

Business resilience and risk management during the Covid-19 pandemic: the Amadori case-study¹

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Abstract

Purpose of the paper: *The work aims at exploring business resilience against a natural biological disaster - such as the ongoing Covid-19 pandemic - through the lens of risk management. Specifically, the work seeks to assess the resilience capacity demonstrated in the procurement activity by a specific company used as a case-study by identifying the indicators that enable the dimensions of organisational resilience to be detected in a longitudinal approach.*

Methodology: *The study implemented a qualitative research approach to develop the case-study. The analysis was carried out by examining internal documents and holding a series of interviews with Amadori's Chief Purchasing Officer (CPO).*

Results: *Resilience dimensions vary longitudinally and require different organisational responses. In brief, to respond to the different sources of risk, redundancy and rapidity were crucial during the lockdown phase, while robustness, rapidity and resourcefulness became key factors in the post-lockdown phase.*

Research limits: *The study's results are based on a specific business case, thus limiting generalisation. Moreover, the results are preliminary as the pandemic is still ongoing.*

Practical implications: *Findings can represent concrete help for other businesses to gain direction and adopt good practices of risk planning and management in view of resilience and business continuity.*

Originality of the paper: *In the management literature, the study of business resilience is limited. This work contributes to extend theoretical and managerial knowledge on resilience dimensions that can be implemented during the different phases of highly unforeseen events with a consistent and prolonged impact on businesses.*

Key words: resilience; risk management; procurement; covid-19; case-study

1. Introduction

Towards the end of 2019, a series of pneumonia cases came to light in China and were subsequently identified as caused by SARS-CoV-2, commonly known as the Covid-19 virus. Since its appearance, a new rapidly evolving situation has been triggered, with the spread of the virus all over the world. On March 11th 2020, Covid-19 was qualified as a global pandemic by the World Health Organization (WHO).

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In most countries, as well as in Italy, urgent legal directives came into force to slow down the spread of the virus, including (local and national) lockdowns, the use of Personal Protection Equipment (PPE), travel restrictions, limitations and stops to a number of sectors and companies, etc. As a consequence, the spread of the Covid-19 pandemic has severely compromised the global economic system, placing the continuity of businesses in serious difficulty and creating a climate of prolonged “deep uncertainty” that is posing unforeseen challenges to business organisations.

The long lockdowns and the on-going circulation of the virus are deeply impacting companies’ planning and operations, leading them to revise not only their business models, but also their approaches to risk and crisis management. In the face of an economic and social environment characterised by a level of global uncertainty that has never been experienced before, reducing the level of risk vulnerability of a business organisation through the improvement of its resiliency capability becomes a priority.

In this context, the study aims at exploring business resilience against a natural biological disaster - such as the ongoing Covid-19 pandemic - through the lens of risk management. More specifically, by analysing a case-study, the work seeks to assess the resilience capacity of the observed company, i.e. the Amadori Group, in the procurement area by identifying the presence and impact of some key risk indicators and resilience dimensions within a longitudinal perspective. In fact, the analysis is performed by considering three temporal stages: before the pandemic, during the lockdown phase and in the post-lockdown phase.

The paper aspires at providing the following contributions. First, business resilience is still poorly investigated and empirically supported (Bhamra *et al.*, 2011; Linnenluecke, 2017; Martinelli *et al.*, 2018). The present study extends theoretical and managerial knowledge on the topic by identifying the different kinds of resilience dimensions that are required in the various phases of manifestation of a highly unforeseen event. Second, risk management and organisational resilience have often been treated as independent, if not conflicting, research topics (Berkes, 2007), despite their similarities (Mitchell and Harris, 2012). Our work tries to reconcile these research streams by exploring business resilience through the lens of risk management. Third, the impact of slow-onset natural disasters, such as the current pandemic, on businesses has been under investigated. Such a prolonged and worldwide uncertainty was unexpected, and any possible empirical work like ours that can shed light on its effects is important to create and advance knowledge.

The contribution is also managerial. Its findings can represent concrete help for businesses in order to adopt good practices of risk planning and management in view of resilience and business continuity. Its implications can also be related to public policies, providing useful insights to public institutions and business associations in order to make them more effective in supporting companies in the development of adequate risk management and resilience capacities to prevent and respond to disasters.

The present work is structured as follows: after describing the main points characterising the literature on business resilience against natural

disasters and evidencing its relationship with risk management, the methodology is presented. Subsequently, the case-study's results are described and discussed, and ends by depicting the study's conclusions and limitations.

