The Management of Costs Using Enterprise Resource Planning and Staff Involvement in the Cold Chain Industry

[1]Chanongkorn Kuntonbutr, [2]Natnarong Jaturat and [3]Howard Combs

[1,2]Rajamangala University of Technology Thanyaburi, Pathumtani, Thailand.
[3]San Jose State University, San Jose, California, United States.

Abstract

This study is designed to investigate the role of Enterprise Resource Planning (ERP) on employee involvement and affect cost reduction of the overall business process. Structural equation models were developed to examine the role of employee involvement, time management, and system operation process in cost reductions. This study focuses on cold chain industry firms. This industry needs effective operation for their fresh products that need to be delivered from the origin to destination on time. The structural equation model was applied to discover the framework that is composed of three mediators. The results found that ERP strategies of firms have a direct effect on employee involvement, the system operation process, and time management, which have an indirect effect of cost reduction.

INTRODUCTION

For more than two decades the management of the supply chain has been evaluated as one of the drivers of a firms' operations, particularly the business related to the transportation of their inventory. Many recent studies have addressed the performance of supply chain management and its impact on firm performances [1-4]. Supply chain management is the integration of overall activities from the intake of the material, operations using the materials, to the conversion of finished goods, and finishing with the outbound of finished goods to customer. The supply chain is concerned with both external and internal units of operation. The crucial role of supply chain management is that overall activities along the supply chain process affect both time and expenses that are occurred in the process. The activities in the supply chain process include both inventory management and transport of the material or finished goods. The transportation of the material and finished goods is the logistic system, which may create high cost for the firms, and may very depend on their product and distance. In addition, transportation, and inventory management are interrelated which incur cost and must be carefully determined in an integration process. Then, the operation that creates inefficiencies may result in supply chain efficiency and firm performance [4-6].

The integration of Information Technology (IT) capability with firm's ability to optimize business processes can enhance firm performance [2]. Not only the expenses that occur within the firms, but some studies have found that supply chain management can facilitate the flow of information that creates mutual trust between partners or vendors [7]. Therefore, supply chain activities have affected both internal and external stakeholders. Although it is difficult to measure the full benefit of information systems derived from Enterprise Resources Planning (ERP), in terms of quantifying every function, intangible benefits that may be realized, such as teamwork efficiency, and customer satisfaction. Moreover, one of the crucial roles being played in the supply chain is the logistic process. The logistic cost is important and can be managed along the process to create lower costs. The cost of logistics will depend on the management of the logistic processes including the transportation cost. A study of intermodal transportation indicated that transaction costs lead to cost saving for shippers resulted in higher profitability [8]. Some scholars put their effort on endeavors to create a model to determine the operation of logistic platforms in different system configurations [9]. Those studies focus on logistic of the products that are non-perishable, which are easy to operate.

By contrast, perishable products are more difficult to manage effectively with low cost of transportation. The food industry is an important part of consumer products, and form the driving forces of population growth, and increasing of attention in food security. The products that need to acquire cold chain logistic come from their physical factors. They need to be carefully stored under specific conditions and must arrive at the destination within a specific timeframe. In addition, it may have a long process from the source of origin to the destination as consumers are scattered in many places around the world. Therefore, the food industries need cold chain logistic to deliver food products from their origins to the destination along the value chain process while preventing the perishable foods from damage caused by being delivered too late. The supply chain encompasses the interrelationships that exists among many activities from the inbound to outbound in the value chain. Those interrelationships will create cost for every activity along the process.

The use of Enterprises Resource Planning (ERP) is currently necessary for most organizations. The ERP can support firms in managing the flow of data efficiency for effective decision

making. It creates the flow of information linked between various functions in an organization. However, the study of ERP in relation with the logistic and supply chain efficiency in term of cost reduction is rarely found. This study will analyze how ERP can support the logistic and supply chain to yield low cost for the firms. For example, the cold chain logistic firms currently have applied new technology such as RFID into some part of their operations. The advantage can be summarized regarding change in process operation such as decreasing in human operation, and more traceability tool for management. The Cold Chain Management Industry has an added incentive to gain high efficiency in the food industry since temperature control is needed for perishable food which needs a fast process of transportation of the product to their customers. Thus, a single logistic chain is often used rather than multiple modes of transportation. However, the question of this study is: How can firms decrease the logistics cost utilizing current technology? This study also intends to construct a logistic model that utilizes ERP, effective logistic management, and optimal supply chain performance for cost reduction.

