Supply Chain Management and Logistics **in Emerging Markets**

Selected Papers from the 2018 MIT SCALE Latin America Conference

Hugo Tsugunobu Yoshida Yoshizaki
Christopher Mejia Argueta
Marina Guimarães Mattos

Supply Chain Management and Logistics in Emerging Markets

This page intentionally left blank

Supply Chain Management and Logistics in Emerging Markets: Selected Papers from the 2018 MIT SCALE Latin America Conference

EDITED BY

HUGO TSUGUNOBU YOSHIDA YOSHIZAKI

Departamento de Engenharia de Produção, Universidade de São Paulo, Brazil

CHRISTOPHER MEJÍA ARGUETA

MIT Center for Transportation and Logistics, USA

MARINA GUIMARÃES MATTOS

MIT Environmental Solutions Initiative, USA

United Kingdom – North America – Japan – India – Malaysia – China

Emerald Publishing Limited
Howard House, Wagon Lane, Bingley BD16 1WA, UK

First edition 2021

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-83909-333-3 (Print)
ISBN: 978-1-83909-331-9 (Online)
ISBN: 978-1-83909-334-0 (Epub)

ISOQAR certified Management System, awarded to Emerald for adherence to Environmental standard ISO 14001:2004.

Certificate Number 1985
ISO 14001

INVESTOR IN PEOPLE

Table of Contents

Part II Urban Logistics Operations and Freight Transportation

Part III Supply Chain Operations for Micro and Small Firms and Retail Operations for Nanostores

This page intentionally left blank

List of Figures

Chapter 12

Chapter 13

Chapter 14

Chapter 15

This page intentionally left blank

List of Tables

Chapter 5

Chapter 6

Chapter 7

This page intentionally left blank

About the Authors

Marcos Agurto – Marcos Agurto obtained his PhD in Economics at the Vancouver School of Economics (VSE). He is a Professor in Economics at Universidad de Piura, where he also serves as Vice President for Research and Director of Lima School of Economics. He has been a Visiting Lecturer at VSE and Visiting Scholar at Virginia Tech. His research focuses on development economics, social inclusion, applied econometrics, and impact evaluation. He has been a consultant for the Inter-American Development Bank and a research mentor for the Partnership for Economic Policy Network, focusing on financial inclusion and price information projects in Africa.

René Amaya-Mier – René Amaya-Mier is a full-time professor of the Industrial Engineering Department at Universidad del Norte, in Barranquilla, Colombia. He holds over two decades of experience as a researcher in the fields of Operations Management and Operations Research. His research interests center in supply chain management, ICT applications in logistics, supply chain collaboration and gainsharing, coordinated product and supply chain design, reverse logistics and system dynamics. He is active member of IIE, INFORMS, IEOM, and the Center for Latin-American Logistics Innovation (CLI) as part of the MIT SCALE Latin America network, as well as partner of the Port, Transport and Logistics Centre of Excellence at Uninorte.

Claudia Antonini – Claudia Antonini holds a PhD in Operations Research from the ISYE School at Georgia Institute of Technology, Atlanta, USA. She is currently a professor in the Industrial Engineering School at Universidad de Ingeniería y Tecnología, UTEC in Lima, Perú. She has over 20 years teaching experience. Her research interests are probabilistic and statistical issues in the design and analysis of large-scale simulation experiments, including modeling, estimation, and generation of stochastic input processes, analysis of output processes, and variance reduction techniques. Recently, she has been working in applications in sales operations for emerging retail markets and agri-business supply chains

José A. Larco – José Antonio Larco holds a PhD in Operations Management & Logistics and an MPhil in Business Research from Erasmus University Rotterdam. He is currently a professor and Head of the Department of Industrial Engineering. He has taught courses on inventory planning, decision making,

simulation, research methods, and facility design. His research focuses on behavioral operations in planning and goal/setting for work design. More recently, he has empirical methods applied for applications in sales operations for emergent retail markets and agri-business supply chains. In addition, he has over five years of experience in operations management and production planning in the industry.

Miguel Avila – Miguel Avila holds a BA degree in Industrial Engineering from Universidad de Ingenieria y Tecnologia, Barranco, Lima, Peru. Also, he holds a specialization in Business Intelligence and Data Mining from ESAN – UNIANDES. He has been working in the telecommunications sector for over two years in areas such as Customer Intelligence. His research interest focuses on techniques for improving the decision-making process using data, predictive models, customer analysis, conjoint analysis, and machine learning algorithms.

Luiz Barreto – Luiz Barreto works as Pathways Operations Manager for Amazon. He has over 10 years of supply chain experience, working in the automotive, heavy machinery, and public sectors. He earned his master's degree in Supply Chain Management at the Massachusetts Institute of Technology (MIT). He obtained two MBAs, one in Finance and one in International Relations, from Fundação Getúlio Vargas. He has also earned a graduate certificate in Logistics and Supply Chain Management (GCLOG).

Sandor Boyson – Dr. Sandor Boyson is Research Professor at the Robert H. Smith School of Business, University of Maryland, College Park, and holds an affiliate faculty appointment at the Institute of Systems Research, Clark School of Engineering, College Park. Dr. Boyson is engaged in sponsored research as principal investigator/advisor in IT Supply Chain Risk Management for the National Institute of Standards & Technology (NIST); and he is the author of three reports on the subject released through NIST in 2010, 2011, and 2012. He is a member of the Advisory Committee on Supply Chain Competitiveness and currently serves as the Chair of the IT/Data Sub-Committee.

Allan M. C. Bretas – Allan M. C. Bretas is a PhD candidate at the School of Electrical Engineering and Computing of the University of Newcastle, Australia. He has a Production Engineering degree and a master's degree in Operations Research from the Federal University of Minas Gerais (UFMG), Brazil. As an operations research engineer, he has eight years of experience in the industry, where he applied optimization, simulation, and statistical methods to steelmaking, seaport, and railway transportation processes. His current research is an industry–academy partnership, where he applies Artificial Intelligence techniques for the optimization of rail freight transportation in the Hunter Valley coal supply chain.