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2. Business resilience against natural disasters and risk management

Natural disasters are destructive events characterised by increasing manifestation all over the world. The impact of these disasters varies: although they fortunately do not always cause loss of lives, they strongly affect the economic and social environment. In fact, natural disasters represent a potentially unpredictable and burdensome threat for the continuity of a company's activities and its survival. However, natural disasters are a broad category of extreme events: earthquakes, tsunamis, volcanic eruptions, floods, and bushfires are classified as sudden-onset disasters, while epidemics, rising temperatures, pollution and coastal erosion are identified as slow-onset disasters (Cutter *et al.*, 2008). Sudden-onset disasters produce unexpected impacts in a limited time-period. Those disasters are often characterised by a relatively defined beginning and end. In contrast, slow-onset disasters emerge gradually: their manifestation is slow, their impact is insidious and they are defined by the cumulative sum of different effects (Staupe-Delgado, 2019). The Covid-19 pandemic may fall into the latter category as it is a biological slow-onset disaster. However, as this biological disaster has shown to be particularly threatening as it is underhanded, global and uncertain in its time-length, thus generating unexpected consequences, the academic debate on its definition and classification is open. Recent papers by Staupe-Delgado (2019), Hsu (2019) and Fiske and Marino (2019) argue for a conceptual reconsideration of the temporal aspect of disasters and advocate greater academic and public policy attention to slowly occurring disasters. The Covid-19 pandemic boosts the discussion, as it presents many specificities that are questioning the traditional way of classifying disasters in terms of time, geographic scope, phasing and positioning (Yamori and Goltz, 2021). Indeed, the spatial limitation aspect that the Covid-19 pandemic has completely discarded is closely related to its temporal confinement in conceptions of disaster. "Disaster agents that are gradual and potentially catastrophic, global in scope and require international cooperation to manage" (Yamori and Goltz, 2021, p. 1) are calling for a new framework for defining and studying disasters.

The academic literature dealing with natural disasters has only recently begun to place companies at the center of the analysis (Zhang *et al.*, 2009). A natural disaster, in fact, produces a direct effect on economic activities, causing physical damages to plants, equipment and stocks. Such direct damages, if substantial, can even lead to the interruption of business activities for long periods of time, thus putting business continuity at risk. To identify the potential risks emerging from natural disasters and prepare to face them, it is important to assess the company's resilience capacity against extreme events, identifying the possible presence of resilience dimensions.

Resilience indicates the capacity characterising systems, individuals and organisations to resist, react and recover from a critical event capable of undermining their stability and functioning (Linnenluecke, 2017; Sutcliffe and Vogus, 2003; Williams *et al.*, 2017). This bouncing-back perspective is overcome by a more recent view - the bouncing-forward one (Martinelli and Tagliacruzchi, 2019; Martinelli *et al.*, 2019) - in which resilience can be interpreted not only as the recovery capacity to return to a pre-existing state, but it is also a way to grasp new opportunities (Sutcliffe and Vogus, 2003; Lengnick-Hall and Beck, 2003; Lengnick-Hall *et al.*, 2011; Martinelli *et al.*, 2018) and perform even better than in the pre-crisis situation.

The measurement of organisational resilience remains a difficult exercise that finds little evidence in the academic literature. This also depends on the conceptualisation of resilience, which is far from being agreed upon among scholars (Bhamra *et al.*, 2011) given the multiplicity of disciplines to which the concept applies, as well as its transversality and multidimensionality (Linnenluecke, 2017). Business resilience is based on the constant monitoring of risk management. However, the literature often approaches risk management and organisational resilience as independent, if not conflicting, research topics, since “Resilience thinking challenges the widely held notions about stability and resistance to change implicit in risk and hazard management policies around the world” (Berkes, 2007, p. 287). On the contrary, risk and resilience have many similarities and points of contact and may be considered “as organising frames and the extent to which risk assessment and risk management provide a window on resilience” (Mitchell and Harris, 2012, p. 2). In fact, both approaches focus on the ability to manage impacts and crises by trying to identify possible options to cope with uncertainty and change. In this sense, the ability to be proactive is fundamental (Berkes, 2007). Somers (2009, p. 13) states that “resilience is more than mere survival; it involves identifying potential risks and taking proactive steps to ensure that an organisation thrives in the face of adversity.” In this perspective, risk is one of the factors to be identified in order then to act resiliently, while impact analysis is considered as the background on which to take rapid business decisions in the event that adverse situations arise.

Several studies in the managerial field have attempted to identify resilience dimensions. Among these, Kantur and İşeri Say (2012) theorised an integrated model in which organisational resilience is defined on the basis of a number of dimensions that had been previously proposed by Bruneau *et al.* (2003) as the 4 R's, i.e. Robustness, Redundancy, Resourcefulness, Rapidity. The latter responds to the conceptualization offered by the Multidisciplinary Center for Earthquake Engineering Research, which includes both physical and social dimensions of resilience (Tierney, 2003). This view supports the capability of the processes, systems, individuals and resources composing an organisation to face and endure sudden shocks and adversities. Even if this framework was developed in a seismic context and with a community perspective in mind, it was later successfully applied to the organisational (Kantur and İşeri Say, 2012, 2015) and business and management fields (Martinelli *et al.*, 2018, 2019). This theoretical framework has also been adopted in the present study.

3. Methodology

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The study applied the business case methodology (Cadle *et al.*, 2010). This is an investigative approach that is particularly useful in the face of a phenomenon - such as the pandemic in progress - whose duration and consequences are still unknown and therefore requires more qualitative methods of investigation, which allow an in-depth analysis that can produce rich and articulated insights.

