INFLUENCE OF RESOURCE-BASED CAPABILITY AND INTER-ORGANIZATIONAL COORDINATION ON SUPPLY CHAIN MANAGENEMENT FOCUS

Chin-Chun Hsu, University of Nevada Las Vegas, U.S.A., Vincent.hsu@unlv.edu
Keah-Choon Tan, University of Nevada Las Vegas, U.S.A., kctan@unlv.edu
James Cross, University of Nevada Las Vegas, U.S.A., James.cross@unlv.edu

ABSTRACT

This article explored the effect of resource-based capability and inter-organizational coordination on a firm's supply chain management focus. We proposed a conceptual framework to describe these two sets of antecedents. The hypotheses were tested using confirmatory factor analysis and multiple linear regression on a set of data collected in the U.S., Europe, and New Zealand. Test results revealed the positive relationships between the proposed antecedents and a firm's supply chain management focus.

Keywords: Resource-based view, supply chain management focus, inter-organizational coordination.

INTRODUCTION

Over the last two decades, business scholars have dedicated considerable effort to understand the factors that encourage organizations to adapt supply chain management (SCM). SCM stresses the seamless coordination of value-creating activities across organizational boundaries to bring products and services to end users. It encompasses inherent complexity and intricacy. The primary question raised in the literature pertains to why firms in a supply chain choose to coordinate their activities with supply chain members to compete in the global marketplace. This question has motivated many influential studies on the genesis of the SCM focus of manufacturing firms and retail organizations, such as the transaction cost economics and resource-based views. In this study, we define SCM focus as the extent of a firm's concentration on various SCM activities, including its efforts to reduce response time and improve integration activities across the supply chain. Faced with intense competition and rapidly shrinking product life cycles, manufacturers and service providers realize that seamless process coordination with those of supply chain partners can be an indispensable competitive edge. Thus, inter-organizational coordination has become increasingly adapted as a pivotal tool to eliminate waste across the supply chain.

Coordination effect arises when firms engage in global SCM activities. Firms use cross-organizational coordination in a global marketplace to overcome the challenges of penetrating a new market and the liability of dealing with overseas supply chain members. In this context, the term "inter-organizational coordination" embraces all types of coordination that buyers and suppliers accumulate through their supply chain activities and implies their ability to explore, analyze, and act on supply chain issues in both buyer and supplier perspectives. As such, buyers and suppliers continuously strive to explore their resources collectively to achieve competitive capability with supply chain members and, in turn, improve their SCM focus.

In supply chain content, inter-organizational coordination is the media through which managers gain access to a variety of resources; for example, inter-organizational coordination helps buyers and sellers access information and resources in the supply chain and reduces perceived risk through explicit certification or associations. Reliance on inter-organizational coordination is not constrained to the new entry to the supply chain but also include information and resource acquisition. Inter-organizational coordination that constitutes relational networks encompasses both economic and noneconomic activities that are embedded in supply chain integration [1].

The principal feature of inter-organizational coordination is that it inheres in the relationship between supply chain members rather than in physical assets, like financial capital, and in the collection of inter-firm networks that supply chain members maintain in varying contexts. In this context, inter-organizational coordination provides a source of competitive advantage in the supply chain and, from a transaction cost economics view, a source of profit-generation capability, because it connects those who control necessary input with others to generate (non-tradable) input and form groups that can design and enforce cost-saving business activities throughout the entire supply chain [2].

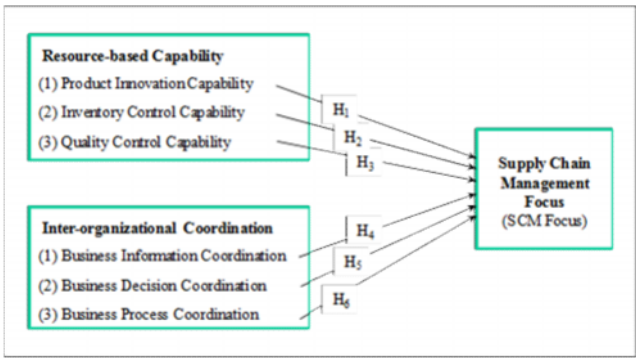
Despite its importance, the effect of inter-organizational coordination on SCM focus remains an under explored area. In response, we empirically examine the antecedents of SCM focus by integrating the traditional resource-based view with inter-organizational coordination, while controlling for context factors. Because both perspectives have considerable merit; thus for a complete understanding of the SCM focus of manufacturing firms and retail organizations, researchers and managers must consider them simultaneously. However, these two perspectives also compete with one another in explaining SCM focus. Is inter-organizational coordination more important, or is a resource-based view the key determinant of SCM focus? In this study, we explicitly assess the relative impact of these two sets of factors on SCM focus.