Irineu de Brito Junior – Dr. Irineu de Brito Junior is a professor of Risk Management at Sao Paulo State University (Unesp) in São José dos Campos, Brazil. He is an invited Professor of Humanitarian Logistics at University of São Paulo (USP) and Professor of Humanitarian Logistics at São Paulo State University

(USP) and Humanitarian Logistics Instructor at Civil Defense and World Food Programme (WFP). He received his BSc in Industrial Engineering; MSc in Logistics Engineering, and PhD in Industrial Engineering from USP. He is also a researcher at Center for Disaster Studies (CEPED) at USP, and his humanitarian research interests are in facility location, transportation, and donations management.

Andrés Cárdenas Hurtado – Andrés is an Industrial Engineer from the National University of Colombia with experience in sustainable logistics, optimization, modeling, data management, and visualization. He has experience in sustainability and strategy in supply chain, working in projects related to Carbon Footprint, Life Cycle Analysis, Efficient Promotions, Packaging Logistics, among others. He is currently serving as Coordinator of Research Projects for the Latin-American Center for Innovation in Logistics (CLI).

Ana M. Castañeda Velásquez – Ana Maria serves as the coordinator of the development of New Services for the Center for Latin-American Logistics Innovation (CLI), where she has worked since 2016. She holds a master's degree in Information Management from Escuela Colombiana de Ingeniería Julio Garavito. She holds an undergraduate degree in Industrial Engineering in the same university.

Mario Chong – Dr. Chong is a professor and member of the Research Center (CIUP) at the Universidad del Pacífico. He is Director of the Peruvian Association of Professionals in Logistics (APPROLOG). He has experience developing research projects, related to engineering and business such as humanitarian logistics, operations management, business strategy, supply chain, global business, agribusiness, operation research, and business models. He has also published several papers, chapters, and books. He has been associate dean of business engineering, director of corporate and international programs, academic director of Master's programs in Business Administration, Global Business, Agribusiness and Food and Supply Chain Management.

Thomas Corsi – Thomas Corsi (PhD, University of Wisconsin-Milwaukee) is the Michelle Smith Professor of Logistics, Business, and Public Policy at the University of Maryland. He serves as Associate Editor for *Transportation Research Series E: The Logistics and Transportation Review*, *Transportation Journal*, and *Journal of Business Logistics*. He also serves on the Editorial Review Board for *International Journal of Physical Distribution & Logistics Management*. His research interests include transportation safety and management practices.

Carlos H. F. Faria – Carlos H. F. Faria is a senior operations research analyst at Valor Logistica Integrada (VLI) Multimodal, Brazil. He has 10 years of experience in capacity planning for railways, ports, and terminals using operations research models. He earned his undergraduate degree in production engineering and master's in transport engineering from Federal University of Minas Gerais (UFMG), Brazil, in 2010 and 2016, respectively. He is currently a PhD candidate in production engineering at UFMG.

Reginaldo C. Ferreira – Reginaldo Catarino Ferreira holds a master's degree in Supply Chain Management from Fundação Getúlio Vargas. He earned an MBA degree in Strategic Service Management from Fundação Getúlio Vargas and a certificate in ISO 31000 and Risk Based Auditing from QSP Institute. He has over 18 years of experience in leadership positions in Risk Management, Internal Controls, and Corporate Security for the main Brazilian Risk Management companies dealing with cargo transportation.

Alejandro Gallegos – Alejandro Gallegos holds an Industrial Engineer Major from Universidad Nacional de Ingeniería with a master's degree in Strategic Business Administration from the Pontifical Catholic University of Peru. He also has a Six Sigma Black Belt and a Business Process Management Certificate. He has over 25 years of experience as a consultant in process, quality, and IT areas in leading companies of service and manufacturing sectors. He is a professor in the Faculty of Industrial Engineering at Universidad de Ingeniería y Tecnología, Barranco, Lima, Peru. He is currently the Chair of Quality at the school and the General Director at CODEGES company.

Jorge García Castillo – Jorge García Castillo is a senior manager at the Danish Refugee Council humanitarian operation in Latin America. He holds a Master's Degree of Engineering in Supply Chain Management from MIT and previously he obtained a double bachelor's degree in Computer Engineering and Mathematics from Universidad Autónoma de Madrid in Spain. He has extensive experience in the optimization sector in companies like IBM and Decide, and he has developed successful innovative products such as ORQUEST. He has also worked as innovation manager and served as a member of the executive group at the Center for Latin-America Logistics Innovation (CLI).

Joice C. Ribeiro Giacon – Joice Ribeiro Giacon is a Supply Chain professional with over 15 years of experience in procurement, distribution and transportation, project management and research. Since 2019, she is COO at Optimum Supply, a company focused in strategic decision analysis using Multi-Criteria Decision Analysis (MCDA) applied in Business Procurement. She worked in Brazil at the University of São Paulo Center for Innovation in Logistics Systems (CISLog USP), Fundação Vanzolini, Natura Cosmetics, and Efeso Consulting. She is a Mechanical Engineer, with an MSc in Logistics Systems Engineering (both from USP) and specialization in Global Logistics & Supply Chain Management (MIT GCLOG program).

Curt Grimm (postmortem) – Curtis Grimm was professor and Charles A. Taff chair of Economics and Strategy at the Robert H. Smith School of Business, University of Maryland. From 1995 to 2003, Professor Grimm served as Logistics, Business, and Public Policy department chair. He received his PhD in economics from the University of California–Berkeley, with his primary focus on industrial organization. Professor Grimm conducted extensive research in both supply chain management, with a strong focus on surface freight transportation, and strategic management. His research focused on the interface of business and public policy with strategic management, with a particular emphasis on

competition, competition policy, deregulation, and microeconomic reform both in the United States and overseas.

Lucas S. M. Guedes – Lucas S. M. Guedes is the operations research leader at Valor Logistica Integrada (VLI) Multimodal, Brazil. In the last three years, he has been working on optimization projects, capacity sizing, and risk measurement at VLI. He earned his bachelor degree in production engineering, his master's degree and PhD in electrical engineering in operations research from Federal University of Minas Gerais (UFMG), Brazil, in 2010, 2012, and 2016, respectively.

