Review

Journal of Economics and Social Research
Ekonomi ve Sosyal Araştırmalar Dergisi
ISSN: 2148-1407/ e-ISSN: 2651-3250

Makale Başvuru/Kabul Tarihleri:
Received/Accepted Dates:
10.06.2020/18.07.2020

Cilt 7, Sayı 13, Yıl 2020

Quantitative Approaches in Supply Chain Management

Mustafa Haşim YILDIRIM
Yeditepe Üniversitesi, Uluslararası Ticaret ve
Lojistik Yönetimi Doktora Öğrencisi
mustafa@energyturco.com
ORCID: 0000-0001-6172-6217
Prof. Dr. Erkut AKKARTAL
Yeditepe Üniversitesi, Ticari Bilimler Fakültesi
akkartal@yeditepe.edu.tr
ORCID: 0000-0002-7090-4449

Abstract

This chapter provides to the reader to understand the importance of quantitative research methods during decision process in a firm, management company or public facilities. In this chapter, quantitative research methods affect on last decision with productivity, profitability and competition. Emprical and deterministic research models are examined. This chapter is based on classification of quantitative research methods on supply chain management with up to date developments in industrial business and scientific research area. Also, some examples of quantitative research models are mentioned in this chapter. Besides, why quantitative methods needed in desicion process with explained examples. Furthermore, brief information on qualitative research models are referred in this chapter.

Keywords: Quantitative Approaches in SCM, Emprical and Deterministic Analysis, Decision Process, Data Analysis.

Özet

Bu çalışmayla birlikte okuyucuların özel bir firma, yönetim şirketi veya devlet kurumlarının karar verme süreçleri için nicel araştırma tekniklerinin öneminin anlatılması amaçlanmıştır. Özellikle tedarik zinciri yönetimi içerisinde alınacak kararlar için nicel araştırma tekniklerinin kullanılması ayrıca bir önem teşkil etmektedir. ecisions. Tedarik zincirinin yönetiminin varlığıyla birlikte üretim, karlılık ve rekabette iyileşmeler ve gelişmelerde olumlu ilerleme hedeflenmektedir. Bilim ve iş dünyasının daha doğru ve ve güçlü karar alma noktasında bilim adamları nicel araştırma tekniklerinin tedarik zinciri yönetiminde son dönemde çok daha etkin bir hal aldığını düşünmektedir. Uygulayıcılar henüz nicel araştırma tekniklerini tam anlamıyla kabullenmemesine rağmen, hatrı sayılır sayıda bilim adamı yaptıkları daha fazla çalışmaların sonucunda günümüzde nitel ve nicel araştırma tekniklerinin birbirini pozitif korelasyonla etkilediğini ifade etmektedir. Bu sebeplede, amprikal ve deterministik araştırma teknikleri bu çalışma içerisinde nicel araştırma tekniklerinin önemini tüm okuyucuların net bir şekilde anlamaları hedeflenmiştir. Bu çalışma içerisinde nicel araştırma tekniklerinin tedarik zinciri yönetiminde sınıflandırılması ve günümüzdeki iş ve bilim dünyasındaki gelişmelerinin neler olduğu üzerine hazırlanmıştır.

Anahtar Kelimeler: Tedarik Zincirinde Nicel Yaklaşımlar, Amprikal ve Deterministik Analizler, Karar Verme Süreci, Veri Analizi.

1. Introduction

In Industrial Applications of Supply Chain Management (SCM), qualitative research techniques are preferred to make decisions. It is known that with the presence of Supply Chain Management, it is aimed to advance in a positive way in productivity, profitability and competition. In recent years, scientists predict that the use of quantitative research methods in SCM separately affects the right and strong decision making in scientific studies and business world.

Today, the number of scientists who think that qualitative and quantitative research methods affect each other with positive correlation has reached considerable levels and although there are more applications in this field, practitioners do not want to accept quantitative research techniques yet.

