

## Chapter 8

# Investigating the Drivers and Barriers of Reverse Logistics Practices in the Pharmaceuticals Supply Chain: Interpretive Structural Modeling (ISM) Approach

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### ABSTRACT

*This empirical research investigates the reverse logistics practices adopted by a leading pharmaceutical company in Egypt, the drivers behind the applied reverse logistics activities, and the barriers affecting the application of reverse logistics. The methodological approach of interpretive structural modeling (ISM) is applied to study the mutual influences across barriers listed by a preliminary case analysis, and to identify the “driving” barriers which may worsen other barriers, and “dependent” barriers influenced by the driving barriers. A key finding of the analysis is that lack of regulation enforcement and lack of public awareness regarding the importance of reverse logistics are the most driving barriers influencing the rest of the identified barriers.*

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## INTRODUCTION

Reverse logistics is one of the most critical aspects for any business related to manufacturing, distribution, and service and support of any type of product (Donald F Blumberg, 2004, p. 1). It is also practiced in different industries, including those producing steel, commercial aircrafts, computers, automobiles, appliances, and chemicals and medical items (Dowlatshahi, 2000, p. 144). The importance of reverse logistics is underscored by its increasing popularity in both business and academic communities since the last decade (Nikolaou, Evangelinos, & Allan, 2013, p. 173).

Earlier, reverse logistics was often considered as a process that has little effect on enterprises as a whole. However, the evolving financial and competitive pressure, as well as the complexity in environmental regulations, have made it clear that reverse logistics is no longer an option for an organization to meet its goals and increase profitability (Partida, 2011, p. 62).

Deployment of reverse logistics is not free from barriers (Ravi & Shankar, 2005, p. 1012). Some of the most common barriers facing companies implementing reverse logistics in different industries are: Importance of reverse logistics relative to other issues, company policies, lack of systems, competitive issues, management inattention, financial and personnel resources, and legal issues (Dale S. Rogers & Tibben-Lembke, 1998, p. 32). In spite of these barriers, companies are becoming active in reverse logistics for different reasons, including economic reasons, legislative reasons, and corporate citizenship (de Brito & Dekker, 2003, p. 6). Growing concerns relating to environmental issues, coupled with legal regulations, have made organizations responsive to reverse logistics not only in developed countries but also in developing countries (Samir & Rajiv, 2006, p. 525).

Reverse logistics is very important in the pharmaceutical industry—not only from the economic point of view but also from the environmental and the regulatory points of view. In addition, the application of reverse logistics in this industry is more challenging than in any other industries, as most pharmaceuticals get destroyed when they are recalled or returned, they are seldom repaired or resold (Kabir, 2013, pp. 89, 97).

Proper disposal of recalled, unused, and expired pharmaceuticals is an important issue with legal implications, as some of these products contain hazardous chemicals. Also, the sensitive nature of medicines as well as the potential harm from use of expired or non-effective medicines means that pharmaceutical companies must effectively implement reverse logistics to promptly clear their supply chain channels of expired and non-conforming drugs (Shaurabh, Saurabh, & Moti, 2013, pp. 12, 18).

## Research Problem

Reselling expired pharmaceuticals in Egypt is an increasing problem with severe consequences (Ramadan, 2014; RASSD, 2015). The head of the chamber of pharmaceutical industries, said recently that the pharmacists syndicate estimated the existence of EGP 600 million (approximately \$US 76.6 million) worth of counterfeit and expired drugs in the Egyptian market, constituting two percent of the country's total annual pharmaceutical sales.

Kabir (2013); Kwateng, Debrah, Parker, Owusu, and Prempeh (2014) as well as other recent studies (de Campos et al., 2021b, 2021a; Laganà et al., 2021; Luís et al., 2021, 2021; Manzollilo, 2021; Ribeiro et al., 2021) suggest extended focus on reverse logistics to potentially reduce this problem. There are however several barriers which hinder or prevent the application of reverse logistics in pharmaceutical

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