

ABSTRACT

Since the beginning of the 1980s, supply chain management (SCM) has gained a prominence role in offering cost-effective solutions and customer value solutions. The impact of SCM has evolved from a supporting role in organizational functions to a strategic role in attaining competitive organizational goals. Under the sophisticated competition in the global business today, the most admired and feared competitors are firms that link their customers and suppliers together into tightly integrated networks using what is now commonly called external integration. External integration is a key ingredient that firms must focus on if they want to realize their goals. Given the existing body of SCM literature, there are a few studies on the topic of external integration. Most of them aim to study the link between external integration and firm's performance but leave factors preceding external integration, such as, inter-organizational factors, external factors, untouched. As such, research related to antecedents of supply chain integration is needed to fill this gap.

The purpose of this research is to conceptualize factors preceding and conceding external integration from both upstream and downstream sides of a firm in focus based on three theoretical approaches, namely transaction cost theory (TCT), inter-organizational relations (IOR), and resource-based view of the firm (RBV). A field study in the context of Thai auto-parts industry is conducted to assess; (1) the relationships between antecedents of external integration and external integration from both upstream and downstream sides, (2) the relationships between external integration and competitive

operational performance, and **(3)** the role of internal integration on the concept of complete supply chain integration. The research design focuses on developing measures to evaluate theoretically specified constructs and collecting survey data to validate the measures and examine a proposed two-causal relationship model.

The proposed two-causal relationship model integrates two groups of factors with external integration; **a) antecedents of external integration**—inter-organizational information coordination capability (comprising of information sharing, compatibility of information technology (IT) infrastructure, and connectivity), commitment, trust (comprising of character-based trust attribute and competence-based trust attribute), organizational compatibility (comprising of compatibility of philosophy and management styles and compatibility of cooperation and solution orientation) and supply/demand uncertainty and **b) consequences of external integration**—productivity-focused performance, customer-focused performance, and product and market realization-focused performance. The proposed model tests how antecedent factors influence supplier and customer integration that consequently lead to competitive operational performance.

Empirical tests of the proposed model are conducted using descriptive data analysis. Data are collected during December 2004 to March 2005. Self-administered questionnaires are distributed by drop-off delivery technique to 508 auto-parts supplier firms considering as population in Thai auto-parts industry. A total of 246 firms are willing to participate but only 181 questionnaires are useable, yielding the useable response rate of 35.6%. The potential non-response bias is assessed by comparing

useable respondent firms with non-respondent firm using T-test statistic. The results exhibit no significant difference between respondent firms and non-respondent firms on ownership structure, business experience, and number of employees. This indicates that the data sets of useable questionnaires appear to be a good representative of the study's population.

Consequently, variable relationships, group differences, and hypotheses testing are assessed by multiple regression analysis (MRA) and multivariate analysis of variance (MANOVA). Prior to the tests, measurement properties of constructs and statistical assumptions of statistical tools are evaluated. The results show evidence construct validity and reliability, no violation of multivariate normality, homogeneity of variance, equality of covariance matrix, independence, linearity and no sensitivity of outliers.

The results of statistical analysis show five important research findings. **First**, commitment, inter-organizational information coordination capability, and trust are three critical factors influencing supplier integration. Organizational compatibility is also important inter-organizational factor but it affects supplier integration through inter-organizational information coordination capability and trust. Supply uncertainty, which is an external factor, does not influence supplier integration. **Second**, inter-organizational information coordination capability and commitment are two critical factors influencing customer integration. Trust and organizational compatibility are also important factors but they affect customer integration through inter-organizational information coordination capability and commitment. Demand uncertainty, which is an external

factor, does not influence customer integration. **Third**, external integration is linked to productivity-focused performance, customer-focused performance, and product and market realization-focused performance. However, customer integration is more important strategy that firms should focus on than supplier integration. **Fourth**, outward-facing and customer-facing integration are not significantly different. Both groups outperform inward-facing, periphery-facing, and supplier-facing integration groups. **Fifth**, internal integration plays a direct role not a moderator role on the complete supply chain integration.

The results of this research provides implications for academic in fourfold; **a)** empirically ascertain the relationships between external integration and competitive operational performance and introduces new relationships between some antecedent factors of external integration and external integration, **b)** show evidence that two trust attributes and two properties of organizational compatibility are appropriate definitions of a trust and an organizational compatibility, **c)** reveal that new product development is customer-driven and most of direct supplier firms are original equipment manufacturers (OEMs) not either original design manufacturers (ODMs) or original brand manufacturers (OBMs), and **d)** disclose the lack of full understanding of supply chain integration in Thai auto-parts industry.

The results of the study also provide managerial implications essential for direct supplier firms to strengthen their competitiveness; **a)** firms should focus on internal integration, followed by customer integration and then supplier integration **to gain**

productivity-focused performance, **b)** firms should focus on customer integration, followed by internal integration and then supplier integration **to gain customer-focused performance**, and **c)** firms should improve customer integration, followed by supplier integration and then internal integration **to gain product and market realization-focused performance**.

In addition, the results of this study suggest directions to enhance supply chain integration; **a)** firms should put more efforts by order of importance into compatibility of information technology (IT) infrastructure, connectivity, and information sharing to improves inter-organizational information coordination capability, **b)** firms should emphasizes commitment by focusing on relational commitment (i.e., training and time of key employees spent to relationship) rather than asset commitment (i.e., asset specific investment), **c)** firms should strengthen their partners' confidence by improving their competence, **d)** firms should concentrate on similarity of management philosophy and style to key partners rather than similarity of coordination and problem orientation, and **e)** firms should increase the level of understanding of supply chain integration by encouraging top management to understand the significance of supply chain integration in order to get full support from them.

Lastly, although this study has provided theoretical and managerial contributions for supply chain integration in Thai auto-parts industry, limitations do exist. Future research works on this research's topic are recommended to researchers in order to get

more conceivable results, better implications, and to test for generalizability of this research findings across industries and countries.

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