In the time we live, supply chain management has become much more global and complex. Supply Chain Management has a special importance and more sensitivity especially on some disciplines. Today, supply chain management, which we feel almost everywhere in our lives, has become indispensable for logistics, sales and marketing, operational management processes, purchasing and strategic management units.Therefore, the importance of quantitative research techniques comes to the fore in making administrative decisions. The availability of data in quantitative research methods and the ability to compare this data will positively affect making the right decision in the management process.

High development strategies in the computer software technologies have affected quantitative research methods positively, since it is possible to easily make complex modeling of the data we have, to complete the calculations of this data in seconds, to evaluate the combinations at the back interface and to process the data.

It is important to have quantitative methods to make a logical reading of the operational processes of all developments that are less frequently encountered but are of great influence in order to correctly understand and interpret the future and future position of an enterprise or firm.The main rationale here is to take into account the numerical losses and impacts that have occurred in the face of certain known events and events for a company or business. With all the variables and factors in the system taken into account, it is aimed to predict what the future position of the relevant business or company will be in the supply chain management.

With this article, it is aimed to evaluate some application examples and the results of these applications with sharing of short information notes about the quantitative research methods. Although it is difficult to collect the numerical data, it will be tried to summarize how important the analysis of these datas with advanced computer programs in a very short time and make a report, and how important for the enterprises and for their future positions.

2. Evolution of Quantitative Research Methods in Supply Chain Management

Making decision is a tough process for an enterprise or company, especially for management board of firms. There is a process in which managers who prefer to make decisions based on past work experiences and results of applications are concentrated. Due to this reason, they prefer using of qualitative research analysis while they have decision process. In recent years, scientists predict that the use of quantitative research methods in SCM separately affects the right and strong decision making in scientific studies and business world (Finke, Sproedt, & Plehn, POMS 21st Annual Conference, 2010).

In this chapter, evolution of quantitative research methods in supply chain management is going to be observed, study observations and application fields of quantitative research analysis are going to be explained with brief information notes which are supported by previeous articles. Quantitative research techniques will be observed under two main headlines with their sub methods, then the syntax and analysis of the informations obtained will be done.

3. Quantitative Research Methods in Supply Chain Management

Two main headlines with sub methods from different sector are going to be briefly explained and discussed in this section.

3.1. Emprical Quantitative Research Methods in Supply Chain Management

3.1.1. Multi Variable Data Analysis

The most important constraint faced by small businesses is the inadequacy of their marketing capabilities and being timid about their investment. These companies struggle with daily activities instead of the investments they need to make on marketing skills and logistics activities. They have to work with the concern of establishing the financial balance correctly. By the correct handling of the instruments of marketing capabilities and logistics concepts, it is possible for small enterprises to develop and getting progress (Rawwas, Konishi, Kamise, & Al-Khatib, 2008)

During the follow-up of these studies, the benefits of quantitative research techniques in supply chain management will also be briefly mentioned. Using the multiple regression analysis technique in the case study to be addressed, the financial aids of the suppliers and the services of the buyers have been mentioned about the factors affecting the small wholesalers, and also shared brief information about the effects of the suppliers' services and the services of the buyers to the big wholesalers (Rawwas & Iyer, International Business Review, 2012)

Today, marketing means the same thing as sales for many small companies (businesses). Since small businesses drowned in daily commercial routines cannot increase their sales, maintain an instantaneous financial balance and spend a lot of time to meet the individual demands and wishes of customers, they leave their places to larger businesses that have a strong organizational structure and economic strength (Heady, Maples, & Greco, 2005). While large enterprises adapt to all kinds of logistics-related changes and developments, while integrating them into their presnt systems, small businesses increase their order and transportation costs by 15% in total sales compared to large enterprises, together with the economic disadvantage they have in operational efficiency. In fact, in the system they have, it can be predicted that there will be a positive return to their companies at a level that may vary between 20% and 30% of their spending today, together with the improvement activities they will perform only in distribution channels (Roundtable, 2001).