Gerardo Heckmann – Dr. Heckmann is a senior professor at the National University of Córdoba (UNC), Argentina, where he leads the Master in Business Administration (MBA) and the Bachelor in Strategy courses. He is the executive director of the Micromasters in Service Management: Design of Successful Experiences, UNCordobaX, on the EdX platform. He works in Statistical Methods, Market Research, and Service Management.

José R. Hernandéz-Arreola – José Rodrigo Hernández-Arreola graduated as an Industrial and Systems Engineer from Monterrey Tech, in 2017. José Rodrigo completed his chapter back in 2016, as part of a final project of System Dynamics. He performed consulting for Mead Johnson Nutrition and developed a project for Farmacias San Pablo before his graduation. Currently, he works for Walmart Mexico as an executive manager for a set of stores. Before being appointed to this position, he led projects related to improve administrative operations and other store tasks, as well as to boost innovation in Walmart stores.

David Hidalgo-Carvajal – David Hidalgo-Carvajal is a PhD candidate at Universidad Politécnica de Madrid. He holds a BEng in Aeronautical Engineering and a MSc in Industrial Engineering. He worked as researcher in urban logistics and sustainability at Center for Latin-American Logistics Innovation (CLI), as well as European Union projects (INSPIRE and NEXT-NET), at Zaragoza Logistics Center, both part of the MIT SCALE Network. In addition, he serves as Senior Teaching Assistant at GCLOG program at Massachusetts Institute of Technology. He currently works at WEDistrict project, a European Union project for renewable energies, and CircularizatETSII project, a local project in Madrid aiming to create circular economy models for the city. His current research focuses mainly on product servitization, circular economy and strategies for reshaping supply chain, including SMEs and nanostores' perspectives.

Miguel Jaller – Dr. Miguel Jaller is an Associate Professor of the Department of Civil and Environmental Engineering at the University of California, Davis, and Co-Director of the Sustainable Freight Research Center at the Institute of Transportation Studies, Davis. He received his BSc and MSc degrees in Industrial Engineering from Universidad del Norte, Colombia, and his MEng degree in Transportation Engineering, MScdegree in Applied Mathematics, and PhD in Transportation Engineering from Rensselaer Polytechnic Institute. His research is highly multidisciplinary and concentrates on analyzing the societal and private

impacts of transport and logistics operations, technology, and policies to develop tools to achieve a sustainable transportation system.

Ana Luna – Ana Luna, PhD, is a full-time professor and a Research Scientist at Universidad del Pacífico, Lima, Peru. She has worked for several years in the Solid Lasers Division at DEILAP, CONICET–Argentina. Within the photonics area, she was dedicated to the study of the generation of structural color. She applied different optimization algorithms in the study of natural photonic structures. She currently does research in mathematical modeling analyzing the air quality using several sensors. She also evaluates distribution systems and air pollutant emissions in the logistics systems from Lima, Peru. Results will be part of the "Smart Cities" project.

Camil Martínez – Camil Martínez (PhD, University of Maryland) is a Post Doctorate Associate at Los Andes University in Bogotá, Colombia. Her research interests include the digital transformation in developing economies, technology adoption for the small and medium enterprises, the impact of supply chain risk management on firm resilience and country resilience and urban logistics. Dr. Martínez' work has been published in several journals, including *Transportation Research Part E*.

Marina G. Mattos – Dr. Marina Mattos is a Postdoctoral Associate at MIT, where her research focuses on sustainable supply chains for circular economy. She also works for the MIT Leadership Engineering Program teaching grad students. Marina holds a PhD in Industrial Engineering, an MSc degree in Transportation Engineering, and a BEng degree in Robotics from UFMG, Brazil. She obtained the Master Level in Global Logistics and Supply Chain Management from MIT and completed the MIT Sloan Program for International Fashion and Luxury Management. Her education also includes a marketing MBA from UFPR, ports engineering from UFRJ, strategical logistics from UFMG, and railroad engineering from IME.

Diego Matuk – Diego is a research assistant for the Research Center of Universidad del Pacifico (CIUP). He is a specialist in logistics, urban and humanitarian transport networks, and last mile transportation for small business. His main work includes publishing papers, chapters, and books related to the aforementioned topics.

Bruno T. Medeiros – Bruno T. Medeiros is a senior operations research analyst at Valor Logística Integrada (VLI) Multimodal, Brazil. In the last four years, he has worked on capacity planning for railways, ports, and terminals using discrete event simulation models at VLI. He holds a bachelor's degree in production engineering, a specialization in business administration and an MBA in Engineering and Simulation. He is currently a master student in Transport Engineering at UFMG, Brazil.

Christopher Mejía Argueta – Dr. Christopher Mejía Argueta is a Research Scientist at the MIT Center for Transportation and Logistics with over 14 years of experience. He does research on retailing operations and supply chain

management for food and agri-business. His research focuses on improving the efficiency and flexibility of operations for multiple stakeholders, designing route-to-market and logistics strategies to address changing purchasing patterns, coupling these dynamic consumer profiles with the retail landscape, and reducing undesired socioeconomic and health problems like income disparity, food malnutrition, food waste by proposing data-driven decision and policy-making processes. Dr. Mejía serves as the Director of the MIT SCALE Latin America network, and he is the founder and director of the Food and Retail Operations Lab (MIT FaROL).

Gianmarco Merino – Mr. Merino is an engineering consultant in Supply Chain and Business Management in Latin America. He worked as a researcher in the MIT GeneSys Project.

Jairo Montoya-Torres – Jairo R. Montoya-Torres is a Full Professor and Director of the PhD Program in Logistics and Supply Chain Management of the School of Engineering at Universidad de La Sabana. He holds a Postdoctoral Diploma "Habilitation à Diriger des Recherches" from INSA Lyon and Claude Bernard University, Lyon, France and a PhD from École des Mines de Saint-Etienne, France. His research interests lie broadly in simulation and optimization of logistics and production systems, supply chain analytics, scheduling and supply chain design, and management under collaborative and sustainable environments. He also serves as part of the scientific committee of the MIT SCALE Latin America Conference.