Several studies have addressed different firm-level factors that contribute to the SCM focus of a firm [2]. However, this study is unique in the following respect: We focus on the added value of taking an inter-organizational coordination perspective, which we consider not as a substitute factor but rather a complement to existing knowledge that enables us to build on previous findings based on resource-based view. The article is organized as follows: The next section describes the conceptual framework and research hypotheses. Next, we describe the research methodology and discuss the results. This study concludes with a delineation of the significance of the findings, managerial implications, and limitations.

THEORETICAL BACKGROUND

To guide the subsequent discussion, we depict the key constructs included in this study in Figure 1. This research proposes that the two sets of antecedents, pertaining to a traditional resource-based view and inter-organizational coordination, precede SCM focus of a firm, and controls for company context factors. The fundamental principle of the resource-based view is that the basis for a firm's competitive advantage lies primarily in the application of its valuable resources. On the basis of our literature review, we propose that both the traditional resource-based view (which pertains to product innovation capability, inventory control capability, and quality control capability), and inter-organizational coordination (which pertains to business information coordination, business decision coordination, and business process coordination) precede SCM focus. The central theme of the research model therefore argues that considering the SCM antecedents on both perspectives simultaneously can lead to a better understanding of the factors that affect the SCM focus of manufacturing retail firms.

Figure 1: Theoretical Research Framework



The economic-based literature focuses on environmental and firm-level factors and assumes that rational decision makers will choose the optimal solution on the basis of rational analysis of institutional, industrial, and organizational factors. In recent years, the resource-based view has emerged as a powerful tool to explain SCM focus [3]. The resource-based view suggests that creating and preserving competitive capability is a function of the firm's core resources and capabilities, which represent the primary source of a firm's success. The resource-based view complements traditional industrial organizational theory (that SCM focus is a function of industry structure and positioning) by recognizing the competitive value of resources/capabilities, and how they combine with and influence initiatives and strategies pursued by a firm. These economic-based SCM focus theories suggest that economic humans have access to perfect information and will choose the rational solution and therefore imply that SCM focus decisions are a consequence of the rational analysis of, for example, firm resources, transportation costs, and/or industry factors.

Resources enable firms to conceive and implement strategies, thereby improving their effectiveness. In contrast, strategies are the means by which firms relate to their external environment. They are the building blocks of managerial decisions and actions that determine long-term SCM focus. Therefore, the fundamental driver of SCM focus is the stock of resources accumulated by the firm, and the value of SCM comes from an increase in the economic rent that accrues to those firm-specific resources. As several researchers have suggested, the development of SCM capability is the primary means for operational excellence within a supply chain. A logical extension is that once a firm has developed its SCM operations capability and infrastructure, it is in a position to leverage relationships within the supply chain. While the SCM literature debates extensively about collaborative, inter-firm development of supply chain capability, the reality is that firms typically develop an internal focus prior to involving external supply chain partners. The implication however, is that how a firm manages its supply chain should be considered simultaneously with consideration of the relationship between internal operations capability and coordination with external supply chain members.

Inter-organizational coordination in a supply chain context refers to the extent to which firms coordinate their value-adding activities across the supply chain to eliminate waste and improve efficiency. Coordinated activities can be tactical (e.g., purchasing, operations scheduling, and logistics) or strategic (e.g., long-term corporate objectives, marketing and customer information). Prior research on the importance of inter-organizational coordination has shown that coordination enhances visibility and reduces uncertainty [4]. It allows firms to coordinate across their supply chains, allowing them to collaborate in activities such as sales, production, and logistics [5]. The extent to which coordination is conducted creates opportunities for firms to work collaboratively to remove supply chain inefficiencies, and thus has a significant direct impact on the relationship among supply chain members. The ability to coordinate across the supply chain can also provide other opportunities. For example, when additional business information becomes available, firms can take advantage of this increased visibility to modify existing actions or plan future operations.

In advancing the key role of inter-organizational coordination in SCM, [6] discusses how firms build and utilize informal channel coordination to achieve effective SCM. [7] proposes that supply chain members' economic action is embedded in their ongoing network of coordination. Through formal and informal channels, inter-organizational mechanisms facilitate information sharing, which helps match buyers, sellers, and other business partners. Furthermore, sharing information about labor and material costs, and market conditions with suppliers enhances the profitability of an investment project and thus is crucial for investment decisions.

