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Research on the Relationship between Supply Chain Control Tower and Enterprise Performance in Machinery Manufacturing Industry

(Thesis submitted for the degree of Executive Doctorate in Business Administration)

Cohort: 2015

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Abstract

The competition between modern enterprises is indeed the competition between their supply chains. If an enterprise wants to win in the competition, it needs a more integrated and flexible supply chain that can cope with the increasingly complicated and fluctuating environment. Like a commander of the control tower at the airport, he must, with the support of a radar screen, clearly know the path of each and every airplane in the air and give unified instructions. In recent years, some enterprises have tried to change the supply chain plan management model and put supply chain control tower into the practice of supply chain management. However, as a new supply chain management model, how can we build the supply chain control tower? Can supply chain control tower really improve corporate performance? All these problems are subject to further research. Therefore, the study of the theoretical framework and operational mechanism of supply chain control tower and its value for the improvement of corporate performance is of great theoretical value and realistic significance for the enterprises to use supply chain control tower to improve their performances.

This paper analyzes, based on the summarization of the research status and developments of supply chain collaboration and the relationship between supply chain collaboration and corporate performance at home and abroad, the make-up and functions of supply chain control tower, puts forward research hypotheses after exploratory researches on the building of the conceptual model for supply chain control tower and corporate performance for the manufacturing industry, and finally, analyzes and verifies the impact of supply chain control tower on corporate performance in the manufacturing industry by the comprehensive use of confirmatory factor analysis, structural equation modeling, hierarchical regression and other methods after collecting relevant corporate data through questionnaires. Research results show that:

(1) Supply chain control tower is an interdepartmental organization. It is an information center backed by system integration that can provide visual services for the supply chain. It can be applied to the transportation and warehousing activities on the supply chain and monitoring and metering. Supply chain control tower plays the role of central pivot of supply chain collaboration and simulates, visualizes, analyzes and predicts information and possible results for all stakeholders who can use such information to solve problems, to avoid risks and improve operating efficiency.

(2) Supply chain performance assessment is the evaluation on the performance of the whole supply chain and corporate on the supply chain nodes, and the implementation and collaboration relationship among corporate on the supply chain nodes. It is the assessment indicator based on the working process. BSC-SCOR supply chain performance assessment model combines the framework from BSC and the detailed process from SCOR, offering a standard description of the management process of the supply chain, achieving a

comprehensive and balanced evaluation on the performance of the supply chain.

(3) In the exploratory cases, the two companies are very good at obtaining, sharing and integrating external and internal information resources based on their advanced information technology and unified information technology standard, to realize supply chain timing, cost and financial advantages and improve the overall competitiveness of their supply chain. On the basis of the exploratory case study and combining the researches of other people, this paper puts forward a conceptual model for the impact of supply chain control tower on corporate performance that takes corporate performance as dependent variable (explained variable), supply chain control tower as independent variable, plan and process control as mediating variable and environmental uncertainty as moderating variable.

(4) Experimental results show that the information integration capacity of the machinery manufacturing industry's supply chain control tower can effectively save time and lower cost, thus further improving market growth rate and profitability of the enterprise. Supply chain control tower information collaboration mechanism can effectively save time, lower cost and reduce uncertainties, thus further improving the market growth rate, profitability and product innovation efficiency of the enterprise. The degree of information sharing of supply chain control tower can effectively lower cost and reduce uncertainties, thus further improving the market growth rate, profitability and product innovation efficiency of the enterprise. In general, information collaboration capacity of the machinery manufacturing industry's supply chain control tower can effectively lower cost and reduce uncertainties, thus further improving corporate performance, while external environmental uncertainties have a significant negative impact on the relation between plan and process control and corporate performance.

Key words: Machinery manufacturing industry; supply chain control tower; supply chain collaboration; corporate performance

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