

Managing COVID-19 disruption: the response of express couriers and lessons learned to improve resilience

Express
couriers'
response to
COVID-19

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Abstract

Purpose – Coronavirus disease 2019 (COVID-19) led most companies to redefine their sales channels, pushing toward e-Commerce. This increase in the online sales of products resulted in significant pressure on the logistics sector. The purpose of this paper is to investigate how express couriers responded to the pandemic period and allowed for business continuity.

Design/methodology/approach – A multiple case study involving five express couriers was conducted. Collected information was coded, then a framework is proposed to discuss the results with the support of the resource-based view and dynamic capabilities view concepts.

Findings – The study highlights how couriers leveraged most of their resources to respond to the pandemic threat. Four recurrent continuity enablers to foster the reconfiguration of resources were identified. Specifically, the study points out the key role of employees, digital technologies, visibility and knowledge as enablers that played a crucial role toward continuity. In addition, valuable lessons learned by practitioners to foster resilience in future disruption are highlighted.

Originality/value – Concerning academia, the present research aims to be among the first ones to provide empirical and practical insights on the impact of COVID-19 among express couriers. Considering practitioners, it identifies lessons learned that could be applied to the sector in future disruption.

Keywords Express couriers, Last-mile, COVID-19, Pandemic, Resilience, Dynamic capabilities

Paper type Research paper

Introduction

The year 2020 has been described in the literature as a black swan (Magableh, 2021), as the coronavirus disease 2019 (COVID-19) pandemic has led to an unprecedented economic shock, causing a supply-demand mismatch (Sharma *et al.*, 2021; Magableh, 2021) and consequently a supply chain disruption (Ivanov, 2020; Queiroz *et al.*, 2020). Lockdowns around the world closed most of the unessential activities leading people to buy online, and experiment with new methods of purchasing goods (Alaimo *et al.*, 2020; Cavallo *et al.*, 2020). E-commerce experienced an explosion in sales which almost doubled in a few weeks, leading retailers to face unprecedented organizational challenges in managing orders and flows of goods (Anastasiadou *et al.*, 2020; Dannenberg *et al.*, 2020; Guo *et al.*, 2020).

Logistics service providers (LSPs) faced an exceptional situation (Choi, 2020; Singh *et al.*, 2021) as well. They dealt with an increase of flows to be managed and to ensure, at the same



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time, the health of their employees (Cichosz *et al.*, 2020; Lau *et al.*, 2020; Ardjmand *et al.*, 2021). The COVID-19 pandemic, as a result, had a strong impact on the LSPs from the operational, managerial and economic viewpoints, requiring the implementation of short-term strategies and the review of the long-term ones, such as digitalization of infrastructures and operations, implementation of safety measures and new working policies (e.g. Ardjmand *et al.*, 2021; Cichosz *et al.*, 2020; Ivanov, 2020; Lau *et al.*, 2020; Queiroz *et al.*, 2020).

Despite the critical role played by LSPs in ensuring the continuity of provisions, it emerges how research calls for more insights into the mechanisms they developed to ensure the continuity of operations and consequently to develop resilience (Choi, 2021; Gammelgaard *et al.*, 2020; Ivanov and Dolgui, 2021). Given the relatively broad context of LSPs, the present paper aims to explore and provide insight into the actions taken by express couriers, which belong to an industry strictly related to e-Commerce activities (Dannenbergh *et al.*, 2020; Guo *et al.*, 2020).

From the above-mentioned considerations, the following research question is formulated: “How did the express couriers respond to pandemic disruption? And which insights can be used to foster the resilience of express couriers in turbulent events?”. Through a multiple case study, data were collected from the empirical context and elaborated in a rigorous way to generate valuable knowledge (Gammelgaard, 2017; Yin, 2018). The results are discussed in the light of the resource-based view (RBV) and the dynamic capabilities view (DCV), which allow to identify and classify firms’ valuable resources respectively in a static and a dynamic environment (Teece, 2007). The paper has a twofold contribution toward both academics and practitioners, highlighting the implications toward the resilience study area. On the one hand, it points out how couriers redefined the use of their own resources rather than acquiring new ones. On the other hand, it points out the relevant role played by some specific resources (e.g. personnel) and the enablers used to configure them (e.g. visibility) to foster business continuity.

The remainder of this paper is organized as follows. The literature regarding logistics in pandemic is discussed in the next section. Research gaps and the objective of the study are then presented, followed by a discussion of the RBV and DCV role toward resilience. The methodology adopted is described and findings from the interviews are displayed. Results – interpreted also according to the theoretical lenses – are then discussed. Finally, study implications and limitations are drawn.

Literature review

During the pandemic period, which is typically defined as a low frequency high-impact event (Shen and Li, 2017), supply chain (SC) has received tremendous attention from both practitioners and academics, which mostly focused on investigating the actual challenges and future implications. Being able to respond to such an event was strengthened to be crucial for the profitability and continuity of firms (Ivanov and Dolgui, 2021). Moreover, it emerged how the “resilience” of the SCs is becoming even more important and relevant (Choi, 2020; Sharma *et al.*, 2021; Perrin and Martin, 2021; Ivanov, 2020).

Several definitions of SC resilience are available in the extant literature, but the concepts of *adaptation* and *response* to unforeseen events to guarantee the continuity of operations are among the most recurrent themes addressed (e.g. Christopher and Peck, 2004; Ponomarev and Holcomb, 2009; Sutcliffe and Vogus, 2003; Wieland, 2021; Bharmar *et al.*, 2011). To foster the resilience of a company and therefore of the entire SC, it emerges the need to develop over time capabilities, both *proactive*, that are strategically built before a possible threat occurs (Lengnick-Hall and Beck, 2005), and *reactive*, that is taken in response to an event (Wieland and Wallenburg, 2012). On the one hand, proactive capabilities are based on *anticipation*, which allows to collect information on potential future changes, and *preparedness*, which

attempts to identify suitable assets to limit the downsides of these future changes, aiming to leverage them (Wieland and Wallenburg, 2013; Ponomarov and Holcomb, 2009; Birkie *et al.*, 2014). On the other hand, reactive capabilities are based on *visibility*, which aims to acquire knowledge of the actual threats, and *speed of response* to develop a countermeasure and limit the exposure (Wieland and Wallenburg, 2013; Pettit *et al.*, 2010; Birkie *et al.*, 2014). These capabilities can be developed mainly by means of communication, cooperation and integration among the actors of the SC (Liu and Lee, 2018; Ponomarov and Holcomb, 2009; Birkie *et al.*, 2014).