HYPOTHESIS DEVELOPMENT

Resource-based Antecedents

The first set of antecedents we address pertains to resource-based factors, which comprise the three components: product innovation capability, inventory control capability, and quality control capability (Figure 1).

The first resource-based antecedent pertains to product innovation capability. Several studies have demonstrated a significant relationship between SCM and product innovation capability. [8] shows that research and development intensity

for product innovation capability and the percentage of revenue generated from its product innovation are directly related to the levels of global sourcing activity. [9] proposes that purchasing and supplier involvement in product innovation create a source of competitive advantage. [10] shows that early supplier involvement in product innovation leads to significant improvements in product development across the supply chain. [11] analyzes the relationship between product innovation and SCM and presents a conceptual model of the determinants of product innovation in SCM. It is clear that the literature suggests a relationship exists between product innovation capability and SCM focus. [12] states that a firm that actively involves key suppliers in product innovation must effectively manage its supply chain. Sharing information, technology, and risk are all contingent on having sound relationships with potential partners. Effectively incorporating suppliers' parts into product innovation capability requires evaluation of how they will interface in the firm's SCM focus. The potential for cost savings and quality improvements will be limited if there is not a shared understanding of how partners plan to align their individual goals to meet shared objectives. We hypothesize,

H_1: Product innovation capability positively affects SCM focus.

The second antecedent we address pertains to the inventory control capability. [9] argues that supply chain efficiency is contingent on the effectiveness and ability of individual supply chain members to connect along the supply chain. [13] studies SCM from an inventory control perspective, focusing on linkages between supply chain members and the chain's collective efficiency. [14] reports that manufacturers use inventory control methods to achieve sustainable competitive advantage and propose an integrated inventory management model that is useful for managing inventory control in an environment where supply chain members form strategic alliances for the purpose of profit sharing. [15] discusses the importance of rapid delivery of products, and how inventory control manufacturing principles can be applied to SCM practices. [16] reports that inventory control capability affects a firm's SCM practices and savvy manufacturers are expected to deliver raw materials and component parts in small lot sizes, frequently, and directly to the point of use, thus eliminating the need for non-value adding inspection of incoming materials. Many organizations adopt strategic alliances with key suppliers to share confidential information and technology. Instead of relying on inspection of incoming materials and component parts, they certify suppliers' processes and/or products. A firm that is advanced in its inventory control capability is likely to place significant emphasis on such practices [17]. Based on these observations we hypothesize,

H_2: Inventory control capability positively affects SCM focus.

The third antecedent we address pertains to the quality control capability. [18] examines the relationships among quality control, certification, and SCM and reports that quality is a strategic variable that should be considered and managed not only within individual firm, but also across the supply chain. [19] explores the connections between buyer and supplier quality assurance practices and highlight the importance of a company-wide commitment to the application of quality assurance principles across the supply chain. [20] discusses the relationships between quality control and dimensions of SCM. [21] reviews and tests the relationship between quality control and SCM and conclude that failure to consider the impact of quality control programs helps to explain the inadequacies of existing SCM models. The literature suggests that a firm's quality control capability affects its SCM focus. The rationale for this relationship is obvious. For example, a firm that is advanced in its quality control practices is more likely to select suppliers that are similarly competent in their quality control capability, and is motivated to form alliances with such suppliers and to allow key suppliers to participate in its product innovation initiative. Conversely, a firm that is less advanced in its quality control capability is unlikely to be able to do so due to its lack of internal capability, motivation to enhance its quality control capability, and credibility in the eyes of suppliers [17]. We therefore hypothesize,

H_3: Quality control capability positively affects SCM focus.

Inter-organizational Coordination Antecedents

The second set of antecedents of SCM focus pertains to inter-organizational coordination factors which comprise business information coordination, business decision coordination, and business process coordination.

Business information coordination enhances the coordination of knowledge with supply chain members and increases the ability to serve downstream supply chain members efficiently. This coordinated information includes changes in market demand, and customer preferences, and helps to coordinate transaction-related activities. This coordinated information is characterized in multiple dimensions, including timeliness, accuracy, completeness, and information credibility [22]. Coordination can be facilitated by the use of coordinated information systems that enable firms to obtain better, more timely information, and thereby maintain close, mutually beneficial coordination [23]. Having such systems also sends a signal to supply chain members about a firm's willingness and commitment to work together towards common goals, a key element of effective coordination. Business information coordination thus provides the 'glue' that not only binds individual pairs of firms, but firms across the supply chain [24]. Thus, we posit,

H_4: Business information coordination positively affects SCM focus.