The case-study analysed is that of the Amadori group, one of the main companies operating in the meat production sector at a national level, with particular reference to the poultry segment. With a turnover of more than 1.6 million euros in 2019, which increased by +2.9% compared to the previous year, the group develops a market share of around 30% of the total poultry meat sold in Italy and employs over 8,300 people.

The study was carried out by examining internal material and holding a series of meetings with the working group composed of an expert researcher on firm resilience, Amadori's Chief Purchasing Officer (CPO), and a company consultant expert in risk management and business strategy. The focus was on purchasing and on the supply chain processes managed by the company.

The documental analysis consisted in examining documents, presentations, internal provisions and notifications, organisation charts and company protocols that were kindly provided by the group's procurement office at the specific request of the other members of the working group in subsequent phases, based on the elements and factors of risk and resilience that emerged during the case-study's development. The information that was contained in the company's documents was particularly useful to suggest questions that needed to be asked and situations that needed to be observed as part of the research. Moreover, tracking changes and developments in the internal memos and protocols addressed to the employees during the lockdown and post-lockdown phases enabled us to better identify the resilience dimensions emerging in these different phases. For this reason, content analysis was employed as a first-pass document review (Bowen, 2009) to organise the information into the resilience dimensions that are central to our research and trace the impact and risks faced by the company.

The qualitative analysis consisted in the administration of a number of semi-structured interviews to Amadori's CPO. The meetings were recorded, carefully transcribed and then analysed by the researcher and re-discussed with the members of the working group. The first two meetings were carried out on the basis of an initial scheme that had been developed by the researcher with the business consultant and aimed at understanding and discussing the following main topics:

- concept of risk and types of risks that the group usually faces, as well as the risk indicators that are usually applied (on the basis of the classification list in Christophe and Gaudenzi, 2015);
- possible previous experiences and reactions before crisis events;
- financial and performance situation before the critical event;
- productive-organisational-procedural-managerial changes decided

during and after the lockdown phase, with particular reference to the procurement area.

On the basis of the results that emerged during these pilot interviews, other topics of interest were identified and discussed in depth in subsequent meetings. In total, 7 structured meetings were held in the June-October 2020 period on the GoToMeeting platform, along with another series of spot comparisons, also by telephone, to clarify some points that emerged, for a total of about twenty hours of proactive comparison.

Then, the collected texts and information were analysed and systematised in order to draw the study's findings.

4. Results

The analysis identified and evaluated the resilience and risk management responses of Amadori's procurement department in order to propose an example of good practices of company behaviour to face crises that can vary according to the time period in which the pandemic is evolving.

The work highlights Amadori's response approach during the three analysed phases: pre-pandemic; during the lockdown; in the post-lockdown phase, thus emphasizing resilience dimensions and the impact and risks faced in each phase, which are defined as follows:

- Robustness highlights the firm's capacity to face the critical event and the solidity of the undertaken and pursued entrepreneurial project;
- Redundancy consists in maintaining excess resources to cope with the new environmental conditions (increasing stocks, production capacity, etc.);
- Rapidity is the ability to adapt and be flexible in revising the business's path in order to restore the functionality of the organisational system in a timely manner;
- Resourcefulness relates to the resources that are engaged and mobilised in the development of the enterprise;
- Risk likelihood refers to six areas of intervention (economic and financial, production capacity, business process, cultural dimension, risk management, scouting of alternative suppliers) that are assessed in a vendor rating perspective;
- Impact is estimated in terms of costs.

4.1 The pre-Covid phase

The risk that historically characterises the sector is a zootechnical, and more specifically avian one, given the sensitivity of this type of animal to airborne viruses. Poultry meat is produced in Italy by the group thanks to a fully-integrated supply-chain. Attention has always been strongly focused on the phytosanitary safety of live animals, a control procedure carried out with extreme care by the internal sanitary management made up of 10 employees and directed by an expert veterinarian, who mainly deals with viruses. The group did not face any real threat from this point of view in the past, given its accurate procedures the high priority. It should also be borne

in mind that the company already had a resilient approach to minimising risks in place when it decided to distribute farms in different areas of the Apennines, so as to limit the possible risks of virus infection. Therefore, an approach to social distance of animals, goods and food was already present in the company.

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In addition to animal raw materials, particular attention is devoted to the sourcing of ingredients that are used to enrich the product, such as spices and “functional” food (flours, preservatives, starters for fermentation, nitrate and nitrites, fibres), in order to minimise the risk of allergens for the consumer. Amadori also offers some non-poultry meat, which is mainly sourced from abroad (with the exception of some pork meat), but for which the level of risk is considered low, as it is supplied from European countries and controlled farms. On the other hand, the greatest risk is related to spices and seasonings that mainly come from non-EU countries. Indirect products, and packaging in particular, are subject to a Just in Time (JIT) supply system, which was built over time and represents a flagship of the group: the trays, film coverings, carton-boxes containing the trays, etc. that are loaded them onto trucks, and then distributed throughout the group’s various distribution channels, were delivered daily in the amount that was needed the next day, thus constituting a 24-hour stock involving several suppliers. Amadori is very sensitive to logistics efficiency, which is linked to the naturalness and freshness of the product, to the point that it has specialised in outbound logistics, thus guaranteeing the punctuality and quality standards required by customers, consisting in large retailers and food distribution chains.