Logistics, mostly operated by LSPs, represents a strategic asset for the SC during routines operations but even more during a crisis, as LSP are responsible for warehousing, transshipment, transport and information flows (Liu and Lee, 2018; Christopher, 2011; Wang *et al.*, 2015). In this regard, some studies point out the relevant role of logistics activities and therefore the role of LSPs during the COVID-19 pandemic. Magableh (2021) defines a framework to assess the impacts of the pandemic and the possible SC opportunities, highlighting how a reconfiguration of the logistics activities is key to guaranteeing a high level of service to customers. Aday and Aday (2020), focusing on the food industry, highlight how logistics is essential for business continuity during a disruption, arguing the necessity to adapt to new customers' requirements. Similarly, Perrin and Martin (2021), by means of a survey, analyze crucial factors for the survivability of a company, highlighting the need to rethink both production (i.e. fewer products) and distribution (i.e. increased capacity) of goods. Instead, Sharma *et al.* (2021), relying on simulations, analyze the priorities of the retail SC and points out the role of the LSPs to foster coordination and communication. Ivanov (2020), with a more comprehensive view of the SC, provides a modeling analysis of the short and long-term impacts caused by the closures of some SC actors, and identifies possible actions on how to reduce these impacts from the economic, inventory management and lead-time perspectives. Choi (2020), moving away from the concept of the traditional logistics transporting goods, proposes an innovative use of logistics, the "bring-service-near-your-home." By simulating the transport of services to people (e.g. a piano for musical lessons) in a pandemic context, the feasibility from the health and hygiene perspectives is assessed. Other studies, instead of pointing out the critical role of LSPs, try to identify competencies and characteristics that could ensure the development of capabilities and consequently promote the resilience of the sector (Choi, 2021). In this regard, Paul and Chowdhury (2021) define possible recovery scenarios highlighting the need for a proactive approach and a flexible logistics system able to feed the SC. Gkanatsas and Krikke (2020) propose a literature-based framework on how third-party LSPs may improve SC resilience by introducing resilience practices and identifying in the adaptability and reorganization the most suitable ones. Herold *et al.* (2021) adopted a different approach and, by means of interpretative research, assessed the reactions and lessons learned by LSPs during the pandemic period, highlighting different ways to create resilience (e.g. operational flexibility). The just mentioned field research provided to map the actual practices adopted and which of them contributed to generating resilience in a real context. Similarly, Hohenstein (2022), with a multiple case study, investigates risk management practices in LSPs during the pandemic and how these contributed to developing resilience in the firms. Among all the insights generated, it emerged how digital technologies (e.g. digital twins, big data analytics, blockchain and cloud computing) can facilitate the management of disruptive events and therefore ensure resilience along the SC (Herold *et al.*, 2021; Paul and Chowdhury, 2021; Hohenstein, 2022).

So far it emerged how the studies mainly focused their attention toward LSPs responsible for the integration of more services (i.e. warehousing, order management and transportation) to a customer. However, when the research scope is narrowed down to express couriers – LSPs responsible only for transport operations in a complex and competitive environment where costs and time are key aspects (Mangiaracina *et al.*, 2019) – the discussion emphasizes

other themes. A first set of papers deals with the implications of the pandemic on customer behavior and purchasing habits that reflect on express couriers. New purchasing methods and fear of contagious led people to limit outside home purchases toward digital channels, emphasizing the need for safer deliveries (Cavallo *et al.*, 2020; Alaimo *et al.*, 2020). Consequently, wholesalers and small-medium enterprises identified couriers as a competitive advantage in these new conditions (Priambodo *et al.*, 2021; Tran, 2021). Other papers focused on the relevant problem of employee health while conducting activities. In this regard, several solutions have been proposed to address this theme. Singh *et al.* (2021) simulate the joint use of drones and trucks to deliver food and medical supplies to quarantined areas. Besides exploiting the contactless delivery, the simulation revealed a limited operational complexity. Similarly, Srinivas and Marathe (2021) simulate the use of mobile warehousing in last-mile delivery as a solution to overcome the criticalities of the pandemic period. As in Singh *et al.* (2021), benefits in terms of hygiene for both logistics operators and customers have been highlighted. Ardjmand *et al.* (2021) focus instead on another key activity in the logistics process: manual picking in the warehouse, where the presence of workers is particularly high. They developed a simulation model aimed to optimize the picking time and, at the same time, minimize the interaction between employees on the picking floor, ensuring the usual values of picking productivity. Although the health of workers and the continuity of operations remain the main topics of discussion, some authors rise attention to the environmental effects of the pandemic. Viu-Roig and Alvarez-Palau (2020), through a literature review, analyze the impact of last-mile solutions on environmental, social and economic sustainability and state how the pandemic has significantly raised the attention to environmental problems. Moreover, they suggest how companies and institutions must collaborate to achieve environmental goals. Sarkis (2021) states instead how companies affected by the pandemic could gain a competitive advantage by leveraging on environmental initiatives, e.g. reviewing current production and logistics-related activities.

Therefore, it emerges how there is still room for research on how LSPs deal with disruptive events and how they can develop competencies to foster resilience. Additionally, the pandemic represents an extraordinary possibility to rise attention on how LSPs cope with low-probability high-impact events (Choi, 2021; Gammelgaard *et al.*, 2020).

Research gaps and objectives

From the extant literature, it emerged that the discussion on the responses of LSPs to the pandemic is open and potential areas still need to be addressed. From a SC perspective it emerges (1) the concept of resilience and the development of capabilities to reduce the downside effects of the pandemic (Ivanov and Dolgui, 2021; Choi, 2020) and (2) the potential role interpreted by LSPs in this context (Paul and Chowdhury, 2021; Gkanatsas and Krikke, 2020). However, only limited attention is given to the latter despite their critical role (Herold *et al.*, 2021).

