

**STUDY OF SELECT ISSUES IN GLOBAL SUPPLY CHAIN IN  
INDIA**

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**DEPARTMENT OF MANAGEMENT STUDIES  
INDIAN INSTITUTE OF TECHNOLOGY DELHI**

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**STUDY OF SELECT ISSUES IN GLOBAL SUPPLY CHAIN IN  
INDIA**

**By  
PRAVIN KUMAR**

**Submitted  
in fulfillment of the requirements of the degree of Doctor of Philosophy**

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# **CERTIFICATE**

This is to certify that the thesis entitled “**Study of select issues in global supply chain in India**” being submitted by **Pravin Kumar** to the **Indian Institute of Technology Delhi** for the award of the degree of **Doctor of Philosophy** is a bonafide record of original research work carried out by him. He has worked under our supervision and has fulfilled the requirements for the submission of the thesis, which has reached the requisite standard.

The results contained in this thesis have not been submitted, in part or full, to any other University or Institute for the award of any degree or diploma.

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## **ABSTRACT**

Global supply chain is a network of relationships with both internal and external partners operating under different political, economic, cultural, social and physical environments. These relationships require close coordination despite the differences. The networks themselves become so vast that no one can hope to achieve close control over more than a limited part of the entire operation.

This research is focused on some of the issues in global supply chain in India. An exhaustive literature review has been conducted to identify the gaps in literature in this area. A questionnaire-based survey has been conducted to gain insight into various issues related to operations of global supply chain in auto sector and, electrical and electronics sector. This research has attempted to fill some of the gaps in contemporary research. The descriptive statistics from the survey, hypotheses testing, and case studies of leading Indian companies provide insight into the practices of global supply chain in India. Interpretive Structural Modeling (ISM) has been used to identify the relationships among the important variables of flexibility in operations of global supply chain. Further a combination of Fuzzy Quality Function Deployment (FQFD) and Multi-Objective Linear Programming (MOLP) has been used to select suppliers and allocate quota among them in global supply chain.

An extensive literature review has been conducted to identify the gaps and relevant research issues in global supply chain. To carry the research, eleven hypotheses were formed based on literature review and discussions with the academicians and practicing managers in global supply chain. To identify the issues related to operations of global supply chain in India, a questionnaire

has been developed. A questionnaire-based survey was used to elicit responses from the industry. Some of the issues related to the practices of global supply chain have been identified through this questionnaire survey and discussed. Various aspects of the questionnaire include characteristics of global organizations, reasons for global sourcing, barriers in global sourcing, benefits of global supply chain, etc. All the hypotheses have been tested using statistical tools.

Case studies of two Indian companies (namely, A1 Motors and EE), which represent two sectors of the Indian industry, have been developed and analyzed using Strength, Weakness, Opportunity, Threats (SWOT) analysis and Situation-Actor-Process-Learning-Action-Performance (SAP-LAP) framework.

An Interpretive Structural Modeling was developed to understand the mutual relationship among the variables of flexibility in global supply chain. A fuzzy quality function deployment (FQFD) and multi-objective linear programming (MOLP) integrated model was developed to select the global suppliers and allocate the quota among the selected suppliers. The present research work focuses on some of the important issues related to operations of global supply chain in India. It provides better understanding of the status of global supply chain in India.

**Keywords:** Global supply chain management, Global sourcing, Global distribution, Flexibility, Interpretive Structural Modeling (ISM), Fuzzy Quality Function Deployment (FQFD), and Multi-Objective Linear Programming (MOLP).

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