THEORY AND HYPOTHESES

Enterprise Resource Planning (ERP)

Enterprise Resource Planning (ERP) has been utilized in the operation process in business firms for some time. ERP is the system that integrates all of the functions within an organization, which provides coordination between each unit, eliminates waste and supports faster and better decision making [10]. This can benefit the firms in terms of its integration of all functions that consume firms' resources. Applying an ERP system has been found to be a beneficial investment to firms. There are many studies that have been conducted to figure out critical factors affecting the implementation of ERP. However, many studies on ERP focus on individual cases and have covered a broad range of study areas. Some studies reviewed the implementation of ERP alignment with a firm's strategy [11]. The use of ERP to improve the overall process within a firm is necessary to create competitive advantage, and successfully implement their strategy. Since it can provide any information promptly for decision making at every level of the operation. Since the logistic and supply chain of business today is concerned with global movement of the material and finished goods, management should consider the benefits of ERP to enhance the efficiency and performance of supply chain management which may require alliance with other partners [12]. Furthermore, the sharing of information is an essential approach to enable effective supply chain integration [13]. However, the implementation of ERP and Supply Chain Management (SCM) still generate difficulties due to the complexity of the technology [14]. Successful integration of ERP and SCM will result in the advantage of improved planning, better decision making, and increases in the firms' performance [15-18].

On the other hand, some scholars have found limitations to specific solutions to certain firms [19]. To achieve the goal of implementing the ERP, firms need their employees to fully participate in the designed ERP system. This is supported by the following study that indicated the ERP implementation also need employees involved in it system to achieving the sucessful implementation[20].   In addition, the ERP can improve business productivity when the employees have some guidance for their involvement of the system [21]. The key importance of ERP is how managers can enhance the employee involvement in term of optimal ERP benefit to participate effectively in ERP operating systems [22]. The ERP operating systems includes leadership, resources, and strategies[21].

Logistic management

Logistics is concerned with various stakeholders and key success factors should be adjusted to fit the expectation of those stakeholders [23]. The transportation of materials or products from place to place may require multi-modal transportation. Urban areas also sometimes need different types of transportation. Various transportation modes are utilized in urban areas and that may require the cooperation between several types of stakeholders [24]. Some firms may use outsourcing partners to improve performance that can be determined in term of financial and overall satisfaction [25].

Logistics is not the main function of most firms, it is only one function in their business process. Many firms try to find some strategy for reducing problems and costs from the logistics process. The outsourcing of the logistics function is used by many firms. The increasing need for logistic outsourcing has an impact on the availability of logistic services providers [26]. Third-party logistic providers are efficient for the transportation of product to customers and play a crucial roles in the supply chain process [27].

Currently, scholars have focused their studies on how logistic operations can be improved to create better firm performance [28, 29]. The studies of logistic performance are focused in terms of time, accuracy, and cost effectiveness [30-32]. One of the most important factors in logistics is its cost. The cost of logistic is increased by the environmental protection that requires green logistic, and reverse logistics throughout the world [33, 34]. Furthermore, the complexity of urban logistic systems affect the essential elements of public and private sectors to integrate their works to achieving the logistic efficiency [35].

Cold chain management

Currently, the operation system of any industry has been created as part of the process of supply chain management. Firms have to operate by the flow of material, production, and transportation of finished goods to customer. The system is not only transportation, but includes the warehouse, and

management of the overall process. Supply chain management with a concept of network perspective is importance for industrial marketing [36]. The products in the process of supply chain include perishable products such as plants and animal products. Some products like plant or animal products need to be stored at low temperature while other goods may need near or below freezing temperatures before they are transported [37]. The cold chain logistic relationship to time-temperature information sharing behavior in the stage of transportation may require many differences according to the type of products [38]. To prevent damage, the logistic of the cold chain product may need to share information efficiency during the process of transportation. The use of information technology for cold chain logistics can support risk management of this industry [39]. The logistic of cold chain products need efficiency of transferring products from point of origin to destination in term of time, quality of transfer activities that can keep products in a good condition, at a low cost. Some products like fresh fruit is found characterized by long supply lead time and with uncertainty of demand and supply. These products need efficient management of the supply chain [40]. The key for developing a more efficient cold chain performance is an integrated evaluation of parameters such as loading, cooling rate, and energy consumption throughout the cargo load [38]. In some studies concerning food supply chains, the results found that the performance of the supply chain is related to the firm's size and to the food chain [41].

To create efficiency in the cold chain supply chain, many attempts to apply innovation have occurred. Some studies examined supply chain management in term of combination of an innovation orientation, customer integration, supplier integration, and internal integration, with capabilities of the firm's performance. These studies found empirical support for the notion that an innovation affects supply chain integration and firm performance [1]. The cold chain supply chain need the new technology such as Radio frequency identification for integration of data promptly, with essential for improving of its management, product traceability, security and reduction of the product waste rate [42]. Another study focused on managing cold chain logistic for optimizing freshness and safety to the end users. A web-based platform was developed to provide the necessary data, and tools to create scenarios based upon actual data related to the movement of product. This process contributes to more effective cold chain management [43].