Said so, when considering LSPs, and more in detail express couriers, discussions concern other aspects. In particular, the evaluation of the impact of specific solutions to address pandemic effects are mostly carried out by means of mathematical model and simulations (e.g. Singh *et al.*, 2021; Srinivas and Marathe, 2021). Similarly, safety-related aspects of workers were tackled, highlighting the need to introduce social distancing and alternative delivery solutions (Singh *et al.*, 2021; Srinivas and Marathe, 2021). The opportunity to review the environmental sustainability initiatives emerged as well, leaving space for additional research in this direction (Viu-Roig and Alvarez-Palau, 2020).

In summary, existing studies provide limited insights into how LSPs, especially express couriers, effectively dealt with the pandemic and how they were able to develop capabilities to manage that period. Only two studies were identified, with different focuses:

Herold *et al.* (2021) identified the lesson learned by means of interpretative research and Hohenstein (2022) on risk management procedures performed by LSPs during the pandemic.

Given these premises, this research aims to explore the role of express couriers during the pandemic and understand how this sector was capable to develop capabilities, either proactive or reactive, and identifies lessons learned and possible future challenges. Moreover, the study aims to contribute to the call of researcher that are asking for empirical research on the implication of the pandemic and how companies responded to it (Choi, 2021; Gammelgaard *et al.*, 2020; Ivanov and Dolgui, 2021).

Resource-based view and dynamic capabilities view

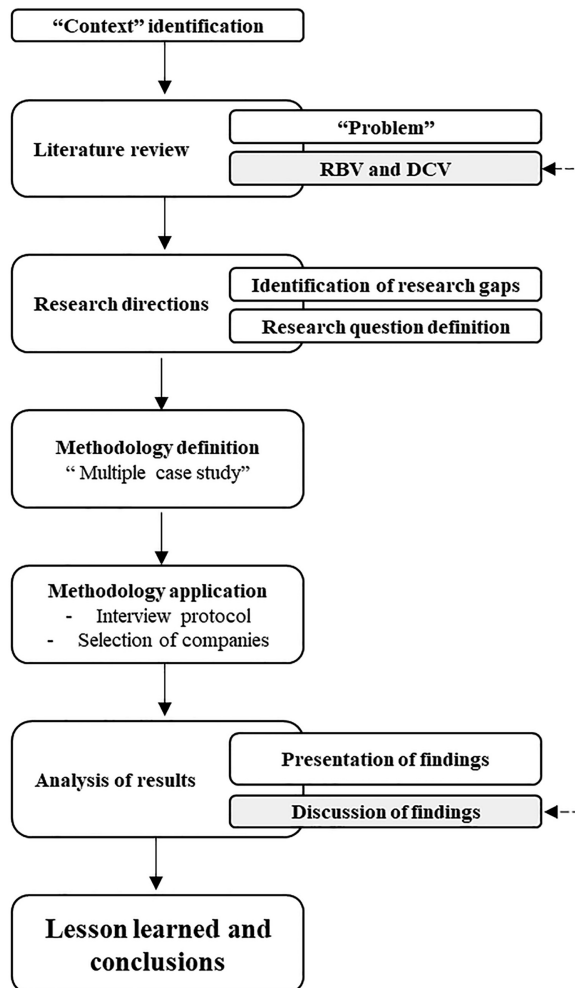
RBV and DCV are at the basis of the resilience concepts development (Birkie *et al.*, 2014; Ponomarov and Holcomb, 2009). RBV is based on the premise that organizational prosperity in a “static” environment strictly depends on some specific firm’s resources or capabilities that are valuable, rare and difficult to be reproduced or substituted (Barney, 1991; Hohenstein, 2022). Resources can be both tangible, like assets and infrastructures, and intangible, like the skills of the employees and the innovativeness of management in the company. Especially the latter are hard to be duplicated, making them even more rare and necessary (Jafari-Sadeghi *et al.*, 2021). The joint use of tangible and intangible resources defines value-creating strategies that allow to generate a competitive advantage over time (Eisenhardt and Jeffrey, 2000).

DCV, which is rooted in the RBV (Barney, 1991), introduces the concept of capabilities as the “firm’s ability to integrate, reconfigure, gain internal and external competencies to address rapidly changing environments” (Teece *et al.*, 1997), in order to achieve a position aligned with market needs and therefore a competitive advantage (Eisenhardt and Jeffrey, 2000; Zollo and Winter, 2002). Two types of capabilities can be identified: *ordinary capabilities*, which allow companies to sustain the competitive advantage in the short-term, and *dynamic capabilities*, which purposefully aim to develop, extend and modify existing resources in response to a change in the environment (Winter, 2003; Helfat *et al.*, 2007). Dynamic capabilities are built upon three main phases: *Sensing*, where opportunities are identified by scanning and exploring the environment; *seizing*, where competencies and internal/external resources previously identified are developed; and *transforming*, where competencies are renewed over time to maintain competitiveness (Teece, 2014).

In concordance with other studies (Dovbischuk, 2022; Hohenstein, 2022; Queiroz *et al.*, 2020; Wang *et al.*, 2020), DCV represents a suitable theoretical background to investigate the role of express couriers in a continuously evolving environment – as the pandemic is – enabling to understand how they were able to respond to this event by reconfiguring and developing capabilities and resources. It becomes relevant to understand, first, the resources that are valuable, rare and inimitable for express couriers (RBV concepts) and then, identify how the pandemic led to a reconfiguration of the latter (DCV concepts), enabling companies to achieve a competitive advantage. In addition, it is possible to gain insights into how to respond in future to similar threats without undermining competitiveness (Ivanov and Dolgui, 2021; Queiroz *et al.*, 2020).

Methodology

Figure 1 synthesizes the overall research process. Once the research context was identified, i.e. the implication of the pandemic on LSPs, the existing literature was accordingly reviewed to identify extant discussion. The role of RBV and DCV emerged as suitable theoretical lenses to be used to interpret the results. Based on the research gaps, the aim of this research was then defined. Next, the research methodology was developed.



Source(s): Author's own creation

Figure 1.
Research process

In particular, a multiple case study was adopted. The case study is a qualitative method suitable to answer “contemporary phenomenon within its context” when “the boundaries between phenomenon and context may not be clearly evident” (Yin, 2018). COVID-19 can be considered a complex phenomenon, therefore, suitable to be investigated with a case study (Yin, 1994; Queiroz *et al.*, 2020). A multiple case study was adopted with respect to a single case study as results may become more generalizable and more perspectives could be captured (Yin, 2018; Rowley, 2002).

