

Thesis Title: Game-Theoretic Studies on Dual-Channel Supply Chain Configuration

Name of the Student: Rofin T M (Roll No. 13IM91F01)

ABSTRACT

The Indian online retail market is the fastest growing in the world and it continues to be driven by various supply and demand factors. The skyrocketing internet penetration and transforming consumer behavior have made its impact on the retail landscape of the country, resulting in innovative business models and reconfigured supply chains. It is imperative for the firms to make a judicious decision on the supply chain configuration owing to its strategic nature and profitability implications. This thesis focuses on the dual-channel supply chain configuration problem.

The rising customer acceptance of e-commerce has made online distribution channels an integral component of the manufacturers' supply chain. Such a transformation has resulted in a dual-channel supply chain configuration for numerous Indian manufacturers, allowing them to reach the market through traditional 'brick and mortar' channels and online channels. Further, it is imperative for the manufacturer to decide whether to employ direct channels or indirect channels. This thesis initially focuses on the manufacturer's decision on the dual-channel supply chain configuration by considering three distinct channel configurations inspired from the Indian market, i.e. Retailer - E-tailer, Company store - E-tailer and Retailer - E-marketplace. A game theoretic model is developed to capture the competition between chain members and practical insights are obtained from a numerical example primarily focusing on the online channel preference of the product.

Further, the thesis focuses on the impact of cooperative advertisement on the dual-channel supply chain configuration. A novel cooperative advertisement mechanism in the form of wholesale price discount is proposed. Furthermore, the transforming consumer behavior is captured in the thesis in the form of showrooming behavior where the customers first evaluate the product in a physical store and end up buying from the online store. Game theoretic models are developed for the three channel configurations under consideration by integrating the effect of cooperative advertisement and showrooming respectively. Closed form analytical expressions corresponding to the optimal policies of the chain members are derived and numerical examples are cited. Practical insights are obtained on the level of advertisement expenditure, the level of retailer's sales effort, channel configuration decision of the manufacturer and optimal policies of the chain members.

Keywords: dual-channel supply chain, online channel preference, cooperative advertising, showrooming, wholesale price discrimination, pricing

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