Preface

INTRODUCTION

Logistics and Supply Chain Management has been a vital part of every economy and every business entity. Supply Chain Management 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).

Whilst the field of Logistics has existed for a 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), the concepts of E-Logistics and E-Supply Chain Management are relatively new. Supply Chain Management development can be traced back to the use of modern logistics (circa 1980s). In the early days, logistics was not considered to make much of a contribution to profitability and given little capital investment. Process and delivery cycle times were long and global competition virtually non-existent. Modern Supply Chain Management (SCM) is comprised of five stages: Management, Warehousing and Transportation, Total Cost Management (TCM), Integrated Logistics Management, SCM, and e-SCM (Ross, 2003).

Evolutions in electronic business, especially business models relying on new developments in logistics and supply chain management, challenge traditional channels for creating value for customers. The adoption of electronic supply chain models not only helps enterprises to improve their business processes today, but also enables them to incorporate new technologies for e-commerce solutions in the future. This book examines how organisations are restructuring their supply chains in order to accommodate new technologies and new ways of doing business on the Internet. In particular, it explores the creation of integrated supply chains, the development of virtual business communities, and how business process re-engineering and business operations re-orienting enable dynamic responses to new customer demands.

The aim of this book is to give students, researchers, and practitioners a critical understanding of current academic and pragmatic approaches to E-Logistics and E-Supply Chain Management. With this book, readers should be able to:

- Assess the structure, nature, and management of e-logistics and the changing external environment in which businesses operate;
- Evaluate the tools and techniques logistics managers may use to measure cost and performance;
Examine the role of logistics in ensuring customer satisfaction in different areas of business activity;
Evaluate logistics trade-offs in relation to integrated strategy;
Debate the impact of logistics decisions on the environment and global industries;
Analyse the contribution of e-business logistics to competitive strategy, productivity, and value advantage;
Judge critically concepts and methods applicable to the implementation of e-logistics;
Identify how major functional areas within business influence e-logistics; and
Engage in and reflect upon problem solving in e-logistics.

The book contains 15 excellent chapters (organised in 3 sections) that examine most of the key aspects of E-Logistics and E-Supply Chain Management. The first section examines the Concepts of E-Logistics and E-Supply Chain Management:

- Introduction to E-Logistics and the E-Supply Chain
- E-Supply Chain Collaboration and Integration
- Information Technology (IT), Electronic Commerce, and Supply Chain Management (SCM)

The second part of the book looks at the elements of E-Logistics and E-Supply Chain Management:

- Procurement
- Distribution and Transport
- Fulfilment
- Traceability
- Customer Relationship Management
- Supplier Relationship Management
- Enterprise Resource Planning

The final part of the book on Evolving Business discusses the future research directions for E-Logistics and E-Supply Chain Management.

- Radio Frequency Identification in the E-Logistics Interface
- Cloud Computing in Supply Chain Management
- Data Modelling and Information Logistics
- The Evolution and Impact of IT on Logistics and SCM: E-Production
- Future Considerations: Sustainability and Reverse Logistics

This book is considered to be of aid to the following prospective audiences:

- First of all, students (both at final year Undergraduate and Postgraduate level) who study Business, Computer Science and Information Systems, Logistics, and Supply Chain Management.
- Moreover, researchers in the above fields.
- Practitioners that either hold a position in the logistics system of companies/organisations or work in third-party logistics services providers.
The Editors’ intention was to help the above groups by giving them an easy to read and understand book with the right depth and the right amount of topic coverage.

ORGANISATION OF THE BOOK

The book is organised in three sections. Each section refers to a specific area regarding E-Logistics and E-Supply Chain Management.

Section 1: The Concepts of E-Logistics and the E-Supply Chain Management

The first section serves as an introduction to E-Logistics and E-Supply Chain Management. Its three chapters synthesize the literature and provide definitions of E-Logistics and E-Supply Chain Management as well as analyse the main concepts and parameters.

Chapter 1: Introduction to E-Logistics and E-Supply Chain Management. 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, expanded upon in the subsequent chapters that provide empirical evidence through case studies, such as those from India, China, Europe, and the UK, which are presented and analysed.