The multiple case study aims to understand how express couriers – an actor among LSPs – responded to the pandemic-related disruption and which insights can be generated to foster resilience practices among the sector.

To guarantee methodological rigor and reliability, four classical criteria were applied (Yin, 2018): (1) *construct validity*, by establishing a chain of evidence, using different sources

during all the phases of the research; (2) *internal validity*, by recording information during the cases and then compare them with other sources of information (data triangulation) and the other cases selected (pattern matching); (3) *external validity*, by employing an explicit description of cases and provide results that can be transferred to other context or settings and (4) *reliability*, by developing a research protocol that ensures replicability of the research.

Case sample

Information is generally drawn from different sources such as documents, interviews and observations (Eisenhardt, 1989; Yin, 1994). According to Rowley (2002) and Eisenhardt (1989), for a multiple case study from 4 to 10 cases should be selected as a minimum to obtain replication and produce similar results. Companies were selected if they belonged to the express couriers' sector as they performed delivery activities strictly linked to the e-Commerce environment. Furthermore, they represent a touchpoint between customers and consumers, playing a critical role in the credibility of the first one and the satisfaction of the latter (Cavallo *et al.*, 2020; Alaimo *et al.*, 2020).

Between May and September 2021, twenty companies providing express delivery services were selected and contacted by e-mail asking about their availability for an interview. There was a positive response from five companies, which were considered enough cases to build a multiple case study (Rowley, 2002).

The final sample selected consists of five express courier companies all operating in Italy at the time of the pandemic sharing similar characteristics in terms of size and operating area. The specific geographical focus ensures similar boundary conditions (e.g. legislation). Some of the companies are internationally developed but only the Italian branch was specifically considered. Similarly to the geographical context, only the express activities were taken into account. Table 1 summarizes the characteristics of the sample in terms of geographical extension, organizational structure, field of operation, main products delivered and typology of customers.

	Gamma	Delta	Epsilon	Lambda	Sigma
Geographical extension	Italy	Worldwide	Italy	Worldwide	Italy
Organizational structure	270 pick-up points, 75 hubs	In Italy: 159 pick-up points, 13 hubs	20 Hubs, 100 pick-up point	3,000 facilities worldwide	10,000 pick-up points
Operation field (logistic-related)	Hauling Last-mile	Hauling Last-mile	Hauling Last-mile	Warehousing Air transport Hauling Last-mile	Warehousing Hauling Last-mile
Main products delivered	Mail General retail	General retail	General retail	General retail	Mail General retail
Main customer typologies	B2C B2B	B2C B2B (main)	B2C B2B (main)	B2C B2B (main)	B2C B2B

Source(s): Author's own creation

Table 1.
Companies profile

Data collection

Once the multiple case study was identified as the suitable methodology, an interview scheme was designed. Following Olah *et al.* (2019), unstructured questions were used not to influence the answer of the respondent and to ensure adaptability to the interview's degree of knowledge.

The interview – whose questions are available in Annex 1 – was organized as follows:

- (1) Introduction about the company
- (2) General impact of covid-19 on the company
- (3) Impact on last-mile delivery
- (4) Final considerations

Questions were provided in advance allowing the participant to understand in detail the objective of the research and, in case of misidentification of the professional figure contacted, to direct us to the most appropriate one. To ensure a response that was more than an opinion we performed interviews with different informants from the same company (Yin, 2018). The interviewee was given the opportunity to speak freely following the pattern of the questions: this choice allowed him/her to express him/herself spontaneously on the topics (Rowley, 2002). The interviews were performed via the Teams platform and were recorded under permission. To ensure the quality of data, the interviews were performed in Italian and then translated and transcribed. After the first round of interviews, the transcripts were provided to the interviewees to check for errors and misunderstandings (Yin, 2018). Then, the second round of interviews for further clarification was performed. The transcripts were then enriched with secondary data coming from different sources (e.g. company websites, reports and available documents) allowing to construct validity and triangulation of information (Yin, 1994; Rowley, 2002).

Table 2 provides information about the role of the interviewee within the company, the duration and the date of the interview. The seniority and roles of the professional figures interviewed were considered suitable for the purpose of the study, as they were directly involved in the company's decision process during the pandemic period. In addition, previous studies that investigate LSPs and pandemic use executive/senior managers as respondent (Herold *et al.*, 2021; Hohenstein, 2022).

Company	Interviewee	Duration (min)
Gamma	Marketing Manager	50
	Operations Manager	45
Delta	General manager	55
	Logistics business developer	45
Epsilon	Innovation manager	70
	Fleet manager	60
Lambda	EMEA responsible for retail and last-mile delivery	45
Sigma	Marketing Manager	55
	Key account Manager	50
	Facility Manager	60

Table 2.
Information about the interviewees with professional figures and duration

Source(s): Author's own creation

Data analysis

An inductive coding approach was performed to identify codes and categories (Williams and Tami, 2019; Liu *et al.*, 2021; Gioia *et al.*, 2010).

First, open coding is adopted to cluster information within each case: information is sifted through and similar words, phrases and concept indicators are organized in broad thematic domains. Second, axial coding was performed to create distinct thematic categories (Williams and Tami, 2019).

To validate the codes and limit potential bias, the coding process was individually performed by the authors and, in case of disagreements, results were compared to select the most appropriate.

Table 3 represents an extract of the process followed and the development of codes and categories.

The information collected and organized were then compared with the secondary sources (e.g. companies' websites, reports and corporate publications) with the aim to verify them and reduced any potential bias. The evidence resulting from the coding and the literature was compared (i.e. "pattern matching") with the aim to verify whether themes arising from the interview were eventually mentioned also in the literature (Olah *et al.*, 2019).