In one of the opinions, small enterprises are not in competition with businesses that are directly larger than themselves, as they operate in different business areas compared to large enterprises (Audretsch, 1995) (Audretsch, Prince, & Thurik, Do small firms compete with large firms?, 1999). The reason for this is that although the economies of scale, scope and learning abilities are insufficient, they have much more flexibility and strong emotional and strong bonds with their customers (Noteboom, 1994).

Key factors of effective performance for above mentioned small and large enterprises are; Marketing Skills: Development of Relationship and Services, Communication, Loyalty, Trust, Commitment to Members, Assistance Programs, Power Brands and Assortments, Logistics Communication and Facilities, Just-in-Time, Supplementary Logistics, Prouct Returns and Availability, Increased Costs Absorption and Logistics Employees (Rawwas & Iyer, International Business Review, 2012).

3.1.1.1. Methods

3.1.1.1.1. Study Setting

Japanese wholesaler companies from Osaka and Kobe were case study. They were represents 4.2 million people from Osaka City and Kobe City. Data collection procedure was completely founded by Japanese Goverment with a consultant from Kobe University.

3.1.1.1.2. Data Collection

Data collection was carried out in two stages. In the first stage, pretest application was made. Surveys were handed over to the managers of 125 different wholesalers under the control of the Hyogo and Osaka district governorships. One week later, survey which collected and distributed 104 questionnaires to be filled record as desired. The data from these questionnaires were analyzed and the reliability coefficient alpha 0.7 and above was obtained. While 75% of 832 studies had an alpha coefficient of 0.7 and above, 14% of them were 0.9 and above. The value of 0.9 and above is

considered as redundancy. Accordingly, 0.7 and above value is sufficient and compatible with other values (Peterson, 1994).

In the second stage of the study, a questionnaire was sent to the managers of 2000 wholesalers in Osaka and 1000 wholesalers in Hyogo via e-mail. 577 of the questionnaires, which were sent to 3000 people, were filled in and sent back, after they were checked, 545 were found suitable for analysis. As a result of these tests with wholesalers in different business lines, it was understood that 305 wholesalers were medium-sized, 174 wholesalers were small and the remaining 66 wholesalers were large-scale businesses.

3.1.1.1.3. Marketing Capabilities

In the study for marketing capabilities; Variables were measured according to the exchange between 20 different services performed by suppliers, wholesalers and retailers (Rawwas, Konishi, Kamise, & Al-Khatib, 2008). These variables include efficient communication, loyalty, trust, assistance programs, commitment to channel members and the power of the brand, which we mentioned in the previous section. Up to 22 variables have been downloaded through factor and data reduction analysis among the six titles we have mentioned. According to the study done by Peterson in 1994, values of 0.78 and above are considered reliable.

3.1.1.1.4. Logistics

According to the studies conducted by Rawwas et al. In 2008, the measurement of logistics variables with nine different logistics dimensions, which are frequently used in marketing channels. Along with the factor and data reduction analysis, it was reduced to 9 variables in two factors. For logistics, which is an independent variable as in marketing skills, alpha value was evaluated in the same way (Rawwas & Iyer, International Business Review, 2012).

3.1.1.1.5. Performance

In one of the previous studies, performance evaluation was made to measure the performance of wholesalers. In this regard, net profitability in achieving the purpose, social communication, social satisfaction, the process of adaptation to new products and new markets, and the operational processes of syncranization of the given labor to the existing system are covered. The effects of suddenly rising or falling performance processes on the system in the current market are examined (Kumar, 1991) (Kumar, Stern, & Achrol, Assessing reseller performance from the perspective pf the supplier, 1992).