Breno D. Moreira – Breno D. Moreira is the operations research and long-term planning manager at Valor Logistica Integrada (VLI) Multimodal in Brazil. He holds a production engineering undergraduate degree from the Federal University of Minas Gerais (UFMG) and a specialist degree in Integrated Logistic from Pontifícia Universidade Católica from Minas Gerais (PUC-MG) in Brazil. He has nine years of experience in VLI focused on long-term planning, strategic projects, capacity planning analyses, and optimization projects.

Clara Orellana-Rojas – Clara Orellana-Rojas is a research engineer at the Institute of Innovation in Productivity and Logistics CATENA-USFQ. Her research focuses on studies of Supply Chain Sustainability and Circular Economy, Urban Logistics and Productivity. More particularly, her current research focuses on the analysis of the maritime transportation dynamics in the Galapagos Islands. This is a study of inter-island passenger transportation for the creation of new routes and transportation policies that allow the reduction of environmental impact and externalities that affect the ecosystems.

María B. Ortíz – María Belén Ortíz holds an MSc in Industrial and Systems Engineering with a specialization in Cognitive Engineering from Ohio State University. She is currently a PhD candidate in Engineering Management at the University of Alberta. Her research is related to customer satisfaction management systems for the healthcare sector. Maria is a Fulbright alum and a recipient

of the "International Postgraduate Study" scholarship funded by the Peruvian government.

Carlos Otero-Palencia – Palencia is a graduate research student at the Civil and Environment Engineering Department at the University of California, Davis. He is a PhD candidate in the Industrial Engineering Program at Universidad del Norte, Barranquilla, Colombia, where he also received his BAs and MSc Degrees in the same program. His research focuses on supply chain collaboration and gainsharing, third revolution in freight transportation, sustainable transportation systems, and optimization. Carlos is currently working on the design of strategies to reduce both logistics costs and carbon emissions in the supply chain operation.

Eduardo Pale-Jiménez – Eduardo Pale-Jiménez holds a BSc in Industrial Engineering and Systems from Monterrey Tech, where he graduated back in 2017. Eduardo developed his chapter as part of a final project in the System Dynamics class during 2016. He works as a production line manager/supervisor at Grupo Zucarmex, the most important sugar manufacturer in Mexico.

John P. Paraskevas – John-Patrick Paraskevas (PhD, University of Maryland) is an Assistant Professor at Miami University. His research interests include the impact of supply chain management representation on the top management team, supply chain risk management, and buyer–supplier relationships. Dr. Paraskevas' work has been published in the *Journal of Supply Chain Management*.

Alicia Pérez – Alicia Pérez is the head of fresh supply in a global company. She holds a master's degree in Supply Chain Management at Universidad del Pacífico and an undergraduate degree in Food Industry Engineering at Universidad Nacional Agraria La Molina. She has more than 15 years of experience in the creation, management, and investment projects in the agri-business sector. Her research interests include business strategy, food and beverage supply chain projects, and innovation in agri-food.

Daniel F. Prato – Daniel is a senior researcher at CLI, with major interest in generating competitiveness and development in emerging countries taking advantage of the large amount of data available, technological platforms, and the use of models. He aims to predict real-world phenomena, facilitate decision-making processes, provide technical support, and generate public policies that guarantee efficiency in operations, management of resources, and facilitate the design of strategies to improve mobility in megacities. Daniel is an Environmental Engineer from the EAN University, with a master's degree in Automotive Engineering and a PhD in Engineering Sciences from Monterrey Tech, Mexico.

Bernardo Puente-Mejia – Bernardo Puente-Mejia is a research engineer in the Institute of Innovation in Productivity and Logistics CATENA-USFQ, where his main research interests focus on urban logistics, supply chain management related topics in Latin America, and data science. He earned his B.Eng. in Industrial Engineering from Universidad San Francisco de Quito, Ecuador, in 2018. He participated at a Latin America SCALE Conference 2018, where he was granted with the Best Student Paper Award. He has also earned the Micromasters

Credential in Supply Chain Management from MITx in 2019 and graduated from the MIT GCLOG Program Class 2020.

María F. Rangel Espinosa – María Fernanda Rangel is an alum of Monterrey Tech. She holds a BSc degree in Industrial Engineering and Systems. Maria Fernanda developed her chapter as part of a final project in the System Dynamics class during 2016. She worked for Abbott immediately after her graduation. She currently works in Walmart Mexico, where she has served as administrative project manager in a project related to develop omni-channel strategies, as vice manager of innovation and omni-channel distribution, and currently, she is a specialist in operations management for omni-channel distribution. She also holds a certificate from MIT Sloan Business of School in Innovation of Products and Services.

David E. Salinas-Navarro – Dr. David E. Salinas-Navarro is an Associate Professor at Monterrey Tech. He holds a PhD in Business/Management Systems from the University of Lincoln and an MBA from Monterrey Tech. His research work focuses on Educational Innovation for Industrial Engineering in Experiential Learning Spaces such as the Lean Thinking Learning Space and the Social Lab for Sustainable Logistics. In 2018, he obtained a Silver Award in the category of Presence Learning and Teaching at the QS Reimagine Education competition. He is an academic advisor for the UCLOG and leads the Educational Innovation track in the MIT SCALE Latin America network.

Brenda Silupú– Brenda Silupú Garcés is a PhD candidate in Business Administration and Management from the Complutense University of Madrid. She is a researcher on issues of Informality, Supply Chain, Business Management in small businesses. She is a research professor in the area of finance at the University of Piura. She works in the GeneSys initiative and is the point of contact for Universidad de Piura with the MIT SCALE Latin America network.

Alessandro S. Silva – Alessandro Santos Silva holds executive positions in Operations and Services, mainly in the Telecommunications industry, during the last 20 years. He holds a master's degree in Management Engineering, and an MBA and a specialization in International Management from Fundação Getúlio Vargas. He has also obtained a Graduate Certificate in Logistics and Supply Chain Management (GCLOG) from the Massachusetts Institute of Technology (MIT) in 2019.