Quotes	Code	Category
"People started to use credit cards and buy online and find it attractive"	Online purchases	<i>Dramatic e-commerce boost</i>
"When restrictions were at their highest, we experienced a peak in e-commerce items to handle"	e-commerce volume	
"We saw our e-retailers partners requiring more services"	e-commerce	<i>Suddenness of pandemic</i>
"We did not expect so much (restrictions) in such a short time . . . we were not conscious of the magnitude until the lockdown was declared"	Fast restrictions developments	
"In February (2020) it was far away, then the first restriction and then all of a sudden we were in lockdown"	Suddenness	
"We did not expect that coming . . . we were the first state out of China to face a severe lockdown"	Suddenness	
"All of our workers went in smart working where possible . . . we also developed a software to optimize delivery and monitoring drivers"	Smart working	<i>Digitalization process</i>
"We have an internal IT department . . . they were able to develop a cloud platform in a few days to allow us to work from home"	Cloud platform	
"Technology helped us during the pandemic . . . it allowed us to work safely and better . . . we are going to keep most of the solutions"	Technology relief	
"Southern region required logistics services . . . e-commerce pushed small enterprises to ask new services"	New costumers	<i>Business opportunities</i>
"We started to reinforce business scouting . . . we saw new customers coming from all the territory asking for express logistics"	Business enlargement	
"We struggled to stay operative and ensure the safety of employees . . . we scheduled more shift distance policies"	Safety of employees	<i>Staff management</i>
"We guarantee all our employees' safety, and we listen to them to acquire all the available information"	Managing the safety of employees	
"We left at home all the employees we could but for someone, smart working was not possible . . . for them, we provided as much protective equipment as we could"	Staff management	
"With the reduced capacity we suffered . . . we understood that we had to better prepare our worker to become able to perform different tasks"	Skill	<i>Need to develop employees' multidisciplinary</i>
"Tight safety rules did not allow to mix different employees . . . if a dedicated employee was sick, we could not replace him quickly"	Employees focus	

(continued)

Table 3.
Extract of the coding
process

Quotes	Code	Category
“It was an unprecedented event. We see a drastic change in the size and volume of the item handled . . . this different mix proved to be challenging to be fulfilled”	Variety of products	<i>New mix of goods handled</i>
“We experienced a shift in the average weight and volume . . . Now that the b2c became the main channel they were smaller”	New market	
“Our business was divided between mail and parcel services . . . the pandemic stopped the mail and parcels exploded requiring us to rethink some processes”	Parcel growth	
“We experienced a peak of volume with no precedence . . . we hired new drivers to cope with the demand”	New employees	<i>Last-mile delivery reconfiguration</i>
“We hired and trained new drivers . . . once it was possible, we developed contactless deliveries. Still, we did face several late deliveries”	Operations shift	
“Transit points in the northern part of Italy were reinforced with new staff to face the new demand”	New employees	
“The company implemented what was possible . . . we purchase safety kits, and we impose safety distances . . . it reduced our productivity, but it secured our employees . . . we also introduced contactless deliveries”	Operations shift	
“The conditions did not allow us to think of a green transition . . . it is costly at the moment”	No environmental consideration	<i>Environmental implication</i>
“The company always aimed at sustainability, also during the pandemic”	Sustainability	
“Our aim is to have by 2030 a carbon neutral fleet . . . but during the pandemic, we focused on our employees and our business”	No environmental consideration	
“Despite the expense for safety, we luckily had positive revenues . . . other sectors were more hit than our”	Positive incomes	<i>Stable shipping costs</i>
“We had fewer expenses due to lower fuel and lower electricity consumptions . . . overall it balanced the other expenses”	Operating cost	

Table 3.

Source(s): Author's own creation

Presentation of findings

This section aims to present the findings, retracing the actions performed by express couriers, identifying the lessons learned. The resulting conceptual framework is reported in [Figure 2](#). It highlights all the aspects that led to a reconfiguration of the delivery activities, the core business of express couriers. The arrows coming from each block identify the connection between events and the contribution of each interview toward it. The same framework topics are discussed in light of the previous literature, highlighting a possible open area of investigation ([Olah et al., 2019](#)).

From the interviews, it emerged a specific order of events characterizing the pandemic period, which required an alternative approach to conducting business activities. The path is explained in the following part.

The introduction of containment measures in Italy developed very intensively and quickly: it was highlighted how logistics and many other sectors at first were not able to anticipate them, showing vulnerability. Gamma stated, “we did not expect so much (restrictions) in such a short time . . . we were not conscious of the magnitude until the lockdown was declared.” Out of the chorus Lambda, thanks to the information shared within the network, developed a continuity plan, which prompted the preparedness of the company.

Contemporary to the containment measures, customers shifted toward digital sales, which required additional logistics services (Ivanov, 2020; Magableh, 2021).

The combined effects of restrictive measures and the increase in digital sales represented a trigger for re-shaping the courier's activities. As a first consequence, a revision of employee tasks was needed to ensure safety and compliance with the new regulation.

In particular, for employees supporting the delivery activities (e.g. customer service), smart working was adopted, which enabled the continuity of tasks and communication. This solution was already partly used, but not so extensively. Delta reported: "One of the first actions was to make it possible for all the employees to work from home providing laptops and access to the company intranet."

In contrast, individual safety devices, interpersonal distance and shift rules were introduced for the other activities necessary for home deliveries. Lambda stated: "Before the pandemic, the workforce was decided according to an optimization perspective, now we needed to introduce new logic of working to ensure enough distance between employees during all their permanence in the facilities." Delta reported, "Our first concern was to ensure the safety of our drivers . . . we ensure safety with tight shift policy and overtime, but we faced difficulties in managing employees fear of contagion and in purchasing safety equipment." It is pointed out how several difficulties arose (e.g. managing the fear of employees), as a high organizational effort was required in an environment where the procurement of necessary goods was difficult (e.g. lack of masks and disinfectant gel). The adoption of these measures led to an evolution of express couriers that, to ensure communication and delivery activities, relied heavily on digital technologies. Gamma: "We preferred to invest in a digital platform rather than tangible assets, to ensure work from home and better communication between our workers." Similarly, Epsilon: "We introduced a routing optimizer that allowed the drivers to perform deliveries activities also in their not conventional delivery area."

It emerged how the staff is a key resource, due to the value they generate and provide to the company, as well as being the key to developing solutions. However, it was also pointed out that there's a need for multi-skills operators, which could represent a greater resource for reconfiguration and better management of the company itself. Epsilon reported: "Looking back we could have enhanced the multidisciplinary of our employees . . . some situation occurred, and it emerged how we were unprepared and under-staff."