3.1.1.1.6. Statistical Analysis on MANOVA

MANOVA is one of the important methods used in determining and revealing the differences between small and large wholesalers when it is desired to be evaluated according to marketing capabilities and logistics variables. In cases where multiple metric criteria and categorical variables are encountered during the comparison of small and large wholesalers, it is more appropriate to choose MANOVA technique (Rawwas & Iyer, International Business Review, 2012).

3.1.2. Regression Analysis

The logistics industry is a combination of many areas of work, and if we want to express these areas of work under the main headings: we can count transportation, storage, handling, the transformation of goods, processes, delivery and information technology, which has become the most important element of recent times. The strong connection and interaction between the developments in the economy and the developments in the logistics sector caused the academy world to reflect on these two important issues and show a special interest. However, the data obtained as a result of these studies have been evaluated and discussed with qualitative methods. In this section of our article, the importance and effect of linear regression method and quantitative

research techniques in supply chain management will be discussed. As a first step, we will examine and interpret the indexes in the fields of economy and logistics whether there is a strong connection between the economy and logistics of metropolitan cities (Lan, Yang, & Huang, 2017).

With this article, the contribution of the changes and developments in the logistics sector to the metropolitan economies through the quantitative analysis will be examined. The effects of metropolitan economies on the logistics industry can be observed in a longer term and their data can be collected, and the development of the logistics sector, which adapts to new changes in information technologies, agrees. The growth of economies is closely related to the strengthening and development of their production, and therefore, there are positive and profound effects on the results of implementation (Mendez, 2001).

While the logistics industry has an important share in the national income of countries, it also attracts the attention of academia and business world. Due to this crucial attraction, extensive studies have been carried out on the logistics industry (Wiengarten, Pagell, Ahmed, & Gimenez, 2014). While planning and configuring the logistics of a metropolitan city, important logistic key points of the city, energy conservation, mitigating the traffic jams that may occur, protection of nature and the environment and labor costs should be approached with care (Taniguchi, Noritake, Yamada, & Izuminati, 1999). It is important to examine the relationship between regional economic growth and regional transportation infrastructure and to come up with a model. With this model, the impact of regional transportation infrastructure on the production and services of the regional economy is clearly expressed (Talley, 1996).

Understanding the direct and indirect effects of quantitative research techniques on the decision making process depends on the correct formula equation to be established. It is important in terms of observing the effects of investments to be made on regional transportation infrastructure on economic development and analyzing of. When the direction of the relationship between transportation type and regional economy is analyzed, it is seen that there is a positive correlation between transportation and economy (Debbage, 1999).

The common view of scientists and industry leaders in recent years, the relationship between regional transport and regional economy is getting stronger day by day, and it seems that regional logistics has positive contributions to the regional economy. However, it is also understood that the changes in the regional economy have little impact on regional logistics. For this reason, it will be useful to examine the effects of the regional economy on regional logistics in more detail and in depth (Lan & Zhong, 2018).

Empirical analyzes have been examined in relation to the examination of the relationship between logistics and economy. For these analyzes for the developments in the logistics industry and economy, practitioners generally found it sufficient to work with a single indicator, such as social logistics costs and GDP. Some scientists or industry veterans have conducted studies using multiple indicators to measure and evaluate. However, the indicators they preferred here remained more subjective, and therefore the studies were less scientific. The studies carried out in determining the relationship between logistics and economy are mostly in the macro perspective and at the level. The deficiency of the mathematical formula used to explain the relationship between this pair needs to be replaced (Lan, Yang, & Huang, 2017).

3.1.2.1. Relationship in between Logistics and Economy

In order to analyze the common effects related to the development of the relationship between the economy and logistics of metropolitan cities, metropolitan cities located in a country should be addressed, changes and developments in the economic data and logistics data of these metropolitan cities should be analyzed by correlation analysis and regression analysis (Baum, 2006).