The second inter-organizational coordination antecedent pertains to business decision coordination. Business decision coordination provides visibility and reduces uncertainty along the supply chain [25]. Suppliers need to understand buyers' needs and their decision-making processes to effectively respond to changes in the marketplace. For example, a retailer's sharing of point-of-sale data with manufacturers and distributors, or using collaborative planning, forecasting and replenishment systems, provides a context within which upstream partners can interpret market

behavior [26]. This allows firms to reduce differences in derived demand forecasts, inventory levels, and costs associated with the 'bullwhip effect'. The result is an improved responsiveness in the supply chain which can in turn positively enhance buyer-supplier relationships [27]. The literature suggests that not only does a supplier's understanding of a buyer's decision-making processes affect the success of buyer–supplier relationships [28], so does coordinated decision-related information, particularly when underlying demand is significantly correlated, especially when replenishment lead times are long. Hence, we posit,

H_5: Business decision coordination positively affects SCM focus.

The third antecedent pertains to business process coordination. Among the motivations for business process coordination are the potential benefits associated with enhanced business data processing [29]. For example, information technology that facilitates data processing and transfer among supply chain members ranges from low technology applications such as telephones and fax machines, to sophisticated technologies [30]. Among these technologies, electronic data interchange (EDI) is a key tool because of its ability to transmit large amounts of data more rapidly and accurately than traditional paper-based methods [31]. Its open standards have motivated some firms to move their EDI systems to the internet and to develop internet protocol-based EDI systems. Several studies have shown that business process coordination like EDI application can facilitate supply chain coordination and promote relationship building [32]. Thus, we posit,

H_6: Business process coordination positively affects SCM focus.

RESEARCH METHODS

Questionnaire Administration

Data were collected in three regions, the U.S., Europe, and New Zealand. Respondents were identified from the Institute for Supply Management (ISM) and the Association for Operations Management (APICS) membership lists, and the KOMPASS commercial database. We sent surveys to the senior purchasing or supply chain managers of 6,097 sample firms. Ninety-one surveys were returned undelivered due to incorrect addresses or the respondents having left the firms. Next, a reminder letter was mailed to the respondents two weeks after the first mailing. Four weeks after the initial mailing, all remaining non-respondents received a second follow-up letter, a duplicate questionnaire, and another stamped, self-addressed envelope. These combined efforts produced 596 responses yielding a roughly ten percent response rate. We assessed potential non-response bias through a series of t-tests to compare mean differences of early and late respondents in terms of firm characteristics and the constructs used in this study. The results suggest no significant differences between early and late respondents on the key variables.

In the survey data, four hundred and eleven respondents were from the U.S., 116 were from Europe, and the remaining 69 firms were from New Zealand. About 44 percent of our respondents were final product manufacturers, and 37 percent were wholesalers and retailers. Forty-seven percent of our respondents have annual gross sales exceeding $50 million.

Constructs and Measurement Items

To achieve a high degree of validity, we used multiple indicators to represent each latent construct and employed existing scales whenever possible. The product innovation capability construct includes four items that reflect the importance of factors that affect a firm's product innovation capability. We measure inventory control capability with four items that ask respondents to rate the extent to which their firm has the necessary JIT capabilities in their operations. Four indicators measure quality control capability, for which informants indicate the extent to which the management stresses the importance of quality control practices.

For business information coordination, we use six items that ask the managers to indicate the extent to which their firm share and integrate information with other supply chain members. The business decision coordination construct has six items that ask informants to indicate the extent to which each item applies to their business decision behavior. Three items measure business process coordination that asks informants to indicate the extent to which they integrate their operations processes with supply chain members. SCM focus consists of seven indicators that examine the extent of a firm's SCM efforts. In the survey, respondents were asked to indicate whether their firms have a formal strategic alliance program with key suppliers because we expect the SCM focus of a firm with formal strategic alliance program is likely to differ from those that do not have one. This study controls for the existence of formal strategic alliance programs and country-of-origin effects.

STATISTICAL ANALYSES AND RESULTS

Measure Validation

Confirmatory factor analysis (CFA) was used to assess the psychometric properties of the scale items for the constructs derived from the survey instrument. Psychometric properties of the survey instrument in terms of reliability and construct validity were evaluated. Construct validity is concerned with the appropriateness of the underlying structure of a construct and can be assessed by determining the empirical dimensions of the construct using principal components factor analysis. Confirmatory factor analyses were used by combining individual set of measured items into the appropriate factors, and factor scores were saved for subsequent analysis. The items had factor loadings of between 0.606 and 0.877 on their respective factors. Reliability analysis was carried out using Cronbach's α to assess the internal consistence of the scales. Values of α in excess of 0.50 show that given the exploratory nature of the analysis, the scales can be considered to be sufficiently reliable. Cronbach's α values ranged from .742 to .862 for the seven constructs (see Table 1).

