Logistics in MANUFACTURING

Patrick Davis

Logistics in Manufacturing

Logistics management is the part of supply chain management that plans, implements, and controls the efficient, effective forward, and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer's requirements. This book presents a balanced treatment of quantitative methods for logistics systems planning, organization and control. This book aims to help engineers, as well as advanced graduate students and young researchers to understand and gain a general knowledge of logistic systems optimization problems and techniques, such as system design, layout, stock management, quality. In first chapter, we discuss the relationship between the logistics complexity of manufacturing companies and their supply chain management. Second chapter discusses on green degree evaluation of manufacturing reverse logistics. The contradiction between economic development and environmental deterioration makes people begin to have a further understanding of the ecology and environment. In third chapter, we give the validity of logistics risk early warning model in manufacturing enterprises: based on the listed corporation of manufacturing industry in Beijing area. Fourth chapter focuses on "Packaging Logistics" for improving performance in supply chains: the role of meta-standards implementation. Fifth chapter represents reverse logistics challenges in remanufacturing of automotive mechatronic devices. However, remanufacturing is associated with complicating characteristics, not least to mention the process of core acquisition. In sixth chapter, we discuss about outbound logistics performance and profitability: taxonomy of manufacturing and service organizations. It develops a taxonomy of manufacturing and service firms formed by their emphasis on different key performance metrics to monitor and manage the outbound logistics portion of the supply chain. Seventh chapter focuses on operations management of logistics and supply chain: issues and directions. Eighth chapter presents about producer–buyer interaction under mass customization and ninth chapter emphasizes on the social and environmental risk management in supply chains. Tenth chapter analyzes the relationship between the rate of returns and the associated costs. Eleventh chapter focuses on reverse logistics for the construction industry and last chapter gives an emphasis on financial issues in logistics performance and integrated logistics.

Patrick Davis, has received his Ph.D. in Industrial Engineering and Operations Research. He has published several articles and research papers on all aspects of supply chain, logistics, manufacturing, operations and technology. He is recognized as an innovator and thought leader in the field of global supply chain and logistics.

Intelliz Press

ISBN 978-1-68251-228-9

9 781682 512289 00000

Davis

Logistics in Manufacturing

Intelliz Press

Logistics in Manufacturing

Editor:

Patrick Davis

www.intellizpress.com

Intelliz Press LLC
1 Radisson Plaza # 800
New Rochelle, New York
NY 10801
United States of America

Logistics in Manufacturing
Editor: Patrick Davis

ISBN: 978-1-68251-228-9

Printed in Republic of Korea

For more information about Intelliz Press and its products, visit our website at **www.intellizpress.com**

Logistics in Manufacturing

List of Contributors

Peter Fernandes Wanke
UFRJ, Brasil, UFRJ, Rio de Janeiro, RJ, Brasil

Henrique Luiz Corrêa
Rollins College, Estados Unidos da América

Ting Tian
Faculty of Management, Shanghai University of Engineering Science, Shanghai, China

Yaping Chen
Faculty of Management, Shanghai University of Engineering Science, Shanghai, China

Yongsheng Liu
School of Business, Beijing Wuzi University, Beijing, China

Jiayu Gao
School of Business, Beijing Wuzi University, Beijing, China

Wenjie Ma
School of Business, Beijing Wuzi University, Beijing, China

Jesús García-Arca
Industrial Engineering School, University of Vigo, Vigo, Spain

Alicia Trinidad González-Portela Garrido
Business Administration School, University of Vigo, Vigo, Spain

José Carlos Prado-Prado
Industrial Engineering School, University of Vigo, Vigo, Spain

Erik Sundin
Division of Manufacturing Engineering, Department of Management and Engineering, Linköping University, Linköping SE-58183, Sweden

Otto Dunbäck
Division of Manufacturing Engineering, Department of Management and Engineering, Linköping University, Linköping SE-58183, Sweden

Matthew J. Liberatore
Center for Business Analytics, Villanova School of Business, Villanova University, Villanova, USA

Tan Miller
Global Supply Chain Management Program, College of Business Administration, Rider University, Lawrence, USA

Xiang Li
College of Economic and Social Development, Nankai University, Tianjin 300071, China

Arshia Khan
International Graduate School, University of Bremen, 0.11 Wing-Building Wilhelm-Herbst-Str. 12, 28359 Bremen, Germany

Hans-Dietrich Haasis
Faculty 7: Business Studies and Economics, University of Bremen, 28334 Bremen, Germany

Matthias Freise
Fashion Procurement and Retail Buying, Reutlingen University, Alteburgstraße 150, 72762 Reutlingen, Germany

Stefan Seuring
Chair of Supply Chain Management, University of Kassel, Kleine Rosenstr. 1-3, 34117 Kassel, Germany

Björn Asdecker
Lehrstuhl fu¨r Betriebswirtschaftslehre insb. Produktion und Logistik, Otto-Friedrich-Universita¨t Bamberg, Feldkirchenstr. 21, 96052 Bamberg, Germany

M. Reza Hosseini
School of Natural and Built Environments, Barbara Hardy Institute (BHI), University of South Australia, Adelaide, Australia

Nicholas Chileshe
School of Natural and Built Environments, Barbara Hardy Institute (BHI), University of South Australia, Adelaide, Australia

Raufdeen Rameezdeen
School of Natural and Built Environments, Barbara Hardy Institute (BHI), University of South Australia, Adelaide, Australia

Steffen Lehmann
School of Built Environment, Faculty of Humanities, Curtin University, Perth, Australia