The high requests for the service triggered by e-Commerce (Dannenberg *et al.*, 2020; Guo *et al.*, 2020) had a twofold effect on the express couriers: new business opportunities and a new mix of goods handled. Concerning business opportunities, it emerged that a larger market was available and needed to be fulfilled. The couriers with the highest geographical

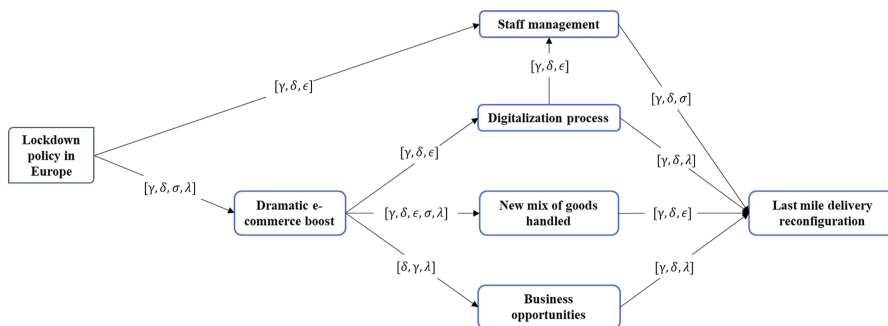


Figure 2. Representation of the framework, highlighting connections and companies' contributions

Source(s): Author's own creation

expansion and reputation experienced limited difficulties in reaching new customers. However, they were not able to absorb all the demand due to the operational complexity generated by the new working policies above mentioned. Lambda reported, “we observed the difficulties of our competitors to absorb the market and we open up to new customers . . . we refuse some of them to ensure the customer promise of a fast delivery.”

The unfulfilled demand was mainly absorbed by smaller couriers, despite their less advantageous pricing offer. Gamma reported: “Many big players had difficulties performing deliveries . . . the companies made an effort to reach new customers and provide them with an offer.”

Communication and sales played a relevant role to promote the companies and sell the services and define contract agreements with new customers available in the market. The variety of new customers and new final consumers is reflected in the goods handled and delivered.

Historically, the express couriers had in small-medium enterprises their costumers – that required mainly B2B activities – and B2C was a limited portion of the business. On average, the distribution was respectively about 70 and 30%. While B2B deliveries drastically decreased, B2C considerably increased. In addition, due to the higher order frequency and the increase in parcels managed, the delivery process was involved. Sigma reported, “In the first moment B2B was stopped and B2C exploded . . . now (late 2021) we return back to normality with a higher percentage of B2C.” Lambda reported, “we delivered all sort of items . . . from toilet paper to food, gym equipment and house furnishing creating complexity along the delivery process.”

Express couriers, opening to new customers, experienced a newer variety of products handled and a change of goods flows around the Italian peninsula, now more “order productive” in the southern regions.

All the above-mentioned events/conditions had an impact on the delivery process that, from a broad perspective, did not face significant changes (i.e. delivering goods to customers). However, most of the activities performed were revised, leading to a temporary reconfiguration of the process.

Safety and health measures had an impact on the times to conduct handling and delivery activities. These aspects, combined with the higher demand, led express couriers to face longer delivery times and eventually delays. As stated by Lambda, “operations did not change a lot . . . we limited crowd situations and we sanitize all the facilities . . . in some specific area we introduced supporting machinery but showed limited performance increases.”

However, two factors enabled couriers to perform a reorganization and achieve a “new normality”: previous knowledge and digital technology.

During a “normal” year couriers experience peak seasons, where demand due to expected reasons (e.g. black Friday or Christmas) is higher. In this regard, commercial agreements with customers are typically signed to cope with these peaks. In an analogous way, couriers used the knowledge acquired in those periods to deal with new demand, framing it with the pandemic restrictions. Sigma reported: “the company in the first moment hired new drivers as in peak season . . . not many but enough to relieve the pressure.”

Also, in the delivery process digital technology played a relevant role to ensure both safety and service to the final customers as new digital support was developed to perform contactless and signatureless deliveries. This allowed drivers to leave the goods at the delivery location without getting in touch with the clients. In some cases, in addition to that, new routing software was developed to minimize the time of the operator in the delivery process. Epsilon reported, “We worked on contactless and signatureless deliveries with digital proof to ensure the safety of employees with limited difficulties of implementation . . . it allowed us a faster delivery process.”

If on the one hand restrictive policies limit the performances of the couriers, on the other hand, they experienced a positive impact as well. As the majority of people were at home, missing deliveries drop down almost to zero, reducing inefficiencies in the delivery process. Along with the lower prices of fuel, it allowed companies to have limited impacts on revenues. Sigma reported “despite the increasing costs of some items due to their availability (i.e. protective equipment and packaging) the delivery cost remained similar” and Lambda reported, “last-mile activities paradoxically become easier . . . everyone was at home.”

Discussion of findings

To understand the responses of express couriers to the pandemic, based on the cases, a first identification of the resources rare, valuable, and difficult to imitate of each company is performed. Then it is evaluated how these were perturbed by the pandemic and which mechanisms were developed to leverage their characteristics.

RBV

The resources that in a business-as-usual context are rare and enable a competitive advantage were identified by means of the interviews with the companies. Some of these resources are conceptually similar but vary in each company according to its objectives and corporate culture, creating a unique set of resources that enables a competitive advantage (Jafari-Sadeghi *et al.*, 2021). As an example, Lambda management is committed to reach a high-quality service level, orienting all the activities toward effectiveness, while Delta prefers to focus on cost-effective solutions, orienting the company toward efficiency.

Gamma, by complimenting its logistics activities with in-house and dedicated IT services that provide highly customized information on the delivery status for both company and the final customers, is capable to propose a dedicated service. When dealing with small volume customers, it allows for implementing a personalized strategy with respect to bigger competitors.

Instead, Epsilon with a less extended network is able to handle products of different volumes and weights with considerable flexibility, providing an express service (i.e. delivery within 48 h) at economically competitive offers (most competitors perform express deliveries only up to 30 kg). Given the great variability of the products sold online, it represents Epsilon's competitive resource with respect to its competitors.

Differences emerged in the resources owned based on geographical extension and SC integration. Sigma's high capillarity over the Italian territory and its reputation, derived mainly from its postal network, represents for the company a rare resource that is difficult to imitate. In fact, its spread presence enables the collection and delivery of items from/to any type of client, with several offers according to their needs at competitive prices. These characteristics together represent the core resources for company competitiveness.