Table 1: Construct Reliability

Constructs	% of Variance	Internal Consistency
Prod. Innovation Capability	70.763	α = .862
Inv. Control Capability	61.524	α = .790
Quality Control Capability	69.643	α = .853
Business Info Coordination	43.870	α = .742
Bus. Decision Coordination	47.948	α = .781
Bus. Process Coordination	70.523	α = .789
SCM Focus	51.280	α = .835

Hypotheses Testing Results

This study uses the factor scores of each construct for the hierarchical regression analysis. This analysis enables us to examine the hypothesized direct effects of the traditional resource-based view and inter-organizational coordination on SCM focus when we isolate the control factors. We first include the control variables (i.e., strategic alliance program and whether the firm is based in the U.S.) in the hierarchical multiple linear regression analysis to control for the effects of strategic alliance programs and country-of-origin effect, and then incorporate the explanatory variables in the full model. Table 2 presents the SCM focus regression results.

Table 2: Hierarchical Multiple Linear Regression

Independent Variables		SCM Focus (Models) A‡	B‡	C‡
Control Variables				
Strategic Alliance Program		.346‡	.140*	.088
U.S. & non-U.S. Firms		-.201†	-.185†	-.133†
Resource-based Capability				
Product Innovation	H_1		.290‡	.118†
Inventory Control	H_2		.195‡	.020
Quality Control	H_3		.133†	-.059
Inter-organizational Coordination				
Business Information	H_4			.456‡
Business Decision	H_5			.189‡
Business Process	H_6			.120†
F-value		8.461	20.863	37.791
R^2		.044	.241	.491
Adjusted R^2		.039	.229	.478
Δ in Adjusted R^2		-	.190	.249

* significant at α = 0.10
† significant at α = 0.05
‡ significant at α = 0.01

In models A, B and C, the dependent variable, SCM focus, is regressed on the control and independent variables. Model A (F-value = 8.461, $p < .01$) tests the effects of the two control variables on SCM focus. Model B (F-value = 20.863, $p < .01$) adds the main effects of the three resource-based predictors. It explains an additional 19.0% more variance than by the control variables in model A. Hypothesis H_1 predicts that product innovation capability relates positively to the SCM focus, is supported ($\beta = .290$, $p < .01$). Also, the inventory control capability is positively related to SCM focus, in support of H_2 ($\beta = .195$, $p < .01$). Moreover, quality control capability has a significant positive impact on SCM focus, in support of H_3 ($\beta = .133$, $p < .05$.). Model 3 (F-value = 37.791, $p < .01$) adds the main effects of inter-organizational coordination to the regression analysis, which explains an additional 24.9% more variance than that offered by the control and resource-based variables in model B. The analysis in model C supports H_4 that business information coordination has a significant positive impact on SCM focus ($\beta = .456$, $p < .01$). We also find strong support for H_5 ($\beta = .189$, $p < .01$) that business decision coordination and H_6 ($\beta = .120$, $p < .05$) that business process coordination significantly affect SCM focus.

DISCUSSION

Most studies hint that SCM focus is as much a function of the character and background of the firm as of the resources it possesses. The bulk of scholarly investigation of SCM focus is on how firm-specific variables (such as capability) are relevant in enhancing performance, but relatively little research attention focuses on the role of inter-organizational coordination in forming SCM focus, especially in the context of manufacturing firms and retail organizations. This study uses an alternative framework to explain that focus. Toward this end, we analyze the impact of traditional resource-based factors and inter-organizational coordination on a firm's SCM focus to determine which factor provides a stronger explanation for the differing focus of a firm's SCM practices. Our analysis of survey data validates our major premise that inter-organizational coordination plays crucial roles in SCM focus. Our test results confirm the significant positive associations between the two sets of antecedents and SCM focus to suggest that inter-organizational coordination offers an alternative perspective to explain a firm's SCM focus.