Chapter 2: E-Supply Chain Collaboration and Integration: Implementation Issues and Challenges. The objective of the chapter is to formulate a supplier integration strategy with the aim to optimise the supply chain in Fast Moving Consumer Goods (FMCG) Sector using a literature-based approach. There is a scarcity of research inputs that study the impact of supplier integration on optimisation of the Value Chain. The chapter emphasizes the integration of supplier relationship practices and their impact on the optimisation of the Value Chain. FMCG industry based on the value chain is defined, and an e-collaborative framework is introduced. The framework is primarily based on factors comprising the supplier integration strategy, i.e. information sharing, e-business systems, and policy-based supplier selections that have a positive influence on the long-term lean manufacturing adoption in FMCG firms. Implementing supply strategy in practice requires the collaboration of manufacturers and suppliers using e-collaborations.

Chapter 3: Web Applications for the Outsourcing of Logistics Services. This chapter investigates the extent to which the Greek Third-Party Logistics (3PLs) companies use the internet in order to provide information and online services to their customers. It is based on the findings of a survey that examined the Web presence of 3PL companies in Greece. Thus, the websites of these companies were contacted and evaluated against a specific questionnaire that consists of two main categories of questions: the scope of logistics services which 3PLs provide, and the Internet practices and technologies that the examined companies use in order to support the identified logistics services. The findings of the survey reveal the effort that 3PL companies in Greece have applied in order to effectively and efficiently support their provided services via the Internet. Furthermore, they support the belief that adaptation and application of the Internet best practices and innovative technologies turns out to be beneficial for all the parties involved in the examined business sector.
Section 2: E-Logistics and E-Supply Chain Management

The logistics and management functions are the main topic of this section. Functions, such as procurement, distribution and transport, traceability, customer relationship management, supplier relationship management, and enterprise resource planning, are discussed in this section based on real life examples.

Chapter 4: Measuring the Impact of Tools on the Leanness of E-Procurement Processes. The concept of lean thinking is—despite its prominence as waste reducer and value creator—still mainly applied to the manufacturing environment. Whilst investigations on applicability to the service industry are advancing fast, little has been distributed for the area of procurement. This development is opposed by trends of increasing degree of outsourcing and related high portions of procurement of up to 60% of a company’s total value creation. The mismatch in terms of lack of strategic attention on lean procurement on the one hand and the responsibility of this function for the majority of a company’s value creation on the other, combined with the simultaneous trend of establishing “miracle cures” in the form of e-procurement gave rise to the interest in determining the stake of buy-side systems in the leanness of procurement processes. For this purpose, a case study approach was adopted focusing on the central questions of what lean means for procurement, which measures could portray leanness in this instance, how the stake of buy-side systems can be reflected in the performance indicators with separate consideration of repetitive processes in operational and strategic purchasing, in order to finally attribute a clear enabler role to IT for achieving leanness in operational procurement. This finding has been reached by the means of an objective research approach, relying on quantitative methods such as KPI measurement for data collection and regression analysis for the interpretation of correlation between the variables. As such, this chapter has not only a high value for practitioners by providing a baseline for benchmarking lean performance of e-procurement, by supporting system investment decisions, or by simply facilitating decisions on adapting existing IT solutions. It also proves as enrichment to the existing theoretical body of knowledge filling into the afore said gaps of lean procurement and putting—at least for procurement processes—an end to the discussion as to whether ERP systems and lean thinking are reconcilable or not.

Chapter 5: A Hybrid E-Auction/Negotiation Model as a Tool for 4PL to Improve the Transport Provider Selection Process. The evolution of e-business has enabled the development of e-marketplaces facilitating the transactions among existing and potential supply chain members on an integrated platform. E-auctions are already considered a critical process for the selection of transport providers, but have not yet been systematically integrated in the 4PL concept. Specifically, a 4PL provider must add value to the e-auction process by assessing, in prior, the capabilities of potential transport providers through an e-negotiation process in order to justify its administrative role. The aim of this chapter is to present a hybrid e-auction-negotiation model, managed by a 4PL provider aiming to improve the transport provider selection process.

Chapter 6: The Use of Cloud Computing in Shipping Logistics. The aim of this chapter is to showcase the potential of new, Cloud-based, Information and Communication Technology (ICT) platforms for transport logistics chain management. The related literature is analysed from five perspectives. First, by examining supply chain issues relating to integration of core processes across organizational boundaries, through improved communication, partnerships, and cooperation. Second, from a strategy and planning perspective, by examining supply chain management as an IT platform dependent business practice. Third, by considering implementation issues using agent, as well as Web service technologies.
Fourth, by considering the impact of new trends in service computing built around technologies, such as Semantic Web services and Service Oriented Architecture (SOA), on transport logistics. Finally, the chapter proposes a Cloud-based SOA software platform as an enabler for lowering transaction costs and enhancing business opportunities through service virtualization in shipping transport logistics. The operational aspects of shipping transport logistics management are illustrated using a business case that shows the opportunities for increased collaboration through Cloud-based virtualized services.