Lambda has in its worldwide network, its role as integrator and its multiple transportation modes (e.g. road, air and water) the sources of competitive advantage as it allows to have complete visibility of the service provided, which results in best-in-class delivery service, difficult-to-reproduce and fully customizable according to client's needs.

Instead, Delta, with an extended logistics network on the European continent, is able to propose a cost-effective service mainly for B2B companies, which allows them to exploit the synergies created within the network. This results in a high reputation for the company, which guarantees visibility in the market served.

DCV

Moving into detail in understanding the mechanisms developed to address business continuity and leverage the opportunities created by the pandemic, the following

characteristics emerged: (1) some of the companies were able to leverage their rare resources and competencies to ensure business continuity, (2) some leveraged other resources, not rare, and capabilities that during the pandemic revealed to be rare and valuable, and (3) some relied on the acquisition of new resources and competencies.

For instance, in a pre-pandemic context, the workforce was not considered a rare or inimitable resource, as it was easily accessible. However, their scarcity during the pandemic made them rare and irreplaceable, transforming them into a strategic resource to be retained. Through the development of distancing rules, protocols and technologies, companies were able to secure business continuity in this new environment.

Corporate management represents the resource through which most decisions and subsequent reconfiguration took place (e.g. employee tasks, network logics) as new ways of working and interaction with employees, suppliers and customers were established to ensure business continuity. As an example, the increased delivery demand, which represented an opportunity to be exploited, required management to rapidly identify specific employees whose tasks could be reconfigured to deal with new customers and new demand (e.g. Gamma).

An in-depth analysis, from a DCV perspective, allows for identifying different approaches within companies while facing a rapidly changing environment.

Gamma, leveraging the capacity of the internal IT structure, developed an in-house platform to enhance communication and information exchange between logistics and support activities, now managed remotely, creating business continuity.

Lambda demonstrates a strategic use of its worldwide network not only from a logistic viewpoint but especially from an information one. Thanks to the acquired insight, the management was able to promptly identify alternative scenarios and purchase the required materials before competitors to ensure both operational availability (high service level) and safety.

Delta's management approach, despite the scarcity of valuable resources to leverage, redefined activities to safeguard resources and then accelerated the implementation of supporting technologies to optimize routings. Delta, in contrast to Lambda, was not able to exploit its own worldwide network as an advantage, although it is a rare and difficult resource to imitate. Delta's worldwide coverage is predominantly on the European and American continents, but not on the Asian continent, where the pandemic first developed.

Sigma's post offices in business-as-usual scenarios are mainly used for pick-up activities and postal service. During the pandemic, they leveraged their availability, due to lower postal activities, and reconfigure them to perform also delivery from there, leveraging the unused resources and the network availability.

It is relevant to note that with the very same objectives, i.e. ensuring security and business continuity, the resources involved are very comparable. However, it emerges that the attitude of company management is different. Internationally developed companies had a proactive approach compared to the other companies. The use of the information generated by the extended network allowed to identify scenarios and relative resources. However, the results should be carefully taken as it depends on only one company.

Analyses through RBV and DCV revealed companies' resources and the way these were adapted to generate business continuity and eventually resilience of the courier sector. To achieve these results, resources were modified either proactively (i.e. before an event) or reactively (i.e. after the event) (Wieland and Wallenburg, 2013; Birkie *et al.*, 2014). As most of the companies had limited anticipation of the "threat," preventive actions were not developed. Instead, it emerged how companies reactively reconfigured some resources, leveraging their internal knowledge and exploiting new opportunities.

Toward resilience – continuity enablers

The discussion of the cases shows how four enablers were commonly employed by the companies, with different importance across companies, to reconfigure and determine resources to support business continuity and ultimately resilience: visibility, previous knowledge, communication and digital technologies.

In particular, *visibility* refers to the ability to collect information and understand shifts in the surrounding environment to prompt changes to a company's resources. This approach is aligned with routines to develop resilience (Lengnick-Hall and Beck, 2005; Teece, 2014), but it was only pursued in international companies.

Similarly, the *previous knowledge*, in this case from peak seasons, represented valuable information that allowed companies to identify a quick response to manage the different volumes of parcels and adapt the delivery operations to the new working requirements. This consideration is in contrast with part of the extant literature that highlights how unmanned solutions can potentially be adopted to increase the delivery capacity and limit the spread of the disease (Srinivas and Marathe, 2021; Singh et al., 2021).

Other enablers to prompt the response were identified. In particular, *communication* among different actors of the company to prompt visibility and share valuable information for a robust response (i.e. different business units of the couriers) and *digital technologies* that enhance flexibility, communication and reconfiguration of activities. Digital adoption finds partial support in the literature, both from a conceptual perspective (Choi, 2020; Ivanov, 2020; Magableh, 2021) and an empirical perspective (Herold et al., 2021; Hohenstein, 2022).

The continuity enablers were clustered in Table 4, in proactive and reactive ones according to their contribution to the development of continuity (Wieland and Wallenburg, 2013; Zollo and Winter, 2002). Some of the enablers prompt anticipation and preparedness (i.e. proactive) while others ensure visibility and agility in the response (i.e. reactive), thus creating a set of tools to react to a disruptive event. In some case the edge of the classification is blurred, as some, being developed before the threats, contributes in both a reactive and proactive way to the creation of "resilience."

Components	Description	Proactive (robustness)	Reactive (agility)
Visibility	Ability to "sense" information from internal and external informant	x	
Communication	Exchange of information between business units of the company to foster the visibility of events		x
Digital technology	The exploitation of different technologies to simplify operations and communications among company actors	x	x
Previous knowledge	The exploitation of the company's knowledge to relocate and adapt resources to the environment	x	x

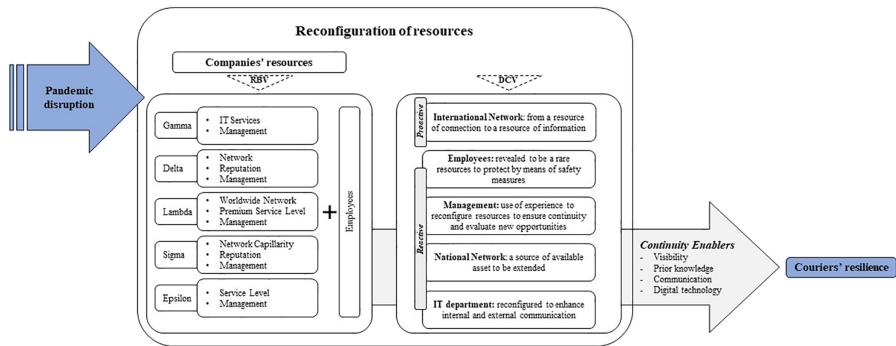
Source(s): Author's own creation

Table 4.
Continuity enablers

Conclusions

The aim of the study was to understand how the express couriers responded to the disruption caused by the pandemic and which lessons and takeaways were learned to improve the "resilience" of the sector toward such unique event. To address these challenges a multiple case study involving five companies operating in the express industry was conducted to collect relevant information. In Figure 3 a schematic representation of the results is reported.