Specifically, all three resource-based capabilities alone are essential for explaining a firm's SCM focus (see model B), but product innovation capability is the only construct that predicts the SCM focus (see model C) when we incorporated the three components of inter-organizational coordination. That is, product innovation capability is a significant and positive predictor in all regression models examining SCM focus. However, inventory control capability and quality control capability are not significant factors in explaining SCM focus when inter-organizational coordination factors are added (see models C). Overall, the result in regression model 3 suggests that inter-organizational coordination is more important in explaining a firm's SCM focus than resource-based capability. The result does not contradict the findings of transaction cost economics or the resource-based view that suggests firm-specific resources explain the SCM focus. Instead, it supplements the literature by showing that, in the case of today's competitive supply chain environment,

traditional explanations of antecedents may not paint a complete picture of successful SCM focus. Our finding confirms the significant role of inter-organizational coordination. On the basis of these findings, we conclude that both resource-based capability and inter-organizational coordination play an important role in a firm's SCM focus. In particular, resource-based capability helps to integrate a firm's internal functions, such as purchasing, supply management, operations management, marketing, logistics, and physical distribution to create an internally integrated supply chain. Once the internal functions within the four walls of a firm are seamlessly integrated, the organization can extend outward to exploit its inter-organizational coordination competence to integrate with upstream suppliers and downstream customers. Thus, the resource-based capacity is a set of internal competency, whereas the latter serves as unique assets to link manufacturing firms and retail organizations in a supply chain.

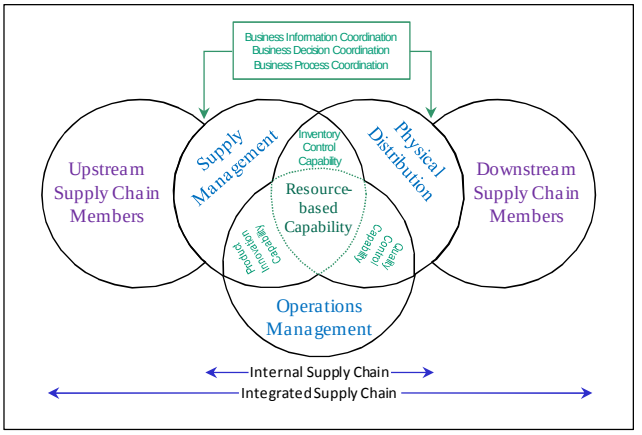
MANAGERIAL IMPLICATIONS

This study has several unambiguous implications for managers and policymakers. The literature review reveals that a firm's SCM focus is the result of various simultaneous factors. In particular, superior SCM practices depend on both traditional resource-based capability and inter-organizational coordination. Hence, managers must possess the necessary resources for supply chain participation and to develop key capabilities to enhance their SCM focus. Our results, which consistently show the significant influence of firm resources, mandate that firms in a supply chain in the modern competitive global market possess the necessary resources for supply chain participation and development of unique capabilities if they want to achieve superior performance.

In addition, the nature and extent of inter-organizational coordination precede SCM focus. Thus, savvy managers operating in a complex supply chain can develop an efficient SCM focus if they align inter-organizational coordination with inimitable resources. Increased globalization forces supply chain managers to think beyond the traditional resource-based perspective and to consider other relevant factors that may help them improve efficiency across their supply chain. In this regard, managers must recognize that their firms are not just an economic unit but also a human-based entity. Such recognition is the first step to open the door to a set of potentially available inter-organizational coordination activities. Manufacturers and service firms can wield these inter-organizational coordination competencies in the global supply chain if they understand their sources and how to explore inter-organizational coordination within and across the supply chain. While it is essential to exploit the potential of inter-organizational coordination to eliminate waste, such as relying on supplier certification in place of inspecting inbound raw materials, savvy managers must realize that it is impossible to integrate with external supply chain members unless the functional divisions within their own firm are integrated internally. For example, a supplier will not be able to ship directly to the point of use if the operations manager does not share his daily production information with the purchasing manager. When its functional divisions are integrated internally, then the firm can expand its integration effort outward to include supply chain members beyond the four walls of its organization.

The major points of this study are summarized in Figure 2. The three inimitable resource-based capabilities (inventory control, product innovation, and quality control capabilities) are unique to a firm. At the initial stage of SCM, each resource-based capability helps to integrate the various functional divisions within an organization to eliminate duplicate activities and remove waste. For example, exceptional inventory control capability helps both the supply management and the physical distribution divisions of a firm to reduce its raw materials and finished-goods inventory. Simple inventory control concepts, such as reducing the supplier base, utilizing preventive maintenance, and increasing the delivery frequency help to trim down raw materials, work-in-process, and finished-goods inventory. A firm can also exploit its extraordinary product innovation capability by linking its supply and operations management functions in new product design and development. Supply management can utilize early supplier involvement, whereas the operations management function can take advantage of concurrently engineering, parts simplification, and value analysis or value engineering to reduce product development time and cost while simultaneously improve product quality.