3.1.2.1.1. Followed Transactions

- Standardized Processing of Original Data
- Measuring the development of Metropolitan Logistics and Economy

1. Calculation index weighting by using entropy method
    - Decision matrix setting-up
    - Standardized decision matrix
    - Weighting of evaluated object and indicator
    - Calculating the entropy value
    - Calculating the coefficient difference
    - Determine the weighting of the evaluated indicator
2. Calculation the levels of logistics and economic development
    - Relation Analysis of metropolitan economy and logistics
    1. Metropolitan logisitics is conducive to metropolitan economy growth
    2. Metropolitan economy prosperity promotes metropolitan logistics development

3.1.2.2. Relationship between regional economic strength and logistic development

It should be known that the strength and recovery of the regional economy is a key factor in strengthening regional logistics. When the regional economy starts to grow, it brings with it the investments to be made for regional logistics. Thanks to the solid economy established and the regional economy fed by reliable technology used, it is possible for the logistics industry to progress, develop and strengthen. Logistics demands strengthening with developed regional economy move in parallel with each other (Lan, Yang, & Huang, 2017).

3.1.3. Chi-square - Regional Impacts in Supply Chain

It is important for companies to strengthen and agile their own performance against the risks in the supply chain. In fact, these risks motivate companies positively to improve themselves and make their work more efficient. Strengthening and strengthening the connections of suppliers and customers with each other can be seen as the main target for improving their performance (Jajja, Chatha, & Farooq, 2018).

In today's world, where globalization is increasing day by day, technology is unabatedly accelerated and organizational capabilities are developed, the estimation and management of the actors in the supply chain has become more feasible (Tang, 2006) (Tang & Musa, 2011). The natural consequences of the deficiencies and deficiencies in the organizational structure can be defined as the existing risks in the supply chain management (Brindley & Ritchie, 2004) (Tummala & Schoenherr, 2011). Ultimately, unpredictable developments in the business world over the past two decades - events such as fire, earthquake, tsunami or nuclear disasters (Pettit, Croxton, & Fiksel, 2013) - seriously undermine companies' performance and decision-making mechanisms (Chopra & Sodhi, 2004). For this reason, the business and academy world also needs to concentrate on seriously in order to eliminate such big risks on the supply chain (Colicchia & Strozzi, 2012).

If the risks that are thought to be on the supply chain are to be grouped under two major headings, the first one can be considered as resources and previous experiences, and the second one is management and results. It is argued that the risks on the supply chain today come from different sources (Norrman & Jansson, 2004). If we want to list what these sources are in terms of items; We can summarize the supply of firms, customer-based, regime laws in the applied states, the ability to

foresee, transportation vehicles, the status of workers and scale of firms (Tummala & Schoenherr, 2011) (Gaudenzi & Borghesi, 2006) (Jiang, Baker, & Frazier, 2009) (Thun, Drüke, & Hoenig, 2011).

Considering the findings that emerged as a result of the studies, it is not possible to mention in the literature that there is concrete quantitative data indicating that the service sector positively affects the performance of the companies in the long term (Bustinza, et al., 2018) (Weijia, Kee-Hung, & Yongyi, 2018).

3.1.3.1. Research Path

- Supply Chain Risk
- Supply Chain Integration
- Agility Performance

3.1.3.2. Test and Measurement Model

Quantitative research techniques are now being used more and more in decision making processes, and the missing parts are requested to be completed. In some studies conducted to test the discriminant validity in the evaluation of the researches and data carried out, the CFA (Conformity Factor Analysis) has chi-square values with the model established and each structure pair 1 constraint. The chi-square values found by placing constraints are compared with the chi-square values obtained without restriction. The meaningful (p value <0.05) is considered to provide the hypothesis for chi-square values for all pairs of structures (Segars & Groover, 1993).

In addition, the confirmatory single-factor test which is proposed by Posdakoff and his friends on CMB (Common Method Bias) can be tested with single-factor test. If there is a remarkable increase in chi-square number compared to the single-factor model, the result is that the CMB does not need to be taken into account. (Podsakoff & Organ, 1986).