Another factor that affects the cold chain management is the concept of environmental protection. This factor may affect the cost of carrying the products. Some studies found that the management of logistics that emphasizes environmental management information results in positive effects in profit and cost [44]. This may be determined in long term consideration, with sustainable operation. Currently, not only the efficiency of cold chain logistic management is necessary, but also sustainable and dynamic capabilities. The sustainability practices and dynamic capabilities for the cold chain management are used to enhance traceability and tracking to

fulfill the need of customers [45]. The sustainable supply chain management is designed to ensure environmental protection practice [45].

Cost reduction

The management of business firms need to control their expenses and cost to create their profitability. The expenses and cost may be occurred at every stage of operations. The inefficiency of cold chain logistics management practice may cause an over estimate of expenses and cost within the process. In the manufacturing industry, the driver for cost reduction are taken into account from the upstream industries that provide raw material, and capital equipment that importance to the cost reduction [46]. Supply chain is one of the main functions within some firms that needs to be invested into with a large amount of capital. An important issue is how firms can invest properly into the supply chain process to get an appropriate response for this function. One study found that increasing supply chain capabilities can enables a firm to decrease overall supply chain costs [47]. The management of inventory systems that are coordination between vendors may create cost sharing under limited storage capacity that result in a benefit to both partners [48].

Currently, many businesses have both the online and offline channels of distribution operating cost that may affect the total supply chain overall cost [49]. For the online business, the appropriate system may minimize cost of the sale person scheduling and delivery cost depend on the competitive criteria [50]. Efficient management can be operated at a low cost by an ERP that integrates information for various functions. In the management of the supply chain, cost-based model that financially evaluates the result of reducing delivery cost can be applied for the planning process [51]. Some studies found not only information technology, but transparent understanding betwee partnerships can have an impact on te transaction cost of supply chain [52]. However, no matter where the costs occurred, firms have to manage them appropriately to lower their overall cost. In addition, the cooperation between producer and buyer may affect the low cost of logistics and supply chain. The setup cost of the producer, ordring costs of the buyer, carrying costs, and transportation costs that are synchronized can demonstrate significant cost saving for the supply chain management [53]. In case of international business, the supply chain may link with both different countries and multi-modal transporation systems. One of the important factor thay affect the cost is port. In determining the international transactions, cost of the supply chain may be impact from external variable as a port-related threat on supply chains [54].

RESEARCH METHODOLOGY

To evaluate the adopting of the ERP system in relation with other internal factor that will support optimal method to figure out the cost reduction depends significantly upon the domain of

this study. A three stage conceptual model is derived from a review of another research theme. First, IT infrastructure and capability were reviewed to understand how they affect the other variables. Second, teamwork efficiency was review as it has a relationship with other variables that will be used for the construction of the model. Finally, project costing was studied to confirm as a dependent variable in the model. The research methodology is organized as mentioned below.

Sample and Data Collection

The research population was medium and large firms with total assets of more than 50 million Thai Baht (THB) listed on the Department of Business Development of the Ministry of Commerce of Thailand. There are 14 groups of sub industries, the total population was 1094 firms. The sample for this study was randomly selected from those groups of sub-industry, with 300 questionnaires returned. Based on the condition of the minimum sample for measurement of using the structural equation model there should be 10 subjects for each observe variable, this study proposed 20 observe variables. Thus, the number of returned questionnaires are sufficient for analysis.

Measurement

The variables of this study were ERP Strategies that were measured as independent variable, and cost reduction measured as a dependent variable. The Time Management, Employee involvement, and system operation process are mediators between ERP Strategies and Cost Reduction. The initial stage in the analysis involved a validation and reliability of the measurement. To achieve the robust test of reliability of the variable used in the model, this study applied Cronbach's alpha for assessing the results. The testing results indicates that all variables have the value of Cronbach's alpha higher than 0.8.

To achieve the normal distribution of all variables that are the requirement of the construct model, this study applied Kurtosis testing to ensure that those variables will have the appropriate value between -2 to +2. The result found that the maximum value is 0.150, whereas minimum value is -0.602. Furthermore, the value of Variance Instruction Factors (VIF) were examined, and found no multi-collinearity between all variables.

Table 1. Variable dimension

Variable Name	Variable Label	Mean	Std. Deviation	Cronbach's Alpha
ERP Strategies 1	ERP1	5.1067	1.33963	.971
ERP Strategies 2	ERP2	5.1667	1.39955	.971
ERP Strategies 3	ERP3	5.0967	1.38095	.971
ERP Strategies 4	ERP4	5.1267	1.43206	.971
Time Management 1	TM1	4.8367	1.45271	.971
Time Management 2	TM2	4.8333	1.44656	.971
Time Management 3	TM3	4.9067	1.47599	.971
Employee Involvement 1	EI1	5.0767	1.33544	.971
Employee Involvement 2	EI2	5.1233	1.37395	.971
Employee Involvement 3	EI3	5.0900	1.36924	.971
System Operation Process 1	SOP1	5.1133	1.39294	.970
System Operation Process 2	SOP2	5.0633	1.37074	.971
System Operation Process 3	SOP3	5.3200	1.42749	.971
System Operation Process 4	SOP4	5.3033	1.46234	.971
Cost Reduction1	CR1	4.9500	1.40502	.971
Cost Reduction 2	CR2	4.8267	1.40113	.971
Cost Reduction 3	CR3	4.9300	1.36307	.971
Cost Reduction 4	CR4	4.9833	1.45492	.971
Cost Reduction 5	CR5	5.0000	1.42599	.971
Cost Reduction 6	CR6	5.1100	1.45083	.971

