

Chapter 3

Exploring Key Success Factors of Indian Pharmaceutical Supply Chain Using Interpretive Structural Modelling

Anurag Mishra

Indian Institute of Technology, Bombay, India

Pankaj Dutta

Indian Institute of Technology, Bombay, India

Suruj Kakoti

Indian Institute of Technology, Bombay, India

ABSTRACT

Indian pharmaceutical industry is witnessing enormous challenges due to varying patent laws, increasing demand, and continuous pressure from the government to provide medicines at a lower price. To overcome these challenges, there is a need for a more robust supply chain (SC) which will help in information sharing and reduce overall cost. The chapter determines the key drivers of Indian pharmaceutical SC, and draws the attention of industry, stakeholders, and top management to emphasise on these drivers to enhance the performance and profitability of SC. An interpretive structural modelling-based approach has been employed to model the pharmaceutical SC key drivers. The 16 key parameters have been identified across all major dimensions such as SC, HR, & organizational, market, technology, and reverse logistics. Further fuzzy MICMAC analysis is done to categorize based on their driving and dependence power. The factors like collaborative relationship among SC partners, quality regulations, third party logistics, and end-to-end responsive SC are found to be more important enablers.

INTRODUCTION

Indian pharmaceutical industry is experiencing major local and global challenges that are creating a pressure to tighten the Supply Chain (SC), which is an important link between the laboratory or manufacturing unit and marketplace. Now, the differentiating factor for a business is shifting from reverse engineering experts to one having improved operational performance measures such as service level and cost to deliver. The Indian Pharmaceutical Industry is expected to grow to \$55 billion by 2020, thereby emerging as the sixth largest pharmaceutical market globally by absolute size. (India Brand Equity Foundation, 2018)

SC management is one of the vital components for industries to gain strategic success, by providing well balanced information flow which helps the organizations to stand against the challenges coming their way. (Rajeev et al, 2017). Understanding and practicing SCM in a proper way has become an essential requirement to stay in this competitive market.

In this paper, we have used interpretive structural modelling (ISM) for identifying and summarizing relationships among SC drivers specifically in the Indian Pharmaceutical Industry. It helps to divide the factors into different levels and then can act accordingly. In this paper, 16 primary key success factors of Indian pharmaceutical SCs have been identified by reviewing scientific journals and analysed by taking into account the opinions of experts and academia which was later used as an input in the ISM methodology from which interrelationships among the drivers and their hierarchical levels were developed. Then we have used fuzzy MICMAC analysis to categorize the drivers based on their driving and dependence power.

LITERATURE REVIEW

A well synchronized SC focuses on customer satisfaction, sustaining competency and continuous improvement in performance. These coordinating actions are tough to finalize due to different working cultures of organizations (Narayanan and Raman, 2004).

Cooper et al. (1997) said that support from the top management, business objectives that are being set are the major drivers influencing SC practices. Shah (2012) had done a thorough literature review addressing the key challenges, the drivers and major components working in a pharmaceutical supply chain. They also addressed the challenges with the solution strategy and future directions. Papageorgiou et al., (2001) used an optimization-based approach for the selection of strategy for product development, capacity and investment in case of pharmaceutical industries. The problem is formulated as a Mixed integer linear programming (MILP) and further an example is used to validate the model. Kumar et al., (2009) studies the control measures needed in the Supply chain of pharmaceutical industry, analysed the whole system using DMAIC process. The target of the study was to improve the reverse logistics process which in turn will help to reduce the harm to a consumer.

Kelle et al., (2012) studies the supply chain in pharmacy and explored the current managerial practices. The authors dealt with the inventory management at a local storage unit and then further suggested solutions for improvement. Surala and Karimi (2012) studied the integrated supply chain for multinational pharmaceutical companies. The authors have proposed a model which integrates the constraints of procurement, production and distribution. A MILP was formulated and two example problems were run to validate the model. Singh and Misra (2018) in their paper illustrate that awareness about SC

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/exploring-key-success-factors-of-indian-pharmaceutical-supply-chain-using-interpretive-structural-modelling/249264

Related Content

Analyzing Artificial Intelligence From Social Science Perspectives: Artificial Intelligence and Human Intelligence

Govind Srivastava (2023). *Data-Driven Approaches for Effective Managerial Decision Making* (pp. 143-154).

www.irma-international.org/chapter/analyzing-artificial-intelligence-from-social-science-perspectives/323317

A Conceptual Model for Measuring Reverse Logistics Performance in Automobile Industry

Kaveh Khalili-Damghani and Maryam Najmodin (2014). *International Journal of Strategic Decision Sciences* (pp. 21-29).

www.irma-international.org/article/a-conceptual-model-for-measuring-reverse-logistics-performance-in-automobile-industry/114626

Predicting Churn for Mobile Phone Providers

(2024). *Decision and Prediction Analysis Powered With Operations Research* (pp. 153-167).

www.irma-international.org/chapter/predicting-churn-for-mobile-phone-providers/350374

Developing a DSS for Allocating Gates to Flights at an International Airport

Vincent F. Yu, Katta G. Murty, Yat-wah Wan, Jerry Dannand Robin Lee (2009). *International Journal of Decision Support System Technology* (pp. 46-68).

www.irma-international.org/article/developing-dss-allocating-gates-flights/1744

D-Sight: A New Decision Making Software to Address Multi-Criteria Problems

Quantin Hayez, Yves De Smet and Jimmy Bonney (2012). *International Journal of Decision Support System Technology* (pp. 1-23).

www.irma-international.org/article/sight-new-decision-making-software/75117