Chapter 7: *A Web Application for Supply Chain Traceability.* The successful control of the physical flow of the products along the supply chain and product safety assurance depends on the existence of an efficient traceability system. This system must be able to identify each and every single unit produced and distributed from farm to fork. In this chapter, the authors present a Web-based application that enables quality, origin, and processing-related data entry in real time. The application’s theoretical background lies on the Traceability Data Pool (TDP) model described in the literature and aims to offer a practical solution for traceability support, especially for the stakeholder operating in the supply chain base, such as the farmers and agricultural cooperatives. This activity-oriented Web application connects field treatments with the rest of the supply chain without implementing additional physical labelling. This application aims at integrating the existing labelling systems implemented in different levels of the supply chain, under a common standard virtual crop codification following the produce along the supply chain, from farm to fork, thus achieving total traceability.

Chapter 8: *E-Enterprise: Organisational Issues of CRM, SRM, and ERP Systems Integration.* This chapter provides a framework and discusses the integration of Customer Relationship Management (CRM) and Supplier Relationship Management (SRM) systems in e-ERP environments in supply chains. Currently, the economic environment enterprises are operating in is extremely competitive and influenced greatly by Information and Communication Technologies (ICT). ICT can be an enabler of business performance but also an obstacle if these technologies are not managed carefully. Enterprises are implementing integrated CRM and SRM software in order to remain competitive, but high rates of failure indicate that the implementation of these solutions is not straightforward. In this chapter, organizational issues concerning the integration of CRM, SRM, and ERP software in supply chains are discussed. This chapter aims at informing managers, scholars, students, and researchers of the issues involved, and identifying critical factors of success for enterprises adopting and implementing integrated CRM/SRM solutions.

Chapter 9: *Monitoring and Warning Mechanisms of Supply Coordination in the Assembly System under Delivery Uncertainty.* The objective of this chapter is to explore the emergence mechanism of supply uncertainty in the assembly system, analyse the uncertainty factors and characteristics of the assembly system, which is different from the series system and the distribution system, and find the consequence of supply uncertainty in the assembly system. On that basis, to achieve supply coordination, the monitoring operation mode under uncertain delivery in the assembly system is constructed. The most important goals are to find the proper monitoring mechanism and warning model of supply coordination in the assembly system. This chapter contributes to the literature by analysing and finding the emergence mechanism of supply uncertainty in the assembly system, which is a bit different from the uncertainty in other supply chains. The investigation of many automobile companies supports this analysis. The proper monitoring mechanism of supply coordination is proposed and case-based reasoning is applied to monitor and warn the supply process in the assembly system under supply uncertainty. Based on a vast investigation
of the automobile industry in China, such as the Jiangling Engine Company, Shen Long Automobile Company, General Motors’ Corporation in China, Dongfeng Automobile Company, etc., the quantitative data among these companies was collected and compared. Qualitative analysis is then used to find the uncertainty of the assembly system. Based on logic reasoning, the mechanisms of the monitoring and warning model are proposed. Case-based reasoning is conducted to find the similar case to provide the warning insights and suggestions. Results show that supply uncertainty factors in the assembly system is a bit different from the series system and the distribution system. The manufacturer can classify the suppliers to cope with supply uncertainty while the different warning levels can be adopted accordingly. Case-based reasoning can be presented to monitor and warn coordination of supply process in the assembly system. As supply uncertainty increases in recent years, results and some mechanisms proposed from this chapter provide insight for the manufacturer for how to manage the multiple suppliers, monitor and warn the supply process to achieve supply coordination in case of supply uncertainty. Consequently, the manufacturer should know the emergence mechanism of supply uncertainty in its assembly system and take effective policies to prepare for the supply risks during the purchasing period.