To ensure that observed variables present validity of the group of latent variables in the structural equation model, two examining techniques were used, convergence validity and discriminant validity. The convergence validity is measured by factor loading of the ERP strategies, time management, employee involvement, system operation process, and cost reduction. The value of the standardized factor loading range from .83 to .95. This indicates the satisfactory result which should higher than 0.6. Additionally, the convergent validity testing also considers the Average Variance Extraction (AVE) which should be more than .50. According to the discriminant validity that purposes to consider the correlation of the latent variables between each group, the result indicates high correlation value of the variable within groups, and low correlation of those variable between groups [55]. The result of factor loadings and average variance extracted is show below.

Table 2. Factor Loading, Reliability and Validity Assessment

Variable Name	Factor Loading	Construct Reliability	AVE (Average Variance Extracted)	Highest of (coloration)^2	AVE / Highest of (coloration)^2
ERP1	.83	.94	.80	.72	1.1
ERP2	.92				
ERP3	.92				
ERP4	.92				
TM1	.94	.95	.87	.60	1.45
TM2	.95				
TM3	.92				
EI1	.90	.93	.83	.72	1.15
EI2	.93				
EI3	.91				
SOP1	.88	.94	.81	.72	1.125
SOP2	.90				
SOP3	.91				
SOP4	.93				
CR1	.90	.96	.81	.60	1.35
CR2	.89				
CR3	.89				
CR4	.93				
CR5	.91				
CR6	.90				

The Discriminant validity was accepted with AVE / Highest of (coloration)^2 more than 1

The Convergent validity was accepted with AVE more than .5

In the beginning, the result of the measurement model indicated the Normed Chi-Squared fit index derived from Chi-Square/degrees of freedom is 1.66, indicating a good fit model. The value of Goodness of Fit, and The Adjusted Goodness of Fit is .925, and .897 respectively. The Root Means Square Error of Approximation is .047. The NFI and Comparative Fit Index value equal .968, and .987. All of the data mentioned above indicate a good fit for this specific model.

Table 3. Assessing the model fit indicators

Chi-square/Degree of freedom (CMIN/df)	1.66
Goodness of Fit Index (GFI)	.925
Adjusted Goodness of Fit Index (AGFI)	.897
The Root Means Square Error of Approximation (RMSEA)	.047
Normed Fit Index (NFI)	.968
Comparative Fit Index (CFI)	.987

FINDINGS

The first step of analysis involved determination of how ERP Strategies affect time management, employee involvement, and system operation process. The employee involvement was also considered a mediator of the Time management and system operation process. Then, Time management, Employee involvement, and system operation process were examined to determine how they impact cost reduction.
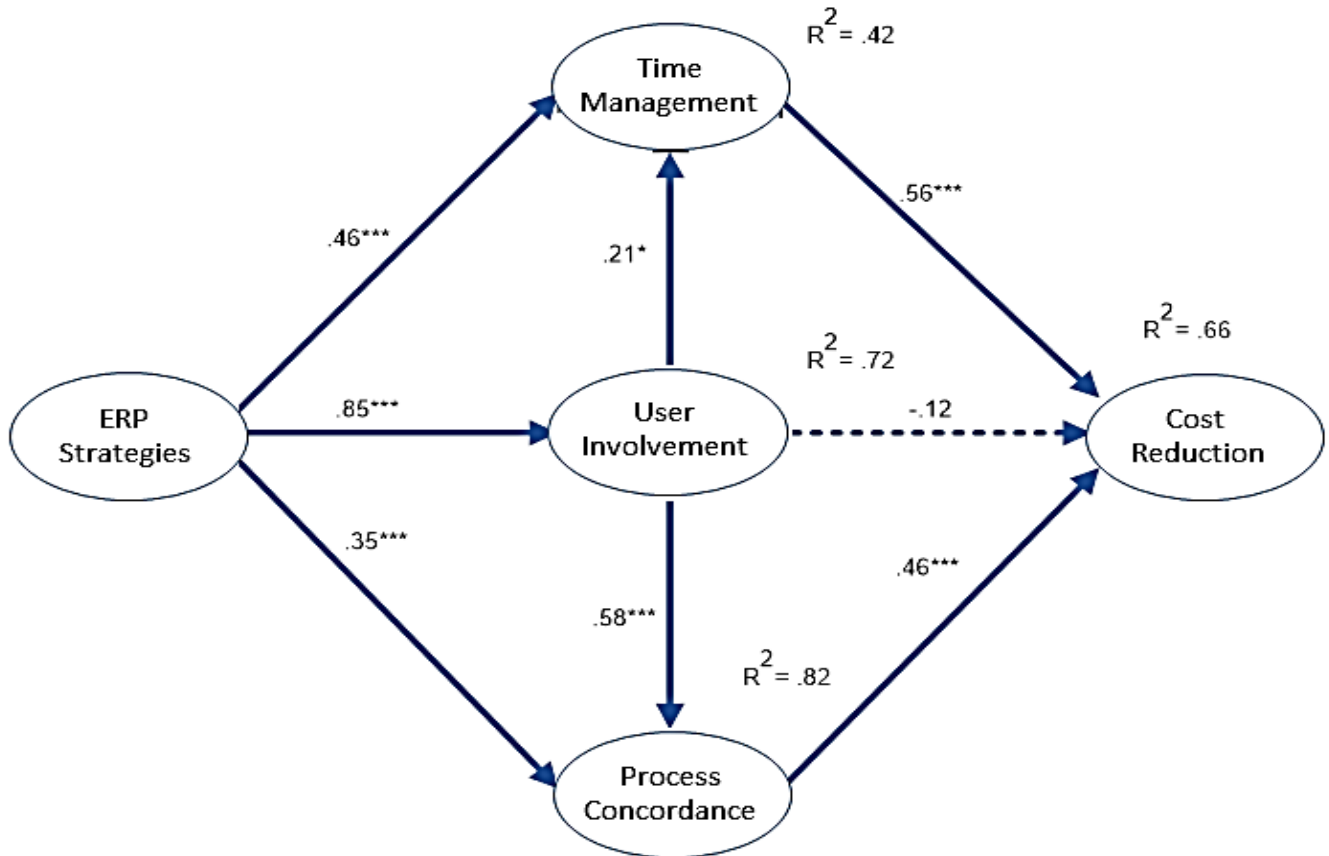
* p-value<.05, *** p-value <.001