3.2. Deterministic Quantitative Research Methods in Supply Chain Management

3.2.1. Decision Tree Analysis

Basic factors of risk: Frequency and Severity can be seen closer by the reader in Supply Chain Research Methods. Aim is to evaluate different options according to risk and not to assess the risk itself. Fixed number desicion is going to provide you to move on your next step: Scenario Analysis and stress testing (Waters, 2007).

3.2.1.1. Scenario Analysis and Stress Testing

Aims of identifying effects and impact on a firm's or supply chain's operational performace. Both focus on less frequent but high impact incidences (LFHI), such as catastrophic events. The basic idea is quantifying the loss or effect of certain situation or events. All the factors is used in the model to see future position of the company on supply chain's business environment (Finke & Nagele, 2009).

3.2.1.2. Fuzzy Logic

It allows different degree of truth. Fuzzy numbers are introduced to reflect uncertainty. Fuzzy logic does not assume any statistical distribution for the uncertainity parameters and complexity is relatively low even when introducing a large uncertain parameters (Mitra, Gudi, Patwerdhan, & Sardar, 2009). It is possible to translate an inexact, non-deterministic input into a deterministic output with Fuzzy Logic. It is used for in Air Conditioners, Elevators and car's ABS. Uncertainity in parameters such as product demands, machine uptimes, safety targets, delivery times or capacity are represented by fuzzy numbers.

3.2.1.3. Artificial Neural Networks (ANNs)

Designed and inspired from human and animal nervous system. Aim is to solve the problem. Most and important feature is "learning" in ANNs. Even datas are complex or imprecise, ANN is learning how to treat with any input data to generate desired output. It is a basic element of artificial intelligency. It is very effective on solving complex classification and regression problems. ANNs are especially useful for time series predictions, such as stock exchange indexes and exchange rates. It is preferred to use sales and material demand forecasting and particulary aiming at reducing the bullwhip effect. It might be used development of Early Warning System.

3.2.1.4. Simulation

It is started to use in recent years with developing computer technologies and software programs.

i. Monte Carlo Simulation combine values chosen from two probability functions and provides one resulting probability function. Basic advantages of this simulation are ease use and implementation.

ii. Spreadsheet Simulation describes fairly simple yet effective simulation tool. However, the simplicity comes a long with a limited use like before.

iii. System Dynamics Simulation is to be used in Engineering sciences. System dynamics is a method to evaluate the interrelation beween different factors and influences on a overall system.

iv. Discrete-Event (DE) Simulation is very useful and appropriate to use. In this model certain aspects of supply chain risks have not been accounted for such as buffers, variations in lead times or a shift in demand.

4. Conclusion and Future Research

Studies and researches show that with the use of quantitative research techniques, businesses, firms, various units of the state state that when they reach the decision making stage of the scientific world, they make stronger decisions by displaying strong basic foundations and by using numerical data. After defining the deficiency determined by using quantitative research techniques in one of the structures that affect each other, the results obtained by the measures taken and the improvements made are much more efficient for the two structures to act in a much stronger and positive correlation.

It is obvious that with the further study of quantitative research techniques and the use of quantitative research techniques more in decision making processes, it can be obtained a much richer knowledge about the structure of the supply chain. Especially with the modeling of the effects of the interaction of the internal and external contexts of wholesalers, which is one of the important rings of the supply chain, the alliance relations of the wholesalers with each other, the instinct to act together, the importance of industrial developments for themselves, the ability and flexibility to compete both internally and externally, the organization The fact that variables such as structure and shape, preferred industry type are included in the model to be established will support the supply chain to have a healthier structure.

Empirical investigations from the quantitative research techniques strongly support the understanding of the relationship between firms and their suppliers. The deficiencies in the integration of the supplier and the customer can be predicted to constitute the risk factor in the supply chain. However, this prediction must be supported by further experimental research and the existing gaps must be filled strongly.

