides the conclusions of this research and future research efforts.

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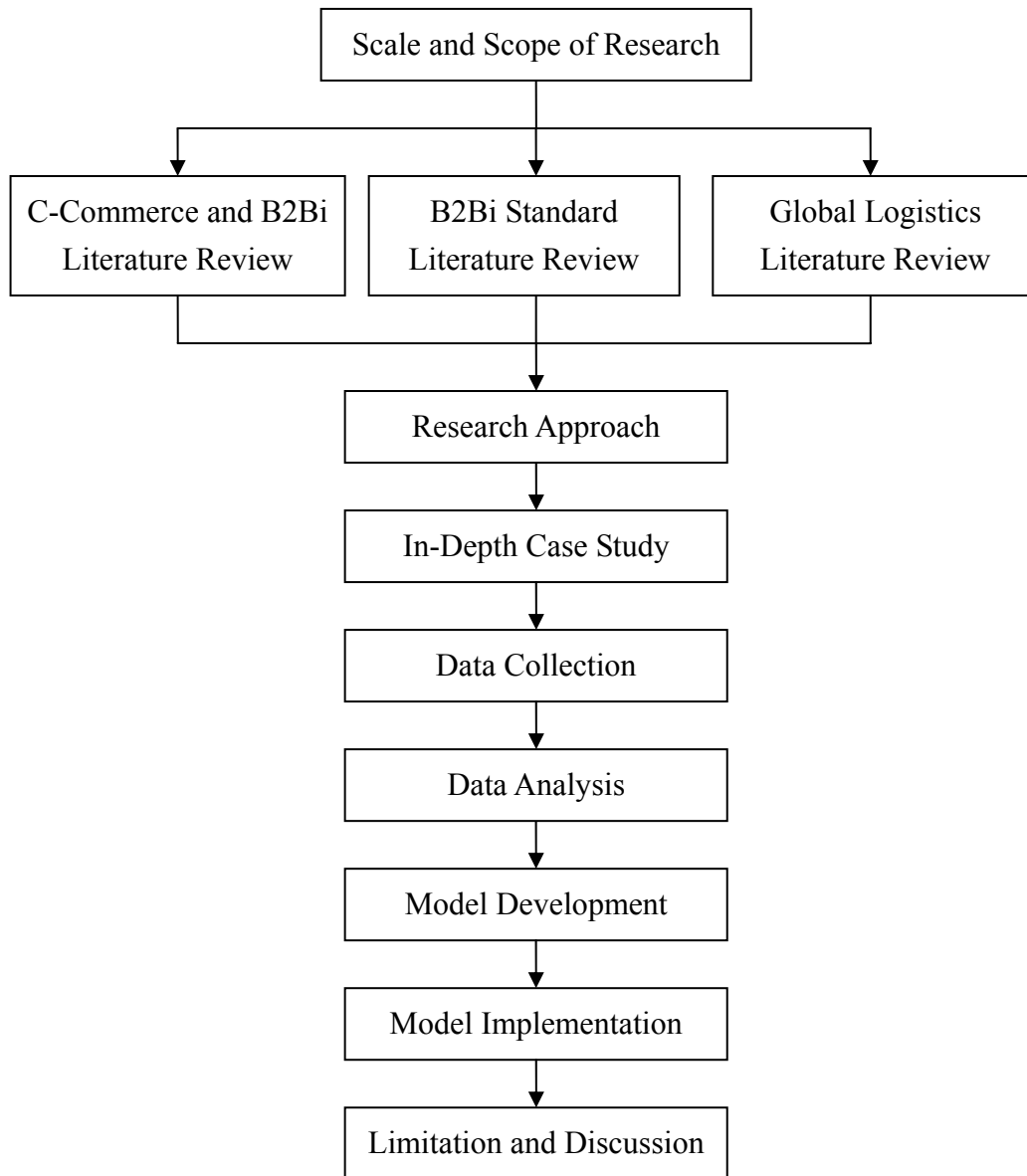
Figure 1. 1 Research Flow