Figure 1. Research model results

Table 4. Regression Weights between latent variable in the model

	Regression Weights
ERP Strategies --> Time Management	.46***
ERP Strategies --> Employee Involvement	.85***
ERP Strategies --> System Operation Process	.35***
Employee Involvement --> Time Management	.21*
Employee Involvement --> System Operation Process	.58***
Time Management --> Cost Reduction	.56***
Employee Involvement --> Cost Reduction	-.12
System Operation Process --> Cost Reduction	.46***

Table 5. Standardize direct and indirect effect

	Direct Effect				Indirect Effect				Total Effect			
	ERP	TM	EI	SOP	ERP	TM	EI	SOP	ERP	TM	EI	SOP
Time Management	.46				.18				.64			
Employee Involvement	.85	.21	.58						.85			
System Operation Process	.35				.50				.85			
Cost Reduction		.56	-.12	.46	.64		.38		.64	.56	-.12	.46

The results indicate that ERP Strategies have a significant impact on Time management (β=.46 with p-value <.001), Employee involvement (=.85 with p-value<.001), and the system operation process (β=.35 with p-value<.001). Employee involvement has a significant affect on Time management (β =.21 with p-value<.05) and on the system operation process (β =.58 with p-value <.001). Time management and the system operation process have a significant impact on Cost Reduction (β =.58 and β=.56 with p-value<.001).

CONCLUSION AND DISCUSSION

This study examines the empirical results of the ERP strategies that may affect the cost reduction of firms in the cold chain industry. There are three mediators involved in the model: time management, employee involvement, and the ERP operation process. This final section summarizes the overall process of study and the contributions of the ERP that may have on cost reduction of the logistic management process.

This study utilized an innovative instrument to acquire information on ERP, and cost reduction which link from time management, employee involvement, and system operation process. This study then applied a structural model on its framework to cover all variables that have mediators.

A firms' ERP strategy focuses on using ERP software to support their overall business strategy. This strategy supports the firm's operations in terms of using information derived from ERP to assist with their decision making. The result of this study found that ERP strategy affects time management. According to time management, it is considered in terms of concentrating on the efficiency of transportation account for time tables controlled by ERP.

The ERP strategy also supports the management of transportation time result to the value added to their products. Therefore, firms should apply ERP to their operating system within their organizations to create collaboration between any function and tasks. This collaboration results in the reduction of various transaction costs of procurement, and costs of transportation in both people and documents in terms of recording the document for the delivered goods. Consequently, those cost reduction result in increased income, profit, and creating firms' sustainability. The ERP has also indirect affected to the time management via employee involvement.

Therefore, firms need to encourage their employees to correctly use the ERP software within the operation process.

In addition, firms need two way communication for following up and receiving feedback from the employee to create continuous improvements for their system. Then, it will improve the efficiency of time management, and support the firms to deliver their goods to customers on time, which consequently creates value added to the firm's products for their customers.