With regard to the operational-industrial risk, the animal processing required the use of the surgical masks well before the pandemic, while care of the animals in the breeding sites required FP3 masks. Health checks and definitions of minimum and maximum limits that significantly surpass the restrictive legal regulations in force, have long distinguished the group’s approach to certified quality.

The other prevailing risk component usually features in the company’s operations is the reputational one, linked to possible negative events that may have an impact on the brand image. Over the years, Amadori has built up a strong brand reputation that is recognised all over the country and has aggregated several product lines with a positioning by target. In the past, “*media terrorist attacks*” on Amadori farms have been the decisive starting point to improve production sites within a modern perspective of animal protection and welfare. It is Amadori’s policy to communicate its respect for the food chain by investing in production sites (fences, solar panels, aesthetic optimisation of the farms in a green environment, expansion of spaces dedicated to animals, protection of the reproductive and selective cycle starting from the egg) and opening up to dialogue with animal / environmentalist rights movements/associations.

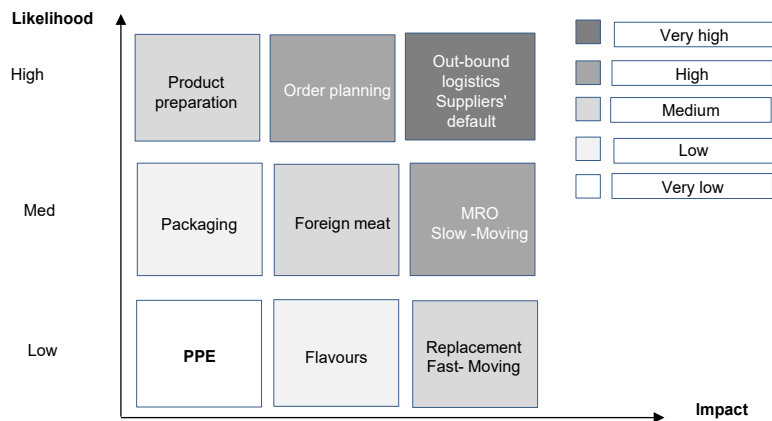
Several factors have allowed Amadori to start from a potentially resilient basic approach. It operates in a traditional sector in which Italy is self-sufficient but expanding (Ismea, 2020). It is also a large vertically-integrated company in which each phase of the production cycle is carefully controlled through an internal traceability system in order to guarantee

safety and quality for each product. The Quality Assurance function, made up of 48 professionals in the supply chain and in the analysis laboratories, is responsible for guaranteeing the highest standards at all stages of production, from the field to the table. Over 5 million euros are invested every year in the entire Quality Assurance system, which carries out over 535,000 total analyses (microbiological, chemical, serological, molecular biology and diagnostic) in all phases of the supply chain and 80,000 microbiological and chemical checks on finished products. The group is therefore characterised by a strong Robustness dimension, which can also be found in the size of the company. Previous studies have shown how the size of a company can influence its resilience capability: large companies have activities that are often decentralised over several territories, can count on extensive resources and skills to deal with the dramatic impact of the disaster, and are more solid than small companies from an economic-financial point of view (Smallbone *et al.*, 2012; Webb *et al.*, 2000). The financial and performance situation of the company before the disaster is in fact a further factor of possible influence (Wasileski *et al.*, 2011). This is obviously also related to the amount of damages caused by the disaster under observation.

On the basis of the resilience factors highlighted above, it is possible to identify the resilience dimensions characterising Amadori's "normality" before the spread of the pandemic in the presence of both Robustness and Resourcefulness.

Fig. 1 shows the different impacts in relation to the level of risks faced during the pre-covid phase.

Fig. 1: Impact and risks during the pre-covid phase



Source: authors' elaboration

4.2 The lockdown phase

During the lockdown, the Amadori group kept its production open and continued to operate, having an ATECO code that was compatible with the ministerial rules in force.

The group's background in pandemic sensitivity linked to the poultry core business allowed it to minimise the impact on company operations and employees from a sanitary point of view: the company only verified 10 cases of Covid-19 among the total number of employees that were active during that period, with 0 cases in the plant in Brescia (100 employees)².

As early as the end of January/beginning of February 2020, the group had already begun to organise itself to protect its workforce and inhibit the occurrence of business continuity problems. The Managing Department, together with the Safety and Environment Department, drew up an internal protocol to organise its internal spacings, the necessary Personal Protection Equipment (PPE) sourcing and the revised layout of the production lines. All departments and employees were equipped with surgical masks and access was controlled. This meant that, by the time PPE was made mandatory in early March, the group was already prepared: it had equipped all employees with the necessary PPE, reduced some of the most crowded departments, diverted production to departments with more available space, and had already secured itself the supply of suitable quantities of PPE. For example, 2 ml masks were purchased in March and supplies were secured until mid-2021. The supplies were first secured by emptying the suppliers' warehouses, thanks to the long-term relationships that had been established with them, thus becoming a priority, but shortly before the stocks ran out Amadori's CPO started to search for new suppliers, which were selected with less stringent criteria than those usually employed, and activating internal referencing and scouting mechanisms to scouting low-risk suppliers. Redundancy started to emerge. This brought to the identification of three new partners: a national purchasing cooperative serving the north-centre Italian hospital system (which was therefore more reliable, in principle); a supplier in San Marino, for reasons of logistic proximity (Amadori's headquarters are located in San Vittore di Cesena) and reduced bureaucratic pressure; and a third player. Therefore, a simpler and more agile procedural approach in relation to the procurement of these indirect goods was introduced, including the acceptance of different payment conditions compared to the usual ones (i.e. advance payment of the order). The prioritisation of the safety of employees and suppliers allowed exceptions to administrative policies in relation to T&C with suppliers, such as the assumption of financial risk by paying for the goods in advance upon order confirmation.