Preface

Logistics management is the part of supply chain management that plans, implements, and controls the efficient, effective forward, and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer's requirements. This book presents a balanced treatment of quantitative methods for logistics systems planning, organization and control. This book aims to help engineers, as well as advanced graduate students and young researchers to understand and gain a general knowledge of logistic systems optimization problems and techniques, such as system design, layout, stock management, quality. In first chapter, we discuss the relationship between the logistics complexity of manufacturing companies and their supply chain management. Second chapter discusses on green degree evaluation of manufacturing reverse logistics. The contradiction between economic development and environmental deterioration makes people begin to have a further understanding of the ecology and environment. In third chapter, we give the validity of logistics risk early warning model in manufacturing enterprises: based on the listed corporation of manufacturing industry in Beijing area. Fourth chapter focuses on "Packaging Logistics" for improving performance in supply chains: the role of meta-standards implementation. Fifth chapter represents reverse logistics challenges in remanufacturing of automotive mechatronic devices. However, remanufacturing is associated with complicating characteristics, not least to mention the process of core acquisition. In sixth chapter, we discuss about outbound logistics performance and profitability: taxonomy of manufacturing and service organizations. It develops a taxonomy of manufacturing and service firms formed by their emphasis on different key performance metrics to monitor and manage the outbound logistics portion of the supply chain. Seventh chapter focuses on operations management of logistics and supply chain: issues and directions. Eighth chapter presents about producer–buyer interaction under mass customization and ninth chapter emphasizes on the social and environmental risk management in supply chains. Tenth chapter analyzes the relationship between the rate of returns and the associated costs. Eleventh chapter focuses on reverse logistics for the construction industry and last chapter gives an emphasis on financial issues in logistics performance and integrated logistics.

Editor

Table of Contents

1

THE RELATIONSHIP BETWEEN THE LOGISTICS COMPLEXITY OF MANUFACTURING COMPANIES AND THEIR SUPPLY CHAIN MANAGEMENT

Peter Fernandes Wanke[I], Henrique Luiz Corrêa[II]

[I]UFRJ, Brasil, UFRJ, Rio de Janeiro, RJ, Brasil

[II]Rollins College, Estados Unidos da América

ABSTRACT

This study aims to investigate whether, and the means by which, supply chain managers of large manufacturing companies adopt a context-dependent approach (also called *contingency* approach) in their supply chain decisions; it empirically explores the correlation between logistics complexity-related contextual conditions and supply chain management (SCM) objectives and decision areas. The study involves a comprehensive literature review, followed by an analysis of survey data (based on a sample of 108 large manufacturing companies in Brazil), using cluster analysis, factor analysis and binary logistic regression. In this study, we not only investigate the major effects of supply chain objectives and decision areas as predictors of the logistics complexity of manufacturing but also investigate their second order interactions. Statistically significant relationships were found between logistics complexity-related contextual conditions and objectives and decision areas involving the supply chain. The managers of large companies who were surveyed considered different objectives and decision areas to be critical to the achievement of supply chain excellence when their companies had different levels of logistics complexity.

Keywords: Brazilian companies. Logistics complexity. Supply chain management. Decision areas. Contingency approach.

INTRODUCTION

Central to the contingency approach is the proposition that the structure and process of an organization must fit its context. The contingency approach to management basically argues that there is no one best way to manage (DRAZIN; VAN DE VEN, 1985). This is in contrast with the "best practice" approach (VOSS, 1995), which is reflected in the

proliferation of operations and supply chain management practices that have frequently and long been considered by some advocates as having universal applicability such as total quality management (FEIGENBAUM, 2004), six sigma (MARTIN, 2007) and lean production (WOMACK; JONES; ROOS, 1990; JONES; WOMACK, 2003).As a counter-example,Fearne and Fowler (2006) challenged conventional thinking with respect to the universal applicability of lean principles when analyzing the construction industry.

According to Sousa and Voss (2008), operations management best practices have now matured, and research on practices has begun to shift from the justification of the value of such practices to the understanding of the contextual conditions under which they are effective. Similarly, in supply chain management, after years of emphasis on developing and demonstrating the value of practices such as continuous replenishment (VERGIN; BARR, 1999); collaborative planning, forecasting, and replenishment (JOHNSON, 1999); efficient consumer response (MATHEWS, 1997); and vendor-managed inventory (WALLER; JOHNSON, 1999), it may also be time for research to shift toward a better understanding of the contextual conditions under which such practices work best. Kaipia and Hölmstrom (2007) advocate for rules and guidelines to help managers select the most adequate planning approach for each situation in the supply chain.

A number of research papers reported in the supply chain management literature have contributed to the development of models that adopt the contingency approach, departing from Fisher's seminal paper (1997). His model has been tested and enriched in several studies. For example, Li and O'Brien (2001) have carried out a quantitative analysis to mach product types to supply chains; Ramdas and Spekman (2000) explored the contingent relationship between supply chain management processes and the characteristics of the products being produced and delivered; Lee (2002) expanded the framework to consider the supply risk and uncertainty in upstream operations; Germain, Claycomb and Dröge (2008) studied the effectiveness of different organization structures to deal with different contextual conditions, namely the level of demand predictability faced by supply chains and Blackburn et al. (2004) suggested that different configurations of reverse supply chains should be used for different categories of products being commercially returned. These studies have demonstrated the importance of aligning management practices with context in achieving better supply chain performance.

This paper attempts to contribute to the development of the contingency approach applied to supply chain management. The relationships between logistics complexity-related contextual conditions (e.g., size of the company, number of stock keeping units (SKU), and frequency of product launches, among others) and two aspects of supply chain management are analyzed: (1) the perception of how critical supply chain managers consider different practices and decision areas (e.g., vendor-managed inventory, logistics and distribution networks, and sourcing) for achieving supply chain excellence and (2) the supply chain managers'perceptions of the criticality of different supply chain objectives (e.g., cost, customer service, time, response, and profitability) for achieving supply chain excellence.