The results also found that ERP strategy has a direct affect to the ERP operation process. The system operation process includes the participation of employee in any stage of ERP process, the improvement of the ERP system along the operation process by the employee, the accuracy derived from ERP along the operation process, and the safety and convenience of ERP software usage. Similar to the time management, the ERP strategy also has indirect effect on cost reduction via the system operation process. The ERP strategy also has an indirect impact on the system operation process via employee involvement.

In summary, the ERP strategy has an impact on cost reduction for the firms' operation process. This indicates that cost reduction concerning procurement, recording the document, and transportation of the goods from its origin to destination. The reduction of those cost and time has an effect on the increasing of income and profit. Furthermore, the reduction of time and cost are found supporting company sustainability. However, a crucial finding is that employee involvement does not have direct effect to the cost reduction. Then, firms should prepare their ERP and other systems to fit the situation within their organizations, and prepare the employee to follow up and develop the system along the business process to achieve the cost reduction.

In conclusion, the management of ERP should start from its strategy to accompany the preparation of both systems and tools for its operation process. Then, preparing employees to have the capability and involvement is essential to achieving the goal of success in operation process and time management. Then, the firms can achieve the result of cost reduction as expected.

ACKNOWLEDGEMENT

REFERENCE

[1] P. Lii and F.-I. Kuo, "Innovation-oriented supply chain integration for combined competitiveness and firm performance," *International Journal of Production Economics,* vol. 174, pp. 142-155, 4// 2016.

[2] J. Peng, J. Quan, G. Zhang, and A. J. Dubinsky, "Mediation effect of business process and supply chain management capabilities on the impact of IT on firm performance: Evidence from Chinese firms," *International Journal of Information Management,* vol. 36, pp. 89-96, 2// 2016.

[3] S. Laari, J. Töyli, T. Solakivi, and L. Ojala, "Firm performance and customer-driven green supply chain management," *Journal of Cleaner Production,* vol. 112, Part 3, pp. 1960-1970, 1/20/ 2016.

[4] A. B. L. d. S. Jabbour, F. C. d. O. Frascareli, and C. J. C. Jabbour, "Green supply chain management and firms' performance: Understanding potential relationships and the role of green sourcing and some other green practices," *Resources, Conservation and Recycling,* vol. 104, Part B, pp. 366-374, 11// 2015.

[5] Q. Zhang, W. Tang, and J. Zhang, "Green supply chain performance with cost learning and operational inefficiency effects," *Journal of Cleaner Production,* vol. 112, Part 4, pp. 3267-3284, 1/20/ 2016.

[6] P. O. Magutu, J. Aduda, and R. B. Nyaoga, "Does Supply Chain Technology Moderate the Relationship between Supply Chain Strategies and Firm Performance? Evidence from Large-Scale Manufacturing Firms in Kenya," *International Strategic Management Review,* vol. 3, pp. 43-65, 6// 2015.

[7] J. Sun and Y. Fang, "Executives' professional ties along the supply chain: The impact on partnership sustainability and firm risk," *Journal of Financial Stability,* vol. 20, pp. 144-154, 10// 2015.

[8] S. X. Xu, M. Cheng, and G. Q. Huang, "Efficient intermodal transportation auctions for B2B e-commerce logistics with transaction costs," *Transportation Research Part B: Methodological,* vol. 80, pp. 322-337, 10// 2015.

[9] D. Gattuso and G. C. Cassone, "Micro-simulation Model Supporting the Management of an Interregional Logistic Platform," *Procedia - Social and Behavioral Sciences,* vol. 54, pp. 557-566, 10/4/ 2012.

[10] H. S. Kilic, S. Zaim, and D. Delen, "Selecting "The Best" ERP system for SMEs using a combination of ANP and PROMETHEE methods," *Expert Systems with Applications,* vol. 42, pp. 2343-2352, 4/1/ 2015.

[11] S. Hao and M. Song, "Technology-driven strategy and firm performance: Are strategic capabilities missing links?," *Journal of Business Research,* vol. 69, pp. 751-759, 2// 2016.

[12] I. C. Chang, H.-G. Hwang, H.-C. Liaw, M.-C. Hung, S.-L. Chen, and D. C. Yen, "A neural network evaluation model for ERP performance from SCM perspective to enhance enterprise competitive advantage," *Expert Systems with Applications,* vol. 35, pp. 1809-1816, 11// 2008.

[13] Z. Lotfi, M. Mukhtar, S. Sahran, and A. T. Zadeh, "Information Sharing in Supply Chain Management," *Procedia Technology,* vol. 11, pp. 298-304, // 2013.

[14] D. Aloini, R. Dulmin, and V. Mininno, "Risk management in ERP project introduction: Review of the literature," *Information & Management,* vol. 44, pp. 547-567, 9// 2007.