Figure 2: Internal and External Factors Affecting SCM Focus



Internal supply chain is used in the literature to describe a firm in the supply chain with well-integrated functional divisions, whereas an integrated supply chain is used to describe two or more supply chain members that have coordinated their value-added activities. Once a firm has successfully exploited its resource-based capability to form an internal supply chain, the next logical step is to expand its SCM focus to embrace external supply chain members to achieve an integrated supply chain [33]. In order to synchronize its activities with external supply chain members, a firm must rely on various forms of inter-organizational coordination, such as business information, decision, and process coordination. The coordination is needed to link the firm with its strategic suppliers and customers. For example, a buying firm must share its production scheduling information with suppliers if the buying firm requires the suppliers to ship in small lot-sizes directly to the point of use frequently. In the just-in-time shipping concept where purchased materials are shipped in small lot sizes directly to the point of use, it is impossible for the buying firm to inspect any incoming raw materials. Therefore, prior to the formation

of an integrated supply chain, an efficient internal supply chain with exceptional production innovation, quality control, and inventory control capabilities must be in place. This may be a plausible reason that once the inter-organizational coordination predictors are entered into the multiple linear regression model in Table 2, two of the three resource-based capabilities became insignificant (Model C). In summary, the resource-based capability can be viewed as the internal factors, and inter-organizational coordination is the external factors affecting the SCM focus.

LIMITATIONS

This study attempts to offer a theoretical framework to explain the complex SCM focus of manufacturing firms and retail organizations in a supply chain. Such endeavors are ambitious in nature and therefore contain numerous inherent limitations. First, the most significant potential limitation of this study is the range of developed constructs for inter-organizational coordination. Our study incorporates multiple rounds of theory building through literature reviews and expert opinions, but it does not capture every aspect of inter-organizational coordination. Establishing a valid and reliable instrument to capture these multiple facets represents an ongoing process, and no psychometric technique can address the completeness or breadth of the measurement adequately. It is entirely possible that other dimensions of inter-organizational coordination affect foreign market expansion decisions but are not captured herein.

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REFERENCES

[1] Richey, R.G. Jr., & Autry, C.W. (2009) “Assessing interfirm collaboration/technology investment tradeoffs: The effects of technological readiness and organizational learning”, International Journal of Logistics Management, Vol. 20 No. 1, pp. 30-56.

[2] Bowersox, D.J., Closs, D.J. & Stank, T.P. (2000) "Ten mega-trends that will revolutionize supply chain logistics", Journal of Business Logistics, Vol. 21 No. 2, pp. 1-15.

[3] Olavarrieta, S. & Ellinger, A.E. (1997) "Resource-based theory and strategic logistics research", International Journal of Physical Distribution and Logistics Management, Vol. 27 No. 9/10, pp. 559-88.

[4] Lambert, D.M., Emmelhainz, M.A. & Gardner, J.T. (1999) "Building successful logistics partnerships", Journal of Business Logistics, Vol. 20 No. 1, pp. 165-81.

[5] Hameri, A.P. & Hintsa, J. (2009) “Assessing the drivers of change for cross-border supply chains”, International Journal of Physical Distribution and Logistics Management, Vol. 39 No. 9, pp. 741-761.

[6] Fawcett, S.E. & Magnan, G.M. (2004) "Ten guiding principles for high-impact SCM", Business Horizons, Vol. 47 No. 5, pp. 67-74.

[7] Whipple, J.M. & Russell, D. (2007) "Building supply chain collaboration: a typology of collaboration approaches", International Journal of Logistics Management, Vol. 18 No. 2, pp. 174-96.

[8] Wynstra, F., von Corswant, F. & Wetzels, M. (2010) “In Chains? An Empirical Study of Antecedents of Supplier Product Development Activity in the Automotive Industry”, Journal of Product Innovation Management, Vol. 27 No. 5, pp. 625-639.

[9] So, S. & Sun, H.V. (2010) “Supplier integration strategy for lean manufacturing adoption in electronic-enabled supply chains”, Supply Chain Management, Vol. 15 No. 6, pp. 474-487.

[10] Pero, M., Abdelkafi, N., Sianesi, A. & Blecker, T. (2010) “A framework for the alignment of new product development and supply chains”, Supply Chain Management, Vol. 15 No. 2, pp. 115-128.

[11] Yigitbasioglu, O.M. (2010) “Information sharing with key suppliers: a transaction cost theory perspective”, International Journal of Physical Distribution and Logistics Management, Vol. 40 No. 7, pp. 550-578.