It is evident that the quantitative research techniques are less common, and strategies and studies for the development of applications in their respective fields, whether in industry, logistics or academia, should be focused and followed. It is stated that, at the end of the studies that use quantitative research techniques, it will be beneficial in decision making in Supply Chain Management. Although such an opinion has occurred, gaps still exist due to the lack of integration in

management processes and their use in the industry and, as a result, the evidence is not at the desired level. For this reason, it is highly recommended to speed up and increase the number of studies on this field, which is important as quantitative research techniques, which will affect the sectors and academia.

It is an undeniable demand that the basic and advanced integration of the rings (elements) in the supply chain can be achieved. It supports the establishment of strong and solid bonds between suppliers and customers, especially in service sectors. It is supported with this article that it is necessary to look at the different aspects of buyer and supplier relations, which were previously examined more with qualitative research techniques, in particular, the need to prioritize quantitative research techniques. By establishing a healthy structure of the services provided in the service sector, the positive strengthening of the interactions of the supplier and all other relevant related units in relation to it and the improvement of the services can be carried out on much stronger foundations with the data obtained from the use of quantitative research techniques. Despite the fact that the previous data is not available and that no studies have been done before on them negatively affects the targeted studies, strengthening the integration of the supply chain and the execution of the works should be supported and the work should not be abandoned.

REFERENCES

Audretsch, D. B. (1995). Innovation and industry evolution. Cambridge: MA: MIT Press.

Audretsch, D. B., Prince, Y. M., & Thurik, A. R. (1999). Do small firms compete with large firms? Atlantic Economic Journal, 201-209.

B., N. (1994). Innovation and diffusion in small firms: Theory and evidence. Small Business Economics, 327-347.

Baum, C. F. (2006). An Introduction to Modern Econometrics Using Stata. Stata Press.

Brindley, C., & Ritchie, B. (2004). Introduction. In: Brindley, C. (Ed.). Supply Chain Risk. Aldershot: 3-13.

Bustinza, O. F., Vendrell-Herrero, F., Gomes, E., Lafuente, E., Opazo-Basaez, M., Rabetino, R., et al. (2018). Product-service innovation and performance. International journal of business environment , 95-111.

Chopra, S., & Sodhi, M. S. (2004). Managing Risk to Avoid Supply-Chain Breakdown. MIT Sloan Management Review, 53-62.

Colicchia, C., & Strozzi, F. (2012). Supply chain risk management: a new methodology for a systematic literature review. International Journal of Supply Chain Management , 403-418.

Debbage, K. G. (1999). Air transportation and urban-economic restructuring: competitive advantage in the US Carolinas. Journal of Air Transport Management, 211-221.

Finke, G. R. (2010). POMS 21st ., (s. 15-21).

Finke, G. R., Sproedt, A., & Plehn, J. F. (2010). POMS 21st Annual Conference. A Comparison of Quantitative Methods in Supply Chain Risk Management – Benefits and Drawbacks (s. 015-0668). Vancouver, Canada: ETH Zürich, BWI Center for Enterprise Science.

Finke, G., & Nagele, F. (2009). Designing an applicable framework to quantify operational risk. CTL. Cambridge: Massachussets Institute of Technology & Karlsruhe Institute of Technology, KIT.

Gaudenzi, B., & Borghesi, A. (2006). Managing risk in the supply chain using the AHP method. Int. J. Logist. Manag., 114-136.

Heady, R., Maples, G., & Greco, A. (2005). Cost engineering for small businesses. AACE International Transactions, 41-46.

Jajja, M. S., Chatha, K. A., & Farooq, S. (2018). Impact of supply chain risk on agility performance: Meditating role of supply. International Journal of Production Economics , 118-138.

Jiang, B., Baker, R. C., & Frazier, G. V. (2009). An analysis of job dissatisfaction and turnover to reduce global supply chain risk: evidence from China. J. Oper. Manag. , 169-184.