[15] H. Ince, S. Z. Imamoglu, H. Keskin, A. Akgun, and M. N. Efe, "The Impact of ERP Systems and Supply Chain Management Practices on Firm Performance: Case of Turkish Companies," *Procedia - Social and Behavioral Sciences,* vol. 99, pp. 1124-1133, 11/6/ 2013.

[16] B. L. Handoko, R. Aryanto, and I. G. So, "The Impact of Enterprise Resources System and Supply Chain Practices on Competitive Advantage and Firm Performance: Case of Indonesian Companies," *Procedia Computer Science,* vol. 72, pp. 122-128, // 2015.

[17] E. Bayraktar, M. Demirbag, S. C. L. Koh, E. Tatoglu, and H. Zaim, "A causal analysis of the impact of information systems and supply chain management practices on operational performance: Evidence from manufacturing SMEs in Turkey," *International Journal of Production Economics,* vol. 122, pp. 133-149, 11// 2009.

[18] B. Kocaoglu and A. Z. Acar, "Developing an ERP Triggered Business Process Improvement Cycle from a Case Company," *Procedia - Social and Behavioral Sciences,* vol. 181, pp. 107-114, 5/11/ 2015.

[19] P. S. Azevedo, M. Romão, and E. Rebelo, "Advantages, Limitations and Solutions in the Use of ERP Systems (Enterprise Resource Planning) – A Case Study in the Hospitality Industry," *Procedia Technology,* vol. 5, pp. 264-272, // 2012.

[20] M. Ağaoğlu, E. S. Yurtkoru, and A. K. Ekmekçi, "The effect of ERP implementation CSFs on business performance: an empirical study on users' perception," *Procedia-Social and Behavioral Sciences,* vol. 210, pp. 35-42, 2015.

[21] U. JAYAWICKRAMA, S. Liu, and M. Hudson Smith, "Knowledge identification, categorisation and prioritisation for ERP implementation success," 2016.

[22] J. K. Nwankpa, "ERP system usage and benefit: A model of antecedents and outcomes," *Computers in Human Behavior,* vol. 45, pp. 335-344, 2015.

[23] M. Kiba-Janiak, "Key Success Factors for City Logistics from the Perspective of Various Groups of Stakeholders," *Transportation Research Procedia,* vol. 12, pp. 557-569, // 2016.

[24] O. Kunze, G. Wulfhorst, and S. Minner, "Applying Systems Thinking to City Logistics: A Qualitative (and Quantitative) Approach to Model Interdependencies of Decisions by various Stakeholders and their Impact on City Logistics," *Transportation Research Procedia,* vol. 12, pp. 692-706, // 2016.

[25] Q. Yang and X. Zhao, "Are logistics outsourcing partners more integrated in a more volatile environment?," *International Journal of Production Economics,* vol. 171, Part 2, pp. 211-220, 1// 2016.

[26] S. F. Alkhatib, R. Darlington, Z. Yang, and T. T. Nguyen, "A novel technique for evaluating and selecting logistics service providers based on the logistics resource view," *Expert Systems with Applications,* vol. 42, pp. 6976-6989, 11/15/ 2015.

[27] Y. Shi, A. Zhang, T. Arthanari, Y. Liu, and T. C. E. Cheng, "Third-party purchase: An empirical study of third-party logistics providers in China," *International Journal of Production Economics,* vol. 171, Part 2, pp. 189-200, 1// 2016.

[28] H. Y. Lam, K. L. Choy, G. T. S. Ho, S. W. Y. Cheng, and C. K. M. Lee, "A knowledge-based logistics operations planning system for mitigating risk in warehouse order fulfillment," *International Journal of Production Economics,* vol. 170, Part C, pp. 763-779, 12// 2015.

[29] A. Mihi Ramírez, "Product return and logistics knowledge: Influence on performance of the firm," *Transportation Research Part E: Logistics and Transportation Review,* vol. 48, pp. 1137-1151, 11// 2012.

[30] M. Ltifi and J. Gharbi, "The Effect of Logistics Performance in Retail Store on the Happiness and Satisfaction of Consumers," *Procedia Economics and Finance,* vol. 23, pp. 1347-1353, // 2015.

[31] D. M. Gutierrez, L. F. Scavarda, L. Fiorencio, and R. A. Martins, "Evolution of the performance measurement system in the Logistics Department of a broadcasting company: An action research," *International Journal of Production Economics,* vol. 160, pp. 1-12, 2// 2015.

[32] K.-H. Lee and Y. Wu, "Integrating sustainability performance measurement into logistics and supply networks: A multi-methodological approach," *The British Accounting Review,* vol. 46, pp. 361-378, 12// 2014.

[33] P. Ceniga and V. Sukalova, "Future of Logistics Management in the Process of Globalization," *Procedia Economics and Finance,* vol. 26, pp. 160-166, // 2015.

[34] A. Haji Vahabzadeh, A. Asiaei, and S. Zailani, "Green decision-making model in reverse logistics using FUZZY-VIKOR method," *Resources, Conservation and Recycling,* vol. 103, pp. 125-138, 10// 2015.