The extremely serious situation of the external context required the company to respond to adjustments to ministerial decrees in real time and to maintain effective control of company's sites. Right from the beginning, management set up a central restricted committee - the so-called "ProCovid Committee" - composed by the General, HR, Healthcare, Strategic Marketing and Sales and Production Directors, which was summoned 3 times a week and to which three crisis committees for the Commercial,

² It is important to consider that 10 cases out of more than 8,000 employees is an unbelievably positive result. The Brescia area was one of the most affected in Italy during the first wave of the Covid-19 pandemic. Reporting 0 cases in those circumstances underlines the group's strong attention and effectiveness in preventing the spread of the virus within the workforce.

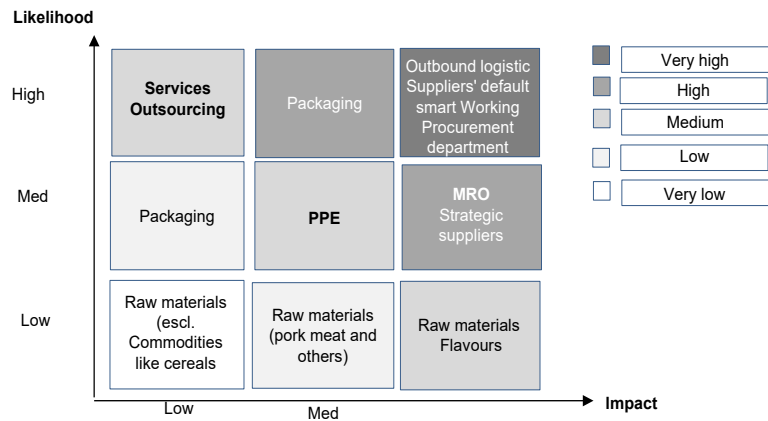
Production and Supply-chain sectors had to report, with specific priority levels. It therefore acted as a sort of first aid committee that acted on all company's issues. The Purchasing Director organised his area into three crisis areas, which were aimed at bringing the situation under control in response to the central committee's updates.

At this stage, Redundancy and Rapidity became key dimensions of resilience, confirming the stream of extant literature that considers redundancy, agility and decision-making flexibility as key organisational resilience dimensions (Sullivan-Taylor and Branicki, 2011; Vargo and Seville, 2011). Amadori's case also confirms the ways to develop business resilience that had been identified by Sheffi and Rice (2005) in relation to supply chain resilience:

- Increasing redundancy;
- Increasing organisational flexibility;
- Acting on corporate culture.

Amadori's top management was very sensitive to risk management and chose to tackle it by deciding which performances to focus on a priori: ensuring supply to distribution channels, and keeping the internal organisation active and productive by playing on redundancy and speed/flexibility (Fig. 2).

Fig. 2: Impact and risks during the lockdown phase



Source: authors' elaboration

However, as Kantur and İşeri-Say (2012) and Sheffi and Rice (2005) also pointed out, redundancy is a short-term tactical lever, while in the long term "...robustness and rapidity are seen as being key in measuring system [...] resilience" (Bruneau *et al.*, 2003, p. 8).

4.3 The post-lockdown phase

Amadori is gradually reducing redundancy in its warehouses and inventory and plans to re-establish the JIT system at 60% by the end of the year.

The group is cautious in its inventory management and reduction policy, in line with the decrease in storage costs. Its new objective is to start from 6 months of stock during the lock-down period to the current 3 months and potentially reduce coverage to one month. The area of packaging components (trays, films and card-boxes) is critical, as it raises the risk of customer delivery and production continuity due to the nature of this very fresh product.

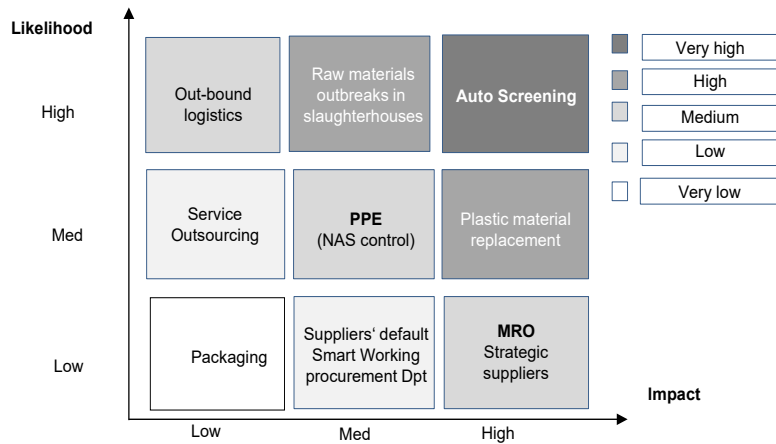
The impact of the pandemic then led to a full revision of the ways in which employees and work activities are organised and managed. Currently, many workers in non-productive departments are smart working. This working mode has proved to worth keeping in the future for part of the staff, at least.