Kumar, N. (1991). A methodology for assessing channel intermediary performance from the supplier's perspective. Ph. D. dissertation. Evanston: Nortwastern University.

Kumar, N., Stern, L. W., & Achrol, R. S. (1992). Assessing reseller performance from the perspective pf the supplier. Journal of Marketing Research , 238-253.

Lan, S., & Zhong, R. Y. (2018). Coordinated development between metropolitan economy and logistics for sustainability. Resources, Conservation and Recycling , 345-354.

Lan, S., Yang, C., & Huang, G. Q. (2017). Data Analysis for Metropolitan Economic and Logistics Development. Advance Engineering Informatics , 66-76.

Mendez, M. F. (2001). The Logistics and Transportation Problems of Latin American Intgration Efforts: The Andean Pact: A Case of Study.

Mitra, K., Gudi, R. D., Patwerdhan, S. C., & Sardar, G. (2009). Towards resilient supply chains: Uncertainty analysis using fuzzy mathematical programming. Chemical Engineering Research and Design , 967-981.

Norrman, A., & Jansson, U. (2004). Ericsson's proactive supply chain risk management approach after a serious sub-supplier accident. Int. J. Phys. Distrib. Logist. Manag. , 434-456.

Noteboom, B. (1994). Innovation and diffusion in small firms: Theory and evidence. Small Business Economics , 327-347.

Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. Journal of Consumer Research , 381-391.

Pettit, T. J., Croxton, K. L., & Fiksel, J. (2013). Ensuring Supply Chain Resilience: Development and Implementation of an Assessment Tool. Journal of Business Logistics , 46-76.

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. Journal of Management , 531-544.

Rawwas, M. Y., & Iyer, K. N. (2012, October 16). International Business Review. How do small firms possibly survive? A comparison study of marketing skills and logistics infrastructure of small and large wholesalers , s. 687-698.

Rawwas, M. Y., Konishi, K., Kamise, S., & Al-Khatib, J. (2008, January). Industrial Marketing Management. Japanese distribution system: The impact of newly designed collaborations on wholesalers performance , s. 104-115.

Roundtable, O. M. (2001). Optimizing costs along the supply chain. Decision Support Memorendum , 65-72.

Segars, A., & Groover, V. (1993). Re-examining perceived ease of use and usefulness: A confirmatory factor analysis. MIS Quarterly , 517-525.

Talley, W. (1996). Linkages between transportation infrastructure investment and economic production. Logist and Transport Review , 145.

Tang, C. S. (2006). Perspectives in supply chain risk management. International Journal of Production Economics, 451-488.

Tang, O., & Musa, N. S. (2011). Identifying Risk Issues and Research Advancements in Supply Chain Risk Management. International Journal of Production Economics, 25-34.

Taniguchi, E., Noritake, M., Yamada, T., & Izuminati, T. (1999). Optimal size and location planning of public logistics terminals, Transport Res. Part E:. Transport and Logistics Review, 207-222.

Thun, J. H., Drüke, M., & Hoenig, D. (2011). Managing uncertainty-an emprical analysis of supply chain risk management in small and medium-sized enterprises. Int. J. Prod. Res., 5511-5525.

Tummala, R., & Schoenherr, T. (2011). Assessing and Managing Risks Using the Supply Chain Risk Management Process (SCRMP). Supply Chain Management, 474-483.

Waters, D. (2007). Supply Chain Risk Management. London: Kogan Page.

Weijia, W., Kee-Hung, L., & Yongyi, S. (2018). The impact of servitization on firm performance: a meta-analysis. International Journal of Operations & Production Management, 1562-1588.

Wiengarten, F., Pagell, M., Ahmed, M. U., & Gimenez, C. (2014). Do a country's logistical capabilities moderate the external integration performance relationship? J Operat. Manage, 51-63.