[35] H. Quak, M. Lindholm, L. Tavasszy, and M. Browne, "From Freight Partnerships to City Logistics Living Labs − Giving Meaning to the Elusive Concept of Living Labs," *Transportation Research Procedia,* vol. 12, pp. 461-473, // 2016.

[36] M. Frostenson and F. Prenkert, "Sustainable supply chain management when focal firms are complex: a network perspective," *Journal of Cleaner Production,* vol. 107, pp. 85-94, 11/16/ 2015.

[37] A. Saif and S. Elhedhli, "Cold supply chain design with environmental considerations: A simulation-optimization approach," *European Journal of Operational Research,* vol. 251, pp. 274-287, 5/16/ 2016.

[38] H.-I. Hsiao and K.-L. Huang, "Time-temperature transparency in the cold chain," *Food Control,* vol. 64, pp. 181-188, 6// 2016.

[39] K. Kim, H. Kim, S.-K. Kim, and J.-Y. Jung, "i-RM: An intelligent risk management framework for context-aware ubiquitous cold chain logistics," *Expert Systems with Applications,* vol. 46, pp. 463-473, 3/15/ 2016.

[40] W. E. Soto-Silva, E. Nadal-Roig, M. C. González-Araya, and L. M. Pla-Aragones, "Operational research models applied to the fresh fruit supply chain," *European Journal of Operational Research,* vol. 251, pp. 345-355, 6/1/ 2016.

[41] M. Bourlakis, G. Maglaras, E. Aktas, D. Gallear, and C. Fotopoulos, "Firm size and sustainable performance in food supply chains: Insights from Greek SMEs," *International Journal of Production Economics,* vol. 152, pp. 112-130, 6// 2014.

[42] D. Tanner, "Applications for RFID Technologies in the Food Supply Chain," in *Reference Module in Food Science*, ed: Elsevier, 2016.

[43] E. Gogou, G. Katsaros, E. Derens, G. Alvarez, and P. S. Taoukis, "Cold chain database development and application as a tool for the cold chain management and food quality evaluation," *International Journal of Refrigeration,* vol. 52, pp. 109-121, 4// 2015.

[44] K.-h. Lai, C. W. Y. Wong, and J. S. L. Lam, "Sharing environmental management information with supply chain partners and the performance contingencies on

environmental munificence," *International Journal of Production Economics,* vol. 164, pp. 445-453, 6// 2015.

[45] P. Beske, A. Land, and S. Seuring, "Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature," *International Journal of Production Economics,* vol. 152, pp. 131-143, 6// 2014.

[46] U. Pillai, "Drivers of cost reduction in solar photovoltaics," *Energy Economics,* vol. 50, pp. 286-293, 7// 2015.

[47] S. Vahid Nooraie and M. M. Parast, "Mitigating supply chain disruptions through the assessment of trade-offs among risks, costs and investments in capabilities," *International Journal of Production Economics,* vol. 171, Part 1, pp. 8-21, 1// 2016.

[48] J.-Y. Lee, R. K. Cho, and S.-K. Paik, "Supply chain coordination in vendor-managed inventory systems with stockout-cost sharing under limited storage capacity," *European Journal of Operational Research,* vol. 248, pp. 95-106, 1/1/ 2016.

[49] W. Wang, G. Li, and T. C. E. Cheng, "Channel selection in a supply chain with a multi-channel retailer: The role of channel operating costs," *International Journal of Production Economics,* vol. 173, pp. 54-65, 3// 2016.

[50] B. Han, W. Zhang, X. Lu, and Y. Lin, "On-line supply chain scheduling for single-machine and parallel-machine configurations with a single customer: Minimizing the makespan and delivery cost," *European Journal of Operational Research,* vol. 244, pp. 704-714, 8/1/ 2015.

[51] Y. Tanai and A. L. Guiffrida, "Reducing the cost of untimely supply chain delivery performance for asymmetric Laplace distributed delivery," *Applied Mathematical Modelling,* vol. 39, pp. 3758-3770, 7/1/ 2015.

[52] A. Singh and J. T. C. Teng, "Enhancing supply chain outcomes through Information Technology and Trust," *Computers in Human Behavior,* vol. 54, pp. 290-300, 1// 2016.

[53] S.-D. Lee and Y.-C. Fu, "Joint production and delivery lot sizing for a make-to-order producer–buyer supply chain with transportation cost," *Transportation Research Part E: Logistics and Transportation Review,* vol. 66, pp. 23-35, 6// 2014.

[54] H. S. Loh and V. V. Thai, "Cost Consequences of a Port-Related Supply Chain Disruption," *The Asian Journal of Shipping and Logistics,* vol. 31, pp. 319-340, 9// 2015.

[55] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modeling,"

Journal of the Academy of Marketing Science, vol. 43, pp. 115-135, 2015.