Juan D. Suárez Moreno – Juan David Suárez holds a master's degree in Industrial Engineering with a focus on Humanitarian Logistics from the National University of Colombia, where he also earned his undergraduate degree in Industrial Engineering. He has experience in research at Universidad Nacional, executing projects for various national and local government entities. Also, he has experience in complex system modeling and in the development of customized optimization applications. Additionally, his academic experience includes the GCLOG program (Graduate Certificate in Logistics and Supply Chain

Management) certification offered by MIT (Massachusetts Institute of Technology) and work with the Center for Latin-American Logistics Innovation (CLI).

Carlos Suárez-Núñez – Carlos is a professor-researcher in the Industrial Engineering Department at Universidad San Francisco de Quito (USFQ) and a consultant with the Center of Development and Transfer of Technologies (CTT-USFQ). He is the founder and director of the Institute of Innovation in Productivity and Logistics CATENA-USFQ, and is the Director of the Master Program in Industrial Engineering at USFQ. He is the co-lead of the "Urban Logistics and Last Mile Operations" research track for the MIT SCALE Latin America network.

Cansu Tayaksi – Cansu Tayaksi is a Postdoctoral Associate at the MIT Center for Transportation and Logistics (CTL), where she supports the Supply Chain Management Blended Program. She has over six years of research experience in Operations Management in academia and has joined numerous national and European Union projects in Turkey as a researcher. Cansu Tayaksi holds a BSc degree in Software Engineering, a Master of Business Administration degree, and a PhD in Business Administration with major in Operations Management from Izmir University of Economics, Turkey.

Jennifer Uchofen – Jennifer L. Uchofen Carrión is an Industrial Engineer from Universidad de Piura. Jennifer is currently working as a logistic analyst in a Peruvian retail company with over 33 stores and four distribution centers around Peru. She is in charge of the management of the logistics operation in the distribution centers, designing new strategies to boost efficiency and continuous improvement. Previously, she had also been directly involved with the development and implementation of logistic processes in the company's stores.

Juan J. Vega – Juan J. Vega is a Research Assistant at CICE, FCE, National University of Córdoba, Argentina, he is a graduate in administration and a doctoral candidate. He has a wide expertise in the Service Sector.

Josué C. Velázquez-Martínez – Dr. Josué C. Velázquez Martínez is a Research Scientist at the MIT Center for Transportation and Logistics (CTL). He has vast experience in conducting applied research on Sustainable Logistics in emerging markets. Dr. Velázquez Martínez leads two research streamlines: the MIT Sustainable Logistics initiative and the MIT Genesys, an initiative to increase the productivity and survival of micro and small firms. Dr. Velázquez Martínez holds a PhD, an MSc and a BSc degree in industrial engineering from Monterrey Tech (Mexico). Before joining MIT CTL, he served as the dean of School of Engineering at Monterrey Tech in Santa Fe, Mexico, and he was a postdoc at the Eindhoven University of Technology, the Netherlands.

José Villena – José Andrés Villena Bayona is a Budget and Acquisitions consultant at the Inter-American Development Bank (IADB) in Washington D.C., with over nine years of experience in public and private sectors. His research interests include environmental sustainability and integration of supply chain operations, especially in purchases, production, distribution, and risk

management in global supply chains. Prior to joining the IADB, José Andrés has been involved in International Business Development in the fishing, metal foundries, mining, and hospitality industries in Latin America.

Jenny E. Yalico – Jenny holds a BA degree in Industrial Engineering from Universidad de Ingeniería y Tecnología, Barranco, Lima, Perú. Also, she holds a specialization in Business Intelligence from Cibertec. She has worked in the consumer goods companies for over three years in areas of Supply Chain and Project Management. Her research interest focuses on techniques for improving processes using data, statistical analysis, and Lean Manufacturing.

Hugo Yoshizaki – Prof. Yoshizaki is a senior professor at the University of São Paulo (USP), Brazil, where he co-directs the Center for Innovation in Logistics Systems (CISLog). He is a full member of the Transportation Research Board (TRB) Standing Committee on Urban Freight Transportation, and vice-president, Americas, of the Production and Operations Management Society (POMS). He also leads several regional research initiatives in the MIT SCALE Latin America network, including the humanitarian logistics and disaster relief research track. He also serves as part of the scientific committee of the MIT SCALE Latin America Conference.

This page intentionally left blank

Chapter 1

Updates in Supply Chain Management and Logistics in Latin America and the Caribbean

C. Mejía Argueta, H. Yoshizaki and M. G. Mattos

1. Latin America and the Caribbean, A Growing Emerging Region

Latin America and the Caribbean (LAC) is undoubtedly a promising region to reckon on in terms of doing business, a big market to sell products and services, to promote trade agreements, and to develop long-term alliances to take advantage of a young workforce with a high potential to manufacture goods at low cost. However, it is also a territory with big contrasts, in terms of income disparity, lack of accessibility, polarization in resource availability (i.e., water, food), low-skilled employees, and education.

First, in terms of the number of nations, LAC is composed of around 25 countries and around 10 dependent territories. It is a vast area that occupies 20.1 million square kilometers (7.8 million square miles). The region is very rich in diverse resources (i.e., oil, gas, timber-related, fertile land, minerals, fisheries, precious metals, sugar, rubber, grains, fruits, and vegetables; Sinnott, Nash, & De la Torre, 2010). LAC possesses 25% of the forests and fertile land, and over 30% of the world's water resources (Studer, 2019).

Second, urbanization and densification rates in LAC are recognized as one of the highest, just after North America. That is partially a result that the region is home to 9% of the world's population (643 million inhabitants). The gross domestic product (GDP) of the region accounts for US$5.8 trillion (5.7% of the world's GDP; World Bank, 2020). This figure is expected to continue growing because of the increasing number of free trade agreements, long-term alliances with other regions of the world, and bigger foreign direct investment in several sectors (CEPAL, 2019).

Third, from a microeconomic perspective, most Latin Americans belong to the middle class with a gross national income (GNI) per capita of around US$8,718 per year (US$24 per day). They are recognized as one of the highest potential workforces in the world (DeCarvalho, 2019) despite suffering the effects of

Supply Chain Management and Logistics in Emerging Markets, 1–8

doi:10.1108/978-1-83909-331-920201001

continuous economic crisis, growing inflation rates, and consequences of weak educational systems (CEPAL, 2019; World Bank, 2020).

