

Chapter 15

Cyber Transportation Logistics: Architecting a Global Value- Chain for Services

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ABSTRACT

In today's global economy, products and services are provided across international borders. The sourcing of these products and services becomes an integral part of international businesses. Information, communication and transportation technologies (ICTT) have made this job significantly more streamlined. However, there is an advantage that big companies, such as Wal-Mart, have over small and medium size ones. While the big companies have the ICTT resources to source globally at will, small and medium enterprises (SME) are much less prepared to do so, resulting in a large competitive disadvantage. By contrasting SMEs with their more successful "big brothers," we highlight the salient ICTT features in a system architecture. This serves as a checklist for any assistance that might be rendered to SMEs and other entities in overcoming their competitive impediment. These findings are the result of numerous international workshops and conferences held in Hong Kong (the export city for a bulk of the Chinese consumer products) and in Arkansas (the headquarters of Wal-Mart).

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INTRODUCTION

In today's information and technology based global economy, the world experiences significant changes in the supply of goods and services. In the United States, call centers are not necessarily located domestically, but across the globe, including India. The biggest global retailer, Wal-Mart, imports a majority of its shelf items from China. In the last count, American Wal-Mart stores import approximately \$15 billion in goods from China each year. Outside the US, Wal-Mart stores are currently located in nine countries. There is an unexpected connection between the former rice paddies in Southern China (now a major manufacturing region for consumer goods) and the remote Ozark Mountains (where Wal-Mart is headquartered). Supply chains are also critical to the public sector, as evidenced from recent experience with natural disasters such as Katrina in the US Gulf Coast and the disastrous earthquake in western China. In these instances, more can be done in delivering relief items to those dislocated in a timely and targeted fashion. The subject of *Cyber Transportation Logistics* aptly captures the interplay between e-commerce, shipments and services across the globe, robust and automatic systems of identification, and the complex worldwide supply chain for goods and services in general.

On an intellectual level, there is a mutual interest amongst selected industries in Arkansas (AR) and Hong Kong, where cyber-transportation-logistics industries are located. As mentioned, AR is the home state for Wal-Mart. Little Rock, AR is also the home for the Acxiom Corporation, a worldwide company specializing in data mining, data warehousing and consumer-market analysis. Memphis, Tennessee (TN), the international headquarters of Federal Express (FedEx), sits at the eastern border of AR. American Freightways, which provides ground operations for FedEx, is based in Harrison, AR. Among competing freight carriers—TNT, UPS—FedEx boasts the first

exclusive right to serve within China, providing a direct air link to the US. Situated at the Pearl River Delta, Hong Kong is the main export hub for Chinese consumer products. While a majority is shipped by boat, high-end items are airlifted through Hong Kong, which is the air-cargo hub of Asia, and in particular, China—the fastest growing economy in the world. We contend that a cyber-transportation-logistics case-study based on this scenario covers the salient Information, Communication, and Transportation Technology (ICTT) factors to provide some useful insights.

On an academic level, research ideas were initiated first from reciprocal faculty visits between the City University of Hong Kong (CityU) and the University of Arkansas at Little Rock (UALR), between the School of Logistics (ISEL), Le Havre, France, and the Arkansas State University. This is followed by a series of workshops and conferences. This chapter summarizes research and instructional discussions and findings resulting from these joint workshops and conferences over the last five years. These discussions include those that took place in FedEx in Memphis, TN, a Wal-Mart Distribution Center in Bentonville, AR, Acxiom Corporation in Conway, AR, the International INFORMS Conference in Hong Kong, an Identity Solutions Symposium at Arkansas State University in Jonesboro, Arkansas, and an International Conference held in the Rockefeller Conference Center on top of Petit Jean Mountain, AR. While this paper focuses on the highlights, supplemental information can be found at the website: <http://syen.ualr.edu/metalab/research/>.

PRIORITIES

With the advent of information/communication technology and efficient transportation, it is an understatement that the world economy is now totally interdependent between even distant lands. For example, as the U. S. and Hong Kong transition from manufacturing-based to knowledge-

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