Optimizing Strategic and Tactical Decisions in Indian Dairy Supply Chain ABSTRACT

Wastage of milk in the process of its procurement and distribution is of significant concern. India is no exception. However, there is little academic research that goes into identifying the factors leading to wastage in the dairy supply chain in the Indian context. Also, there is little research on ways to reduce cost in the entire dairy supply chain.

Purpose – The purpose of this research study is to identify the factors leading to wastage in the inbound and outbound logistics of Indian dairy industry and optimize the cost incurred in the dairy industry supply chain in India through routing optimization model and re-designing the dairy supply chain.

Methods – To categorise the causal factors form the identified wastages factors for inbound and outbound logistics, we used Grey-DEMATEL approach in this research study. And the objectives focused in cost optimization, we used the mix integer linear programing (MILP) model for product distribution and redesigned supply chain network for overall cost benefit.

Findings – The research findings reveal that for inbound logistics the study classified the barriers into five causal and seven effect factors and for the outbound logistics the barriers classified into five causal and fourteen effect factors. The outcome from proposed MILP model for product distribution not only reduces the delay in deliveries but also minimize the total distribution cost. In last objective we redesigned supply chain network to achieve the overall cost benefit.

Practical Implications – The implication of this study is two-fold. From a managerial perspective, the study, also being of exploratory nature, gives the managers a real-life understanding of the factors leading to wastage and the ways by which they can be mitigated. The mathematical modelling helps to bring in some semblance and authenticity for future decision making.

Theoretical contribution – From an academic perspective, the study throws light on a rarelystudied domain in the Indian context - wastage factors in the dairy industry supply chain, and develop MILP model for cost optimization.

Limitations – Data was considered from one, though significantly large organization. Future research can expand the sampling frame and time horizon for the purpose of data analysis.

Keywords: Wastage, Dairy supply chain, Vehicle routing, Network design, India.