Chapter 5
Logistics Practices in Small and Medium Enterprises (SME):
Risk Context Survey for Hurricanes

Jesus Escalante
Universitat Politècnica de Catalunya, Spain

Ileana Monsreal
Universidad Autónoma de Yucatán, Mexico

Josep Casanovas
Universitat Politècnica de Catalunya, Spain

ABSTRACT

The present study explored the logistics practices of the managers of Small and Medium Enterprises facing associated risks and hydro-meteorological phenomena. The aim was to study the similarities and relationships between different groups of variables. The methodology, analysis and conclusions are described based on the ERRS-2014 survey, which measures the perception of the environment, capacity to react, prospective and collaboration. Finally, the results obtained show significant views perspectives to diversify diagnostic tools, which are useful to evaluate, to plan and to assess scenarios as well as their impacts on resource management in the context of risks due to hydro-meteorological phenomena (i.e. hurricanes) in metropolitan areas.

INTRODUCTION

Supply chains are complex networks of enterprises that experience continual turbulence, creating a potential for unpredictable disruptions. In fact, executives identify supply chain risk as the highest threat to their firms (Erkoyuncu, Apa, & Roy, 2015; Zhao, Huo, Sun, & Zhao, 2013). Studies by the Council of Supply Chain found that, although effectively managing such operational risks directly affects financial performance, a majority of corporate board members were informed about risks (SCC, 2014). Furthermore, traditional risk management techniques are lacking in their ability to assess the complexities of

supply chains, evaluate the intricate interdependencies of threats and prepare a firm for the unknowns of the future (Zhao et al., 2013).

As they become aware of these gaps, many supply chain researchers are beginning to understand the value of the concept of resilience, defined as "the capacity for enterprise to survive adapt and grow in the face of turbulent change" (Fiksel, 2003; Pettit, Fiksel, & Croxton, 2013).

This study builds on lessons learned from supply chain disruptions to create a conceptual framework for evaluating and improving supply chain risk.

Today it is possible to find studies that incorporate data on three indices: one for identifying individuals, another for the variables and a third for the periods during which the study was carried out.

The aim of this study was to analyze similarities and differences from the point of view of the Multiple Factor Analysis (MFA) (Abdi & Valentin, 2007; Escofier & Pages, 1994), to study the configurations of individuals and the relationships between different groups of variables.

Based on the ERRS-2014, the responses to a survey of 155 managers of small and medium enterprises were studied. The MFA and procedure, according to the variables that comprise the initial tables, are described.

The aim of this study was to analyze the logistics management practices and infer how they respond within the context of risk linked to hydro-meteorological phenomena. Each of the subscales had a similar number of items. The advantage of the above is that it enables comparisons to be made intuitively based on direct scores along a Likert scale.

For the analyses and statistical tests the R statistical software was used.

LITERATURE REVIEW OF MFA PRACTICES IMPLEMENTATION

Multiple factor analysis (MFA) is a generalization of principal component analysis (PCA). Its goal is to analyze several data sets of variables collected on the same sets of variables collected on the same set of observations, or several sets of observations measured on the same set of variables. As such, FMA is part of the multitable PCA family which comprises related techniques correspondence analysis (Abdi & Valentin, 2007).

MFA deals with a multiple table, composed of sets of either quantitative or categorical variables balancing the influence of the different sets of the first principal axis by dividing the weight of their variables/columns by the first eigenvalue of the separate analysis of this set.

Thus, the highest axial inertia of each group is standardized to 1. MFA offers the usual results in any PCA and also tools for comparing the different sets such as the superimposed representation of the rows as induced separately by every set of columns. Initially multiple factor analysis for contingency tables was proposed to simultaneously analyze several frequency/contingency tables. Afterward, it has been extended to multiple tables with a mixture of quantitative, categorical and frequency sets.

Then refer FMA applications, note that most are focused on social issues, but there are still few studies related to business. This research aims to extend the application of FMA associated with the risk versus practices logistical of managers on metropolitan zone.

The insurability of risk: a quantitative approach applied to motor insurance, focus on study of 32 consumer durable goods and some countries between 1977 and 2008. Countries are divided into five categories based on gross domestic product per capita purchasing power parity. The techniques imple-

Related Content

Robust Iterative Learning Control for Linear Discrete-Time Switched Systems

Ouerfelli Houssem Eddine, Dridi Jamel, Ben Attia Selmaand Salhi Salah (2015). *Handbook of Research on Advanced Intelligent Control Engineering and Automation (pp. 543-565).*

www.irma-international.org/chapter/robust-iterative-learning-control-for-linear-discrete-time-switched-systems/123331

Website Performance Measurement: Process and Product Metrics

Izzat Alsmadi (2013). *Business Strategies and Approaches for Effective Engineering Management (pp. 275-301).*

www.irma-international.org/chapter/website-performance-measurement/74689

Distributed Maximally Permissive Nonblocking Control of Flexible Manufacturing Systems

Renyuan Zhang, Yongmei Gan, W. M. Wonhamand Zhaoan Wang (2013). *Formal Methods in Manufacturing Systems: Recent Advances (pp. 36-60).*

www.irma-international.org/chapter/distributed-maximally-permissive-nonblocking-control/76565

QFD-Based TOPSIS Methodology for Material Selection

K. G. Durga Prasad, B. L. Manasa, P. Krishna Murthyand K. D. S. Sravani (2020). *Handbook of Research on Developments and Trends in Industrial and Materials Engineering (pp. 169-193).*

www.irma-international.org/chapter/qfd-based-topsis-methodology-for-material-selection/247015

Nonlinear Adaptive Filtering with a Family of Kernel Affine Projection Algorithms

Felix Albuand Kiyoshi Nishikawa (2015). *Handbook of Research on Advanced Intelligent Control Engineering and Automation (pp. 61-83).*

www.irma-international.org/chapter/nonlinear-adaptive-filtering-with-a-family-of-kernel-affine-projection-algorithms/123309