Figure 3.
Illustrative framework
of the role of continuity
enablers



Source(s): Author's own creation

The results provided by the study yield significant insights for both academics and practitioners and aim to provide key takeaways that can be improved long after the pandemic.

The express couriers responded to the disruption brought by the pandemic leveraging on the resources available to them, both internal and external. These included people, organizational skills, previous knowledge, existing assets and digital technology, which all played a central role in ensuring continuity. Through the theoretical perspective of RBV, these resources were classified to understand their role within the organizations examined.

In a rapidly changing environment, the sole presence of rare and strategic resources cannot be not a viable condition to ensure continuity (Ponomarov and Holcomb, 2009; Wieland and Wallenburg, 2013). Indeed, it emerged the role of firm choices to adapt resources to the external environment.

Through the DCV theoretical perspective, it was identified which resources were impacted by the changing context. Depending on the size of the companies and their own resources, different response mechanisms were identified. Companies with a very extensive and international network were able to understand the changes and revise their processes quickly, using the company's information and assets, while those with a less extensive network experienced a more complicated response due to the lower visibility on the event.

Despite the diversity of individual companies to respond to this circumstance, the key role of staff, both those dedicated to delivery and support activities, emerged. Indeed, most of the actions taken (e.g. social distancing, different work logic, adoption of new technologies) were aimed at ensuring the health of employees.

The reconfiguration and management of resources took place through four "continuity enablers": visibility, previous knowledge, communication and digital technologies. It is worth pointing out how, depending on each actor, these were developed to a greater or lesser extent. For example, visibility was observed in the actors with international outreach.

The decisions made in managing the resources enabled the sector to overcome the pandemic period with limited negative effects and some considerations for the future:

- (1) *Personnel* in logistics activities: it emerged how personnel has become a rare and strategic resource, necessary for the development of the sector. As it becomes more difficult to find personnel, it emerged the need to promote flexibility among them, to ensure their role and improve the agility of the company.
- (2) *Digital technologies* to support logistics activities not only to optimize the goods distribution process but to improve interaction and communication with employees. Their implementation ensured both safety of employees and the safety of deliveries,

without significantly impacting productivity. As already points out in a less disruptive environment (Queiroz *et al.*, 2020) they can be further developed, going beyond a tool for enhancing communication, to create more flexibility in the logistics services.

- (3) Continuously *monitoring* the environment in order to capture weak signals: it emerged how most of the solutions were developed during the event, pointing out the need to support implementation with preventive measures to better balance the recovery effort in possible future disruption.

The case study confirms the findings of previous research on the role of logisticians during disruption and their role in the continuity of operations (Liu and Lee, 2018; Ivanov and Dolgui, 2021). Second, it partially confirms the results obtained from other studies that explored LSPs industries during the pandemic period (Herold *et al.*, 2021; Hohenstein, 2022), but it enriches the results on a specific actor, the express courier sector, which is less developed than LSPs. Finally, the study aims to cope with the requests for more empirical contributions to logistics activities during the pandemic period (Choi, 2021; Gammelgaard *et al.*, 2020), providing insight into how a specific actor was able to respond to its implication. The practical implication, despite being gathered from a limited number of companies, could be used in the future to strengthen the role of companies in a turbulent environment and therefore enhance visibility, communication and speed during a negative event.

The study yielded significant results, however, the results obtained are affected by the sample considered (Yin, 2018). In fact, only five companies were considered, all belonging to the same country. To overcome such limitations a possible option could be to perform a similar study on other LSPs, belonging to different geographical contexts. It is believed that, in general, the sector, due to similar restrictions and the similar impact of the pandemic, has behaved in a similar way on the continent, but particularities cannot be excluded. Additionally, the study used a single methodology to explore the research area. A combined approach with quantitative contributions could be employed to test some of the collected results (e.g. the implication of digital technology on companies' performances before and after the pandemic).

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ANNEX 1

Introduction about the company

- (1) Company
- (2) Product managed
- (3) Market area (north, center and south)

General impact of covid-19 on the company

- (1) Looking back at the past year, many events have happened in the world that have changed people's habits. How have these impacted your company in general?
- (2) In the months leading up to March 2020, information about the virus arrived in Europe. What did you expect? What did you decide to do?
- (3) How has the March lockdown changed your demand?
- (4) In your opinion, what are the main reasons for a change in demand?
- (5) Have changes/implementations been made to the business model to better reflect your customers' demands?

Impact on last-mile delivery

- (1) How has the increase in demand impacted your logistic chain?
- (2) How has the pandemic affected your company economically? How have costs changed per shipment?
- (3) Imagine that it was a fairly chaotic time and that some choices were very timely. In your opinion, did the company prefer to satisfy customer demands (min lead time) or to control and optimize resources (max productivity)? What considerations were made to choose one of the two options?
- (4) Linked to the previous question, have you decided to make any investments?
- (5) If yes, which investments have been made in last-mile delivery?
- (6) What impact will the measures implemented have on the future?
- (7) In conclusion, have you considered the opportunity to make a "green" turn in your investment assessment?
- (8) Is it reasonable to think that the pandemic has had a different impact on logistics in northern, central and southern Italy? How did your company in Italy decide to deal with the considerations listed above?

Final considerations

- (1) The pandemic altered habits and changed many plans. Do you think the company managed to create a competitive advantage thanks to the pandemic?
- (2) Looking at what you did in 2020 today, would you call it a success? Would you change anything?
- (3) Thinking about all the work your company has done over the last year, what have you learned from this situation (positive and negative aspects)? Do you think it will be useful in the future?

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