From a strategic perspective, supply chain and logistics operations in LAC pose significant barriers and problems for companies seeking to grow in emerging markets (CEPAL, 2019; DeCarvalho, 2019). One of the biggest challenges is to overcome the stark contrasts in the region in terms of macro- and microeconomics, infrastructure, and logistics performance. For instance, there are billions of dollars invested in the Panama Canal Expansion. Meanwhile, countries like Colombia still struggle to supply their main cities located in three very high mountain ranges across the Andes. Furthermore, we observe a considerable disparity in terms of the logistics performance index (LPI) per country, where Chile displays the highest score for the region with 3.32 out of 5 and Bolivia, Cuba, and Venezuela show a value equal to the lowest income countries of the world with a score between 2.2 and 2.3. This gap is better acknowledged considering that the average LPI score for the world is 2.87. For Latin America, the score is 2.61, and for Organization for Economic Co-operation and Development (OECD) members, the score is 3.62, with Germany as the top-ranked country with an LPI score of 4.2.

In a more detailed discussion, higher population densities also bring higher fragmentation of urban distribution networks, leading to frequent deliveries in smaller volumes and increased logistics costs (Fransoo, Blanco, & Mejía-Argueta, 2017; Tanco, Escuder, Heckmann, Jurburg, & Velazquez, 2018). Besides, the increasing variety of distribution channels and the diversity in customer profiles (Coca-Stefaniak, Parker, & Rees, 2010) related to preferred payment methods, order processing, and delivery alternatives makes it more complex to serve accurately and on time a large number of orders.

Additionally, LAC regions need to overcome security issues to reduce the likelihood of robberies, thefts, and other potential risks. Ultimately, this will allow not only to get high-performance supply chains but also to dissipate social concerns related to the usage of technology. That means collecting data to feed data-driven decision- and policy-making strategies with proper information coming from over 85% of small and very small (i.e., nano, micro) firms, which exist all over LAC. This is particularly important because the rise of proximity retailing and the growth of e-commerce in developing countries will allow serving millions of transactions daily if proper technological devices and software are used to enable the myriad of small firms across the region.

Last but not least, there is an essential task in investigating the role of supply chain operations in LAC to be able to respond effectively to significant societal challenges such as food security, resource waste (food, water), attention to underresourced population segments and reduce undesired environmental effects such as greenhouse gas emissions, and erosion due to poor agricultural practices, among others. While these challenges depend on multiple factors and disciplines outside supply chain management (SCM), they undermine productivity, economic growth, and social development in the long term.

2 Venues of Applied Research in SCM for Latin America and the Caribbean

Back in 2008, the MIT Center for Transportation and Logistics and LOGYCA signed a multiyear agreement to create the Center for Latin-American Logistics Innovation (CLI) to establish the Supply Chain And Logistics Excellence (SCALE) center for Latin America, which is part of the global SCALE network. This alliance has brought together over 35 academic partners from top-ranked universities in 11 countries of Latin America, and the Caribbean called the *MIT SCALE Latin America network*. The academic partners (LAC universities) work together to create a research and educational agenda that aims to face and embrace the logistics, socioeconomic, and SCM challenges of the region under diverse research initiatives that are evaluated every three years.

After 12 years of existence, the SCALE Latin America network has organized 10 academic workshops and two conferences for the region. The contributors and authors of this book presented their studies in the MIT SCALE Latin America Conference of 2018, our second multicountry conference celebrated in April 2018. Fourteen submissions out of 145 papers were selected to be part of this edited book, encompassing top academics from nine different countries (Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, the US). Showing a critical new phase for the MIT SCALE Latin America network, for the first time, true regional and multicountry research appears in this book. The combination of chapters provides a wide variety of methodologies, actual cases, managerial insights, and findings to deal with SCM and logistics challenges in LAC.

For the sake of simplicity, we organize the content of the book in three parts:

(1) Strategic topics in SCM: with contributions related to collaboration, use of financial and risk key performance indicators, as well as purchasing and prioritization approaches.
(2) Urban logistics operations and freight transportation: data-driven solutions to deliver goods in densely populated areas and/or pedestrian zones, while overcoming high fragmentation, poor infrastructure, and delivery risks; and, improving the use of other-than-truck transportation means to move cargo from harvesting areas to ports to promote exports.
(3) Supply chain operations for micro and small firms: recognized experts stressed the importance of micro and small firms in Latin America. There are topics such as a joint replenishment model for this type of firm; and on how supply chain practices and active owners/managers can help to improve their performance. Last but not least, the set of very small, family-owned retailers (called *nanostores* by Fransoo et al. 2017) is carefully investigated, as they serve as social community hubs and are the main (sometimes the only) point of sale available for low-income people.

In Part I, we present four chapters that discuss strategic topics in SCM for Latin America. In Chapter 2, Martínez et al. (2020) explore how location, frequency of risk-related events, firm's culture against risks, and the region of the

globe affect the decision to adopt a supply chain resilience strategy. They use a data set of 7,000 firms from 102 countries and perform statistical analysis to model logistics regressions, to find significant factors that explain what triggers a proactive resilience strategy. Chapter 3 from Giacon et al. (2020) introduce the importance of supplier selection for a nongovernmental organization (NGO) via a methodological framework that uses three mathematical models of multidimensional auctions to improve the efficiency of procurement by reducing costs and time. Their optimization models based on combinatorial auctions and volume discount, which are suited for procurement processes, and the multi-attribute decision analysis (MCDA) to prioritize alternatives (i.e., suppliers) might be used by other firms different than NGOs. Their results show that savings between 9 and 20% can be obtained with a combination of methods.

We live a fiercely competitive environment in the retail industry; therefore, strategy and collaboration help building a long-term competitive advantage. In Chapter 4, García Castillo et al. (2020) study the impact of collaboration between a consumer-packaged-goods (CPG) manufacturer and a Colombian supermarket chain to analyze how managing a joint price strategy in promotions and discounts allows the dyad to improve the global financial key performance indicators (KPIs). Authors use descriptive statistics and a granular understanding of KPIs such as the return of investment (ROI), promotion forecast accuracy (PFA), and market share variation to investigate the effect of promotions per store, country region, and product category. Authors use a rich data set with transactional data of 33 products and 455 points of sale.

