

# Chapter 14

## Constructing a Resilient Distribution System Using Cabotage: Building a Resilience Delivering

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### ABSTRACT

*After a major disaster, commercial supply and delivery activities suffer serious problems because transport infrastructures can be damaged, destroyed, inactive, or restricted. During the first months of 2017 in Peru, the phenomenon of the coastal El Niño increased rainfall along the coast, which caused the blockage of numerous roads and bridges that affected one and a half million people. This situation caused many companies to halt their distribution logistics operations. For this reason cabotage was considered to replace traditional transport to merchandise by road. Maritime cabotage consists of the transport of loads and people considering short distances and low-medium loads. This research tackles increasing resilience distribution using cabotage as an option to transport merchandise in post-disaster scenario through a Peruvian processed food company based on empirical evidence. Results show that cabotage service is in process to mature in Peru. The company analyzed showed positive results during the coastal El Niño 2017 phenomenon.*

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## INTRODUCTION

Peru is one of the countries that will be most affected by the most negative impacts due to climate change due to its complex geography, this added to the state of its coastal cities, which are characterized by informal housing constructions, high population density and limited road infrastructure, create conditions of high vulnerability for their inhabitants and mass consumption companies that operate there. In 2017, Peru was impacted by El Niño Costero, a phenomenon whose effects are like those caused by El Niño phenomenon, that is, a significant increase in rainfall on the coast, which in turn caused landslides (called “huaicos” in the Peru), as well as overflowing rivers, etc. Northern regions of the country have the worst fall in 33 years of the regional GDP according to El Comercio (2017), impact per region was; Piura (-3.6%), Cajamarca (-2.9%), Áncash (-2.6%), La Libertad (-1.1%) and Lambayeque (-0.2%) and Tumbes (0,1%). Daily losses record was valued at US \$ 31.2 million (Gestión, 2017). The climatic phenomenon mentioned from the point of view of goods’ distribution affected many companies because of blockade of roads by the overflow of rivers, destruction of bridges by the force of the flow, villages flooded by the overflow of the rivers, etc.

The supply chains of mass consumption companies characterize by having multiple supply and supply points (producers, distributors, suppliers and logistics operators) were paralyzed or limited in their activities. The main food companies operating in the area had to put into operation various actions for keeping their operations, which already depleted by product losses such as lack of inventory at local distributors, stock breakages at local retailers, etc. On the other hand, the population was affected because it lived in a short time shortage of food in the different localities. All of which stimulated the search news solutions to continuing distribution of merchandise. This scenario of crisis described, motivates the company-case analysed in this paper, to seek new solutions for the distribution of merchandise in the Northern region, finding in cabotage an alternative to replace the traditional means of transport used under normal conditions.

Poor performance of the commercial supply chain due to disruptive events has been studied by several authors (Martha et Vratimos, 2002, Semchi-Levi et al., 2002, Helferich and Cook, 2002, Christopher and Lee, 2002, Chopra and Sodhi, 2004; Sheffi, 2005). They have highlighted the exposure of unreliable supply chains due to the configuration and design of networks that are vulnerable to risks and threats to unpredictable events, for example: natural disasters (Reed and Simon, 2011; Fujita and Nobuaki, 2012, Reed and Simon, 2014), shortages of parts (Latour, 2001, Rice, 2005), strikes (Treece, 2014; Pender, 2014), terrorist attacks (Thurm et al ., 2001), unforeseen changes in demand (Barrett, 2001), failures in computer services (Koch, 2004), illicit activities (Lemos, 2004), equipment failures (Kleindorfer and Saad, 2005; Olson, 2011), bankruptcy or poor state of partners’ finances (Macalister, 2002).

This paper tackle on how increase transport’s resilience of a mass consumption company under crisis state because the coastal El Niño 2017, in the Northern zone of Peru. It is presented through a company experience analysed which run an alternative transport means called cabotage, which let it keep its distribution operation into the most impacted Peruvian regions previously mentioned. To recovering company-case’s learning experiences case method is used exposing its supply chain disruption during the disaster. This means of transport is not the regular because it is one made by boats of low load capacity in short routes instead regular road transport used for companies.

The article is organized as follows; first, it is present the background about transportation operations of mass consumption companies and in particular about company-case under coastal El Niño 2017

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