Chapter 4
Analysis of Technology as a Factor of Resilience in the Agri-Food Supply Chain

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ABSTRACT

Distribution companies in the Spanish agri-food sector have shown a high level of resilience during the COVID-19 crisis, as they have always guaranteed a high availability of product in stores (more than 90%) despite the changes in demand themselves from such an uncertain context. The scientific literature already identifies some specific factors that can positively influence the robustness of their logistics processes, such as proximity supply models, collaboration between value chain actors, and customer-oriented strategies. But this chapter seeks to delve into the relevance that technology can have as an element of supply chain resilience, concluding that it is an important but not yet determining factor. The companies that took part in the study, which represent more than 50% of the Spanish agri-food distribution, have shown that the technological capacity of their companies does not have a direct correlation with their current level of resilience, although in at the same time, they consider it a binomial that has a lot of potential and needs to be developed.

INTRODUCTION

As businessman Warren Buffet puts it: "Only when the tide goes down can you see who was swimming naked" (Edwards, 2016). A phrase that could be perfectly applied to Spanish supply chains, as the crisis of Covid-19 has exposed its true resilience, demonstrating the fragility of some logistics structures and the strength of others (Mena, Karatzas, & Hansen, 2022). For example, it is well known that at the begin-

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ning of the pandemic the medical equipment suffered a collapse in its supply system, caused by a sudden and sharp increase in demand, which depleted the stocks of items as necessary as masks, hydroalcoholic gel, or respirators (Derqui, Filimonau, & Matute, 2021). In addition, the reaction time was not fast, but it took several weeks to restore an optimal level of service, able to respond to the needs of the population.

On the other hand, the agri-food chains always showed a remarkable degree of resilience, as, although they also suffered significant changes in demand, they were able to withstand the onslaught and overcome the difficulties, managing not to interrupt supply. of products (Matthews, 2020). In fact, according to the databases of Nielsen and AECOC (the largest Spanish association of company's manufacturers, distributors and logistics of consumer goods) that collect daily information on the behavior of sales of 40,000 references in 1,800 supermarkets throughout Spain (Brugarolas, Martínez-Carrasco, Rabadán, & Bernabéu, 2020), agri-food distribution maintained a level of product availability in stores above 90% during 2020. Even in March, when demand varied the most due to the unexpected confinement of the entire population, the lack of product at points of sale did not exceed 8%. Figure 1 shows the evolution of this barometer, called OSA (AECOC, 2021), which collects information on the most essential categories: packaged food, refrigerated food, frozen food, beverages, drugs, and perfumery.

Figure 1. Percentage of product availability at the points of sale of the large Spanish agri-food distribution during the year 2020 (AECOC, 2021)