Chapter 1
Introduction to E-Logistics and E-Supply Chain Management

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ABSTRACT
This chapter provides an introduction to the E-Logistics and the E-Supply Chain Management paradigm. It presents definitions and an overview of Logistics and Supply Chain Management, and the logistics processes of the Supply Chain.

INTRODUCTION

Logistics and Supply Chain Management has been a vital part of every economy and every business entity. Supply Chain Management (SCM) encompasses the management (including the planning, design, implementation and control) of all of the logistics processes (including procurement, warehousing, inventory control, manufacturing, distribution and sales order fulfillment functions) of a business. Both sciences have become prestigious research fields in the past few years. More than 75 journals include these terms in their titles (Folinas, 2012).

The objectives of this chapter are to define and provide an overview of concepts and terms, namely; Logistics, Supply Chain Management, E-Logistics and E-Supply Chain Management (E-SCM). The chapter describes the logistic processes of Supply Chain Management, the relationships between Information Technology (IT), and resulting trends such as greater Supply Chain Integration and Collaboration.

MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

The field of Logistics has existed for some considerable time, defined as: “1. The science of the movement of supplying and maintenance of military forces in the field; 2. the management of materials flow through an organization, from raw materials flow through to finished goods; 3. the detailed planning and organization of any large complex operation” (Collins, 1990, p. 903). This
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definition is indicative of the age and military origins of the term, the latter two definitions are more appropriate to modern business. The second definition describes supply chain management, minus the important references to information and information flow.

Whilst the field of Logistics has been in existence for some considerable time, with strong military associations, the concepts of E-Logistics and E-Supply Chain Management are relatively new. In the early days, logistics was considered not to make much of a contribution to profitability and given little capital investment, process and delivery cycle times were long and global competition virtually none existent.

Beginning with the early days of production systems, the history of production systems has moved on from the limitations of production and supply famously coined by Henry Ford: “Any customer can have any car painted any colour that he wants, so long as it is black”. Kiichiro Toyota, founder of Toyota, started with the production of 20,000 vehicles a year, a very far cry from the production figure at the Ford plants. Identifying that in order to best raise efficiency levels when starting out from limited production volumes, it would be necessary to eliminate stockpiling in the production process, and to achieve this it would be necessary to ensure the Just-In-Time (JIT) supply of parts to all segments of the manufacturing process. Thereby, reducing stockpiling and the need for warehousing of parts, driving out waste, etc. JIT was developed by the Japanese and first used for Toyota. With JIT, supplies and components are “pulled” though the system when and where needed.

Manufacturing processes can involve push or pull production systems. Push is based on sales forecasts which in turn push products into the warehouse, this is also known as “make to stock” and is based on an estimate of how many products might sell. Production of parts pushes the production of the end product. Conversely, Pull systems (the opposite of push), is when a product is made only when a customer order arrives. It is based on actual demand in the market, and is also known as “make to order”. In this case, demand for parts pulls the manufacturing of parts for the end product.

The Push system is not used much as it requires companies to hold massive amounts of stock which will increase warehouse inventory costs. Holding stock will also cause other problems such as stock obtaining defects due to long periods of being on the shelf, this could lead to problems further in the supply chain as damaged stock could be used in production which will produce a bad quality product and the whole production process will have to stop until fixed.

Pull is the most used in mass production with reduced warehouse costs as well as less inventory being held (material is only needed when orders come in). An example is Dell computers, which makes computers to order (specification) when ordered. Pull systems produce products with a short lead time, the time between receiving and delivering the order.

The concept of Lean Management also originated at Toyota in Japan. Lean Management provides a competitive edge by eliminating waste, with the aim that every step adds value to the process.

A Supply Chain is the chain of activities from the raw materials to the customer, a classic supply chain description is: “Farm to Fork”. A typical supply chain involves activities such as sourcing the raw materials, transporting the raw materials for processing, transporting the processed goods for warehousing, before transporting the goods again for packaging, packaging the goods, transporting the packaged goods to a central distributor, before finally transporting the finished goods to local retail outlets and ultimately customers.

A Supply Chain can be defined as the sequence of an organisation. The sequence refers to the facilities (warehouses, factories, processing centres, distribution centres, retail outlets and offices), and functions and activities (purchasing, forecasting, inventory management, information management,