[12] Lo, S.M. & Power, D. (2010) “An empirical investigation of the relationship between product nature and supply chain strategy”, Supply Chain Management, Vol. 15 No. 2, pp. 139-153.

[13] Marion, T. & Sipahi, R. (2010) “Early-stage firms and delay-based inventory control using decision-making tableaux”, International Journal of Production Research, Vol. 48 No. 18, pp. 5497.

[14] Mollenkopf, D., Hannah, S., Wendy, T. & Ueltschy, M. (2010) “Green, lean, and global supply chains”, International Journal of Physical Distribution and Logistics Management, Vol. 40 No. 1/2, pp. 14-41.

[15] Cachon, G. & Olivares, M. (2010) “Drivers of Finished-Goods Inventory in the U.S. Automobile Industry”, Management Science, Vol. 56 No. 1, pp. 202-216.

[16] Wadhwa, S., Bibhushan, & Chan, F. (2009) “Inventory performance of some supply chain inventory policies under impulse demands”, International Journal of Production Research, Vol. 47 No. 12, pp. 3307.

[17] Hsu, C.C., Tan, K.C., Kannan, V. & Leong, G.K. (2009) "Supply Chain Management Practices as a Mediator of the Relationship between Operations Capability and Firm Performance" International Journal of Production Research, Vol. 47 No. 3, pp. 835-855.

[18] Dowlatshahi, S. (2011) “An empirical study of the ISO 9000 certification in global supply chain of Maquiladoras”, International Journal of Production Research, Vol. 49 No. 1, pp. 215-234.

[19] Whipple, J.M. & Roh, J. (2010) “Agency theory and quality fade in buyer-supplier relationships”, International Journal of Logistics Management, Vol. 21 No. 3, pp. 338-352.

[20] Khan, O. & Creazza, A. (2009) “Managing the product design-supply chain interface: Towards a roadmap to the design centric business”, International Journal of Physical

Distribution and Logistics Management, Vol. 39 No. 4, pp. 301-319.

[21] Fredriksson, A. & Jonsson, P. (2009) “Assessing consequences of low-cost sourcing in China”, International Journal of Physical Distribution and Logistics Management, Vol. 39 No. 3, pp. 227-249.

[22] Shafer, S. & Byrd, T. (2000) "A framework for measuring the efficiency of organizational investments in information technology using data envelopment analysis", Omega, Vol. 28 No. 2, pp. 125-41.

[23] Levary, R. (2000) "Better supply chains through information technology", Industrial Management, May-June, pp. 24-30.

[24] Basa, A., Kriebel, C. & Mukhopadhyay, T. (1995) "Information technologies and business value: an analytic and empirical investigation”, Information Systems Research, Vol. 6 No. 1, pp. 3-23.

[25] Ross, A. & Droge, C. (2002) "An integrated benchmarking approach to distribution center performance using DEA modeling", Journal of Operations Management, Vol. 20 No. 1, pp. 19-32.

[26] Narasimhan, R. & Kim, S. (2002) "Effect of supply chain integration on the relationship between diversification and performance: evidence from Japanese and Korean firms", Journal of Operations Management, Vol. 20 No. 3, pp. 303-323.

[27] Wong, C.Y. & Acur, N. (2010) “Understanding inter-organizational decision coordination”, Supply Chain Management, Vol. 15 No. 4, pp. 332-343.

[28] Fugate, B., Sahin, F. & Mentzer, J.T. (2006) “Supply Chain Management Coordination Mechanism”, Journal of Business Logistics, Vol. 27 No. 2, pp. 129-161.

[29] Skipper, J.B. & Hanna, J.B. (2009) “Minimizing supply chain disruption risk through enhanced flexibility”, International Journal of Physical Distribution and Logistics Management, Vol. 39 No. 5, pp. 404-427.

[30] Kumar, K. & van Dissel, H.G. (1996) “Sustainable collaboration: Managing conflict and cooperation in interorganizational systems”, MIS Quarterly, Vol. 20 No. 3, pp. 279-300.

[31] Hsu, L.L. (2005) “SCM system effects on performance for interaction between suppliers and buyers”, Industrial Management + Data Systems, Vol. 105 No. 7, pp. 857-875.

[32] Ettlie, J.E. (1995) "Product-process development integration in manufacturing", Management Science, Vol. 41 No. 7, pp. 1224-1237.

[33] Tan, K.C., (2001) “A framework of supply chain management literature”, *European Journal of Purchasing and Supply Management*, Vol. 7 No. 1, pp. 39-48.