On the other hand, Chapter 5 from Pérez et al. (2020) applies a supply chain strategy framework to optimize a company's strategy, in this case, a Peruvian manufacturer of corrugated cardboard boxes. Such methodology includes (1) a functional strategy map (FSM) to capture the essential strategy factors from current supply chain operations; (2) conceptual system evaluation and reformulation methodology (CSAR) to link strategical and tactical levels from the organization following a logical connection between the company's strategy and its activities; and (3) an MCDA method (Analytical Hierarchy Process – AHP) to prioritize the best strategy or operation to be improved. Authors combine primary and secondary data to apply the methodological framework, and they report improvements in the overall cost and fill rate, among others.

Part II comprises four chapters. The first three chapters discuss research in urban environments for different topics, cities, and countries. This topic is particularly important, given the accelerated urbanization rates of the region and the growing challenges to deliver goods and services in densely commercial areas. The fourth chapter presents a freight transportation study to facilitate exports of grains via trains. In Chapter 6, Puente-Mejia et al. (2020) introduce the adaptation and use of a methodology to investigate urban logistics solutions, based in the *Better Cities for Logistics Toolkit* proposed by the MIT Megacities Logistics Lab. The authors present the application of this methodology using primary and secondary data using diverse mathematical formulations. However, the authors did not develop their models for specific companies. Their contribution stands out by presenting three unusual, generic cases of

optimization for (1) Loading and Unloading Bays, (2) Transfer Centers, and (3) freight trip generation models that might be used in other cities of emerging markets.

Understanding city and customer features to deploy effective last-mile operations will become a must in the coming years, due to changing purchasing behaviors and dynamic city regulations, particularly in Latin America. In Chapter 7, Heckmann and Hidalgo-Carvajal (2020) use a methodology to characterize establishments, infrastructure, traffic, and delivery operations in a neuralgic section of the downtown area of Córdoba, Argentina. They use methods like Factor Analysis (FA) and Analysis of Variance (ANOVA) to find relevant factors to identify clusters to guide Córdoba's urban logistics policy and decision-making processes to regulate or to redesign last-mile operations. Large urban areas might also suffer from insecurity, particularly in emerging markets. In Chapter 8, Barreto et al. (2020) assess the risk of cargo theft in Brazil using historical data from January 2015 to November 2017 from a risk management company. They use descriptive analysis, hypothesis testing, and logistics regressions to identify critical variables to reduce the likelihood and impact of thefts for distribution operations and city transportation.

Freight transportation depends on more than just trucks to move cargo, and Chapter 9 discusses how railroad transportation is helpful to get economies of scale and to move large volumes of goods, particularly grains in long-haul trips. Guedes et al. (2020), authors of this chapter, improve the capacity of train operations by optimizing a train-scheduling problem at the port of São Luís, in northern Brazil. They propose mixed-integer linear programming (MILP) to minimize the departure times in order to improve the dwell time of freight train cars. Based on secondary data from a Brazilian logistics operator, the main contribution of this chapter comes from providing an optimized train timetable for peak days, standardization of train crossing options, and providing a support tool for traffic adjustments with other rail operators.

Finally, in Part III, we present six chapters of a trending topic in the region: SCM for micro and small firms, and nanostores' (i.e., mom-and-pop stores') operations. In Chapter 10, Velázquez-Martínez and Tayaksi (2020) position the importance of studying SCM for micro and small firms by presenting insightful facts from several cases and workshops they have carried out through their MIT GeneSys initiative to increase productivity and survival rate for this type of firms. The authors conclude presenting three main avenues of research. Chapter 11 from Otero-Palencia et al. (2020) discusses a collaborative strategy for noncompetitive small and medium-sized enterprises aiming to reduce their logistics costs. Although the authors use hypothetical data, their methodological framework based on a Stochastic Collaborative Joint Replenishment problem (S-CJRP) for multiple items is an appealing approach. It was modeled carefully to overcome challenges such as the frequency with which each buyer should replenish the products, whether to coordinate the supply chain internally or outsource its coordination and how to allocate investments among partnering buyers.

Chapter 12 introduces an empirical investigation based on data collection suing the methodology created by MIT GeneSys. Silupú et al. (2020) explore if the adoption of business, SCM, and lean practices influence the performance of 50 micro and small enterprises from Piura, Peru. The descriptive statistics and linear regressions used by authors indicate that best practices do matter for a firm's performance, and different practice categories like business, SCM, and lean complement each other even for micro and small firms. For instance, the effect of the business practices will be higher if the firm also adopts SCM practices. In Chapter 13, Yalico et al. (2020) study the role of manager's knowledge and a KPI system for small and medium-sized firms in the wood and timber sector of Peru. Authors use a framework based on Bloom's Taxonomy, descriptive statistics, and hypothesis testing to evaluate 21 firms. Results show the high variability in the knowledge about KPIs and a low level of usage.

The retail industry is one of the most dynamic sectors in the world because it depends on macroeconomic trends, microeconomic (end-consumer) patterns, political stability, and supply chain operations. We consider that the myriad of small, family-owned retailers spread all over cities of emerging markets deserves special attention and close zoom within the micro-and-small-firm studies (Fransoo et al. 2017; Mejia et al. 2019). They have particular features, such as the variety of product categories they handle (edible and nonedible), as well as constraints such as limited shelf and storage space, limited budget, low technology adoption rates, aversion to risk, and high informality rates. Therefore, we present two chapters related to nanostore operations that address strategies of how to manage current and shape future nanostore business models, as well as retail format choice.

In Chapter 14, Rangel-Espinosa et al. (2020) explore opportunities to increase the competitiveness of nanostore business models in neighborhoods with different socioeconomic levels. Authors collect primary data from customer's attributes and other characteristics from stakeholders (shopkeepers, suppliers) of nanostore supply chains in nine out of 16 boroughs from Mexico City. They use descriptive statistics and independent nonparametric tests to determine significant factors of the competitive landscape in which nanostores are immersed and analyze interaction among significant factors and stakeholders using causal loop diagrams. In Chapter 15, Avila et al. (2020) present a logistics regression model to explain customers' preference to buy in supermarkets or nanostores. They collected 110 surveys from customers in the district of Surco, Lima, Perú, which is a representative area of that famous Latin American city. Results showed that time available for purchase and a comparatively better-perceived service at nanostores would increase the probability of customers in selecting them as their main point of sale.