In July 2020, a new Prime Ministerial Decree (DPCM) was enforced in the Emilia Romagna region. In order to prevent Co-vid outbreaks in slaughterhouses, additional measures were taken and the company, by strongly relying on non-EU workers, implemented a return for holiday plan for these workers to avoid possible infections. The HR strategy of the company to employ its own personnel rather than outsource from external organisations - unlike its competitors-prevented the company from incurring in production stops, thus reducing health risk for employees; moreover, the company imposed a strict protocol on the workforce concerning respecting social distancing in the workplace and at home. This resulted in a COVID Free policy (which is of relevant value in industrial policies, based on organisational redundancy). When schools opened in mid-September, prevention for self-screening and personal training became key factors. In fact, resilient organisations: 1) Informed employees through strong internal communication, which is particularly important when a disruptive event occurs so they can make better and faster decisions in the face of the unforeseen event; 2) Distributed power so that teams and individuals could be enabled to take the necessary actions quickly, thus increasing the chances of limiting disruption; 3) Conveyed passion for their work: successful companies engendered a sense of the greater good in their employees. Excepting the second point, these approaches were also found in the Amadori case.

Fig. 3 highlights the impact and risks faced by the company during the post-lockdown phase, in which Robustness and Resourcefulness will be displayed, but Rapidity continues to play an essential role.

Some limits of the new ways of performing activities became evident, including the loss of brainstorming (active to passive) due to smart working; changes in conducting relationships with suppliers, which are now managed on a remote-negotiation basis. Digital scouting of suppliers started to occur on specialised platforms, changing the traditional procurement process and practices. New categories needed to be managed for procurement, as well as hyper-accredited categories, thus opening to more risky suppliers.

Fig. 3: Impact and risks during the post-lockdown phase



Source: authors' elaboration

5. Discussion

The ongoing health pandemic caused by the global spread of Covid-19 has opened a situation of deep uncertainty that had never been faced by companies before. In such a context, an in-depth analysis - such as the one conducted in the present study, aimed at identifying the dimensions of resilience that allow an organisation to reduce its degree of vulnerability to risks by strengthening its resilience capacity - makes it possible to indicate dimensions, indicators and possible examples of behaviour that may be useful to companies and managers to strengthen the resilience capacity of their organisations and improve risk management in procurement.

Results highlighted that the Amadori group's capability to generate Robustness and Resourcefulness before the spread of the pandemic boosted its resilience capacity when the pandemic spread. However, during the first lockdown in the spring of 2020, Redundancy and Rapidity became key dimensions of resilience, and the group's sensitivity towards risk management issues underwent a tremendous improvement by paying major attention to keeping the internal organisation active and productive, increasing the number of suppliers and stocks, and led to a revision of strategic choices in terms of procurement. Starting from the summer of 2020, with the end of the first lockdown, Robustness and Resourcefulness returned to be key factors, even if Rapidity continued to play an essential role and risks shifted to auto screening processes and material procurement, including a revision of operations concerning planning and working patterns.

In sum, in order to not jeopardise business continuity, it has been crucial to:

- Ensure production by protecting workers with the necessary Personal Protective Equipment (PPE);

- give up the usual weekly planning following the lean methodology and accepting to lose in terms of efficiency in order to gain in agility and flexibility;
- Increase stock redundancy and adopt the Just in Time (JIT) system;
- Activate cross-functional immediate response teams.

The establishment of these processes allowed the company to weigh the risks and shift the focus from it to the compatibility of business objectives, and therefore how and what the organisation can risk, adapt and prevent.

The implications stemming from the present study are numerous. Firstly, this study contributes to extend the theoretical and managerial understanding of the manifestation of highly unforeseen events with a consistent and prolonged impact on business continuity in view of organisational resilience. In this perspective, the study applies a theoretical model of organisational resilience to a concrete case, thus improving empirical knowledge on the subject and combining the dimensions of resilience with the identification of specific risk indicators. In fact, this study is also original as an integrated reading of business resilience capacity through models and risk management indicators, with particular reference to the procurement area.

A further aspect that qualifies the contribution may be found in the specific natural disaster investigated, i.e. a health pandemic that is classifiable as a slow-onset calamitous event in the literature (Cutter *et al.*, 2008) but on which a rich academic debate is developing and which, as such, can lead to different consequences and response models compared to those that occur when natural disasters of immediate destructive impact occur, such as hurricanes, earthquakes and floods. Despite its limitations, the literature on the subject of disaster management and resilience to natural disasters with immediate impact is certainly broader than the one aimed at studying slow-onset disasters. In this sense, our contribution offers a fresh and deep knowledge of a phenomenon that is still poorly investigated.