Chapter 10: *The Strategic Contribution of ERP Systems to the Formulation of Non-Financial Key Performance Measures (KPIs) in Logistics Activities: An Exploratory Study in Northern Greece.* The purpose of this chapter is to make a thorough observation of supply chains within the broader geographical area of Northern Greece in order to recognise whether organisations formulate and use KPIs (Key Performance Indicators) in order to evaluate performance. The essence of developing useful KPIs with regard to supply chain performance is the identification of the gap between planning and executing, while KPIs also give an indication about areas that are in need of corrective action. However, due to the fact that the Greek region has maintained narrow manufacturing activities as a result of its economic situation in the past five years, the research is focused on—but not limited to—that part of the supply chain associated with logistics and customer service. With respect to the diversity of the sample researched, which is categorized into four groups—namely LSPs (Logistics Service Providers), wholesalers, retailers, and service companies—some trigger outcomes have been obtained regarding the manner through which those companies are manipulating their information flow—either through their ERP (Enterprise Resource Planning) or another IS (Information System). Within this context, it is also observed whether ERPs are utilized in order to assist and support the design and deployment of KPIs in the framework of performance evaluation with regards to key and support logistics activities.

Section 3: Evolving Business

For anyone who needs to understand the future challenges of logistics and supply chain management, the examination of case studies seems to be a very useful tool. These cases refer the future practices of logistics and supply chain management to various business sectors.

Chapter 11: *The Use of RFID Technologies for E-Enabling Logistics Supply Chains.* This chapter reviews the potential benefits and challenges of introducing Radio Frequency Identification (RFID) technologies as a means of e-enabling logistics supply and distribution systems. It introduces RFID and associated technologies as a catalyst for e-enabling optimised supply and distribution activities. In particular, the emerging role of RFID in integrating logistics supply chains is considered key to aligning tasks and achieving operational efficiencies. Other benefits include better visibility resulting from proactive task and process management, and improved risk assessment associated with better data ac-
In addition, the optimisation of planning and control functions is enhanced through the introduction of key RFID technologies and their integration into logistics operations. Finally, the use of RFID technologies in a variety of sectors and areas is reviewed, from monitoring the supply of perishable goods to the distribution of pharmaceutical products, to tracking livestock “from farm to fork.”

Chapter 12: Cloud Computing in Supply Chain Management: An Overview. In this chapter, the use of cloud computing is presented in supply chain management and more specifically in the case of third party logistics service providers. At a first level, the chapter demonstrates what cloud technology is, how it can be used in supply chain management, as well as its benefits compared with other systems. Furthermore, the chapter outlines the implementation of cloud computing in the case of third-party logistics companies, especially from the perspectives of cost effectiveness and real-time visibility of shipment and inventory between companies and their customers.

Chapter 13: A University of Greenwich Case Study of Cloud Computing: Education as a Service. This chapter proposes a new Supply Chain Business Model in the Education domain and demonstrates how Education as a Service (EaaS) can be delivered. The implementation at the University in the UK is used as a case study. Cloud computing business models are classified into eight Business Models. This classification is essential to the development of EaaS. A pair of the Hexagon Models is used to review Cloud projects against success criteria; one Hexagon Model focuses on the Business Model and the other on IT Services. The case study is used to demonstrate the added value offered by Supply Chain software deployed by private cloud, where Oracle suite can demonstrate supply chain distribution, is useful for teaching. The evaluation shows that Students feel more motivated and can understand their coursework better supported by statistical analysis. A strategic plan of using enterprise SAP (Systems Applications Products) for supply chain in higher education is in place to improve teaching and learning where SAP is more suitable for delivery of teaching activities and content. It is believed that adopting an appropriate EaaS and the right technologies such as SAP will help this and other universities to improve learning efficiency and quality of teaching.

Chapter 14: Investigating the Effect of E-Learning Technologies on Supply Chain Activities: The Evidence of ELT Book Market. This chapter is concerned with the impact of new technologies in the supply chain of the English Language Teaching (ELT) book market. The chapter’s research starts with a literature review that presents the modern technological solutions for an educational system that can alter the book market’s supply chain. The electronic teaching and reading facilities can reduce costs of production and distribution, but they can also become an ecologically friendly solution to the environmental problems that the world faces today. The statistical analysis of questionnaires has resulted in the Greek ELT market being unwilling to change the existing supply chain operations of the ELT sector. Even though the market does not believe that the use of new technologies can result in the replacement of printed books. There is a trend of using them because they provide marketing benefits to their users. This trend can become the catalyst of a new era within the ELT book market’s supply chain operations.

Chapter 15: ERP Implementation Service Supply Chain: A Modular Perspective. ERP system plays a critical role in gaining competitive advantages; however, the implementation of the ERP system is a critical success factor but a difficult process to both the software providers and the buyers of the ERP system. Designing and delivering the implementation services becomes a key challenge to the ERP suppliers. This chapter applies modular logic into service design in order to reduce complexity and increase the service variety and quality, and develop a conceptual structure of service supply chain for delivering ERP implementation services.
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