We hope that readers find the discussions in all chapters of this book insightful and useful. More importantly, we would like to invite readers to take advantage of the variety of topics, methods, and applications presented such that they can learn from how researchers and practitioners are facing and embracing current and future SCM challenges in LAC.

References

Avila, M. A., Larco, J. A., Antonini, C., Ortíz, M. B. & Mejía Argueta, C. (2020). A discrete choice model for retailer selection in emerging markets. In H. Yoshizaki, C. Mejía Argueta, & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 299–318). Bingley: Emerald Publishing Limited.

Barreto, L. P., Silva, A. S. & Ferreira, R. C. (2020). Risk analysis of transporting goods by road in Brazil. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 157–174). Bingley: Emerald Publishing Limited.

CEPAL. (2019). *Foreign direct investment in Latin America and the Caribbean*. Santiago: ECLAC. Retrieved from https://www.cepal.org/en/publications/44698-foreign-direct-investment-latin-america-and-caribbean-2019

Coca-Stefaniak, J. A., Parker, C., & Rees, P. (2010). Localisation as a marketing strategy for small retailers. *International Journal of Retail and Distribution Management*, *38*(9), 677–697.

DeCarvalho, I. (2019). The search for qualified talent in Latin America. Retrieved from https://hbsp.harvard.edu/inspiring-minds/the-search-for-qualified-talent-in-latin-america?itemFindingMethod=Editorial. Accessed on March 31, 2020.

Fransoo, J. C., Blanco, E. E., & Mejía Argueta, C. (2017). *Reaching 50 million nanostores: Retail distribution in emerging Megacities*. Lavergne: CreateSpace Independent Publishing Platform.

García Castillo, J., Castañeda Velásquez, A. M., Cárdenas Hurtado, A., Suárez Moreno, J. D. & Prato, D. F. (2020). A collaborative assessment of promotions performance using financial KPIs. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 61–88). Bingley: Emerald Publishing Limited.

Giacon, J., de Brito Jr., I. & Yoshizaki, H. (2020). NGO's supplier selection and procurement cost reduction with multi-dimensional auctions. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 41–59). Bingley: Emerald Publishing Limited.

Guedes, L. S. M., Bretas, A. M. C., Faria, C. H. F., Medeiros, B. T. & Moreira, B. D. (2020). Daily train scheduling in seaport terminal: A MILP approach. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 175–194). Bingley: Emerald Publishing Limited.

Heckmann, G. & Hidalgo-Carvajal, D. A. (2020). Identifying underlying urban logistics factors in old downtown of Córdoba, Argentina. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 131–156). Bingley: Emerald Publishing Limited.

Martínez, C., Paraskevas, J. P., Grimm, C., Corsi, T. & Boyson, S. (2020). The impact of environmental risks in supply chain resilience. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 11–39). Bingley: Emerald Publishing Limited.

Mejía-Argueta, C., Udenio, M., Mutlu, N. R., & Fransoo, J. C. (2019). Are nanostores there to stay in emerging markets? Working paper. MIT Center for Transportation and Logistics, Cambridge, MA.

Otero-Palencia, C., Amaya-Mier, R., Montoya-Torres, J. R. & Jaller, M. (2020). Collaborative inventory replenishment: Discussions and insights of a cost-effective alternative for noncompetitive small- and medium-sized enterprises. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 215–233). Bingley: Emerald Publishing Limited.

Pérez, A., Villena, J., Matuk, D., Luna, A. & Chong, M. (2020). An analytical hierarchy approach applied in the packaging supply chain. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 89–104). Bingley: Emerald Publishing Limited.

Puente-Mejia, B., Orellana-Rojas, C. & Suárez-Núñez, C. (2020). Data-driven solutions for evaluating and planning last mile operations in Latin America: A methodological approach focused in Quito, Ecuador. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 107–129). Bingley: Emerald Publishing Limited.

Rangel-Espinosa, M.F., Hernández-Arreola, J.R., Pale-Jiménez, E., Salinas-Navarro, D.E. & Mejía Argueta, C. (2020). Increasing competitiveness of nanostore business models for different socioeconomic levels. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 273–298) Bingley: Emerald Publishing Limited.

Sinnott, E., Nash, J., & De la Torre, A. (2010). *Natural resources in Latin America and the Caribbean: Beyond booms and busts?* Washington DC: World Bank Latin American and Caribbean studies, 55550. Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/2482/555500PUB0Natu1EPI1991501801PUBLIC1.pdf?sequence=1&isAllowed=y

Silupú, B., Agurto, M., Merino, G., Uchofen, J. & Velázquez-Martínez, J. C. (2020). Adoption of best business and supply chain practices and micro/small firms' performance: Evidence from Northern Peru. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 235–253). Bingley: Emerald Publishing.

Studer, I. (2019). Latin America's natural resources and climate change. Retrieved from https://www.nature.org/en-us/what-we-do/our-insights/perspectives/latin-america-natural-resources-climate-change/. Accessed on March 31, 2020.

Tanco, M., Escuder, M., Heckmann, G., Jurburg, D., & Velazquez, J. (2018). Supply chain management in Latin America: Current research and future directions. *Supply Chain Management*, *23*(5), 412–430.

Velázquez-Martínez, J. C. & Tayaksi, C. (2020). Supply chain management for micro and small firms in Latin America. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 197–214). Bingley: Emerald Publishing Limited.

World Bank. (2020). Data bank. Retrieved from https://databank.worldbank.org/home.aspx. Accessed on March 31, 2020.

Yalico, J. E., Ortíz, M. B., Larco, J. A., Gallegos, A. & Antonini, C. (2020). Managers' knowledge of key performance indicators in small and medium enterprises: Wood and timber SMEs in Peru. In H. Yoshizaki, C. Mejía Argueta & M. G. Mattos (Eds.), *Supply chain management and logistics in emerging markets* (pp. 255–271) Bingley: Emerald Publishing Limited.