Indeed, a key contribution of this analysis consists in a preliminary identification of the organisational resilience dimensions arising in accordance with the different phases and risks characterising the spread of a biological natural disaster. As regards the analytical framework used in this study, findings underlined that the 4R's model is not comprehensive: rather, resilience dimensions can occur with different intensity in relation to the different phases a company may undergo when facing a peculiar natural disaster like the Covid-19 pandemic. Indeed, the 4R's model should not be conceived as linear, but applied in a longitudinal way, by weighing the resilience dimensions' occurrence differently in relation to normal rather than crises periods, and differentiating between emergency times and post-emergence times when shocking events are investigated. Within such a perspective, this study tends to confirm Martinelli *et al.*'s (2018) results. The Amadori case-study shows that dealing with risk does not mean removing it, but knowing it, managing its evolution, assessing its impact in a variable and unpredictable context. The options are manifold and the alternatives/choices produce different effects. The drastic choice of removing risk at the source is costly and in the case of the pandemic, not pursuable. The ability of procurement to respond to adverse events, the

ability to rebound (homeostasis) and to react quickly to unexpected events, clearly emerged in the case-study analysis, resulting in a significant amount of material in terms of strategic and operational options capable of driving companies to regain positive and increasing performances. The analysis of organisational resilience was assessed with particular attention from a longitudinal perspective, considering three time periods - i.e.: before the pandemic, during the lockdown phase and in the post-lockdown phase. In each phase the possible impacts, the type of activated organisational resilience dimensions, and organisational responses vary.

Last but not least, the analysis is also appreciable for its methodological approach. In fact, the study is proposed as an innovative form of cooperation between academy-company-consultancy. This involves rather different cognitive schemes, languages and backgrounds that have allowed an in-depth and innovative interpretation of the investigated topic.

As for managerial implications, more in-depth knowledge of the determinants of organisational resilience can allow companies to better assess which resilience dimensions to invest more in during the various phases when facing unforeseen events. Management practices need examples of resilience measures linked to concrete business cases. Uncertainty will be a long-standing feature of markets and institutions, and only companies that have built resilience over time will be able to overcome such a large and severe crisis. Resilience is not an organisational capacity that emerges suddenly, but rather the result of proactive adaptation and a processual vision capable of settling and consolidating over time yet difficult to perceive and measure. Conventional approaches to risk management designed to address traditional impacts - such as minor natural disasters or single management crisis - are not always effective when a company is faced with unforeseen disasters characterised by prolonged persistence and uncertainty like the ongoing Covid health pandemic. The predominant approach in business risk management requires risk identification and quantification, which are not always possible in absence of empirical data (Pettit *et al.*, 2013). Our findings can represent concrete help for businesses, giving them some guidelines in order to succeed when trying to translate good practices of risk planning and management in their specific organisational context in view of resilience. The results of the analysis of the Amadori case-study may offer useful guidelines not only to companies and managers, but also to policy actors to identify the correct support policies for economic players with a view to resilience.

6. Conclusions

Natural disasters are events of increasing manifestation in their frequency and intensity that are particularly threatening for business continuity and require distinctive management skills and the reconfiguration of resources in order to be overcome. However, to put a resilient response in place, it is necessary to understand the dimensions that contribute to enhancing organisational resilience more in detail.

Despite the useful contributions that the current study offers, some limitations are present. The results of the study are based on the analysis of a specific business case and therefore do not allow generalisability. It is, however, a very useful approach in the face of a disaster context, i.e. a pandemic health crisis, which had never occurred so intensely before at a global level and on which, therefore, academic and managerial knowledge is limited. Focusing on a single case study, while allowing deep and detailed understanding of the investigated phenomenon, could be spoiled by industry-specific elements, given that in the resilience literature some sectors, albeit limited, were found to be more vulnerable to natural disasters than others (Wasileski *et al.*, 2011; Dolfman *et al.*, 2007; Martinelli and Tagliazucchi, 2018). Verifying the used model and the postulated responses by and of companies in other sectors could reveal a different intensity of the investigated dimensions of resilience, as well as possible differentiated business behavioural models based on the different risk management approaches that were adopted.

We are also aware that the pandemic context is evolving and it is still difficult to make predictions about the near future. The analysis should therefore be extended over a longer time horizon in order to more robustly support our preliminary findings.

References

- BERKES F. (2007), "Understanding uncertainty and reducing vulnerability: lessons from resilience thinking", *Natural Hazards*, vol. 41, n. 2, pp. 283-295.
- BHAMRA R., DANI S., BURNARD K. (2011), "Resilience: the concept, a literature review and future directions", *International Journal of Production Research*, vol. 49, n. 18, pp. 5375-5393.
- BOWEN G. (2009), "Document Analysis as a Qualitative Research Method", *Qualitative Research Journal*, vol. 9, n. 2, pp. 27-40.
- BRUNEAU M., CHANG S.E., EGUCHI R.T., LEE G.C., O'ROURKE T. D., REINHORN A. M., SHINOZUKA M., TIERNEY K., WALLAC W.A., VON WINTERFELDT D. (2003), "A framework to quantitatively assess and enhance the seismic resilience of communities", *Earthquake Spectra*, vol. 19, n. 4, pp. 733-752.
- CADLE J., PAUL D., TURNER P. (2010), *Business analysis techniques: 72 essential tools for success*. BCS, The Chartered Institute, Swindon, UK.
- CHRISTOPHE M., GAUDENZI B. (2015), "Managing risks in sustainable supply chains", *Sinergie Italian Journal of Management*, vol. 33, n. 1, pp. 57-74.
- CUTTER S.L., BARNES L., BERRY M., BURTON C., EVANS E., TATE E., WEBB J. (2008), "A place-based model for understanding community resilience to natural disasters", *Global Environmental Change*, vol. 18, n. 4, pp. 598-606.
- DAHLES H., SUSILOWATI T.P. (2015), "Business resilience in times of growth and crisis", *Annals of Tourism Research*, vol. 51, march, pp. 34-50.
- DOLFMAN M.L., WASSER S.F., BERGMAN B. (2007), "The effects of Hurricane Katrina on the New Orleans Economy", *Monthly Labor Review*, vol. 130, n. 3, pp. 3-18.

- FISKE S.J., MARINO E. (2019), "Slow-Onset Disaster. Disaster Upon Disaster: Exploring the Gap Between Knowledge", *Policy and Practice*, n. 2, pp. 139.
- HSU E.L. (2019), "Must disasters be rapidly occurring? The case for an expanded temporal typology of disasters", *Time and Society*, vol. 28, n. 3, pp. 904-921.
- ISMEA (2020), *Report Tendenze Avicoli*, Panoramica sull'annata 2019, giugno
- KANTUR D., İŞERI-SAY A. (2012), "Organizational resilience: A conceptual integrative framework", *Journal of Management and Organization*, vol. 18, n. 6, pp. 762-773.
- KANTUR D., İŞERI-SAY A.I. (2015), "Measuring organizational resilience: A scale development", *Journal of Business Economics and Finance*, vol. 4, n. 3, pp. 456-472.
- LENGNICK-HALL C.A., BECK T.E. (2003), "Beyond bouncing back: The concept of organizational resilience", *National Academy of Management meetings*, Seattle, WA.
- LENGNICK-HALL C.A., BECK T.E., LENGNICK-HALL M.L. (2011), "Developing a capacity for organizational resilience through strategic human resource management", *Human Resource Management Review*, vol. 21, n. 3, pp. 243-255.
- LINNENLUECKE M.K. (2017), "Resilience in business and management research: A review of influential publications and a research agenda", *International Journal of Management Reviews*, vol. 19, n. 1, pp. 4-30.
- MARTINELLI E., TAGLIAZUCCHI G. (2018), *Resilienza e impresa: l'impatto dei disastri naturali sulle piccole imprese commerciali al dettaglio*, Franco Angeli, Milano.
- MARTINELLI E., TAGLIAZUCCHI G., MARCHI G. (2018), "The Resilient Retail Entrepreneur: Dynamic Capabilities for Facing Natural Disasters", *International Journal of Entrepreneurial Behavior and Research*, vol. 24, n. 7, pp. 1222-1243.
- MARTINELLI E., TAGLIAZUCCHI G. (2019). "Entrepreneurs' resilience to natural disasters: a survey in the retail sector", *Sinergie Italian Journal of Management*, vol. 37, n. 1, pp. 43-62.
- MARTINELLI E., DE CANIO F., TAGLIAZUCCHI G. (2019). "Bouncing back from a sudden-onset extreme event: exploring retail enterprises' resilience capacity", *The International Review of Retail, Distribution and Consumer Research*, vol. 29, n. 5, pp. 568-581.
- MITCHELL T., HARRIS K. (2012), "Resilience: A risk management approach", *Overseas Development Institute Background Note*, January, pp. 1-7.
- PETTIT T.J., CROXTON K.L., FIKSEL J. (2013), "Ensuring supply chain resilience: development and implementation of an assessment tool", *Journal of Business Logistics*, vol. 34, n. 1, pp. 46-76.
- SHEFFI Y., RICE J.R. (2005), "A supply chain view of the resilient enterprise", *MIT Sloan Management Review*, vol. 47, n. 1, pp. 41.
- SMALLBONE D., KITCHIN, J., XHENET M. (2012), "Vulnerable or resilient? SMEs and the economic crisis, in the UK", in Dallago B., Guglielmetti C., *The consequences of the international crisis for European SMEs: vulnerability and resilience*, Routledge, UK.
- SOMERS S. (2009), "Measuring resilience potential: an adaptive strategy for organizational crisis planning", *Journal of Contingencies and Crisis Management*, vol. 17, n. 1, pp. 12-23.

- STAUPE-DELGADO R. (2019), "Progress, traditions and future directions in research on disasters involving slow-onset hazards", *Disaster Prevention and Management: an International Journal*, vol. 28, n. 5, pp. 623-635.
- SULLIVAN-TAYLOR B., BRANICKI L. (2011), "Creating resilient SMEs: why one size might not fit all", *International Journal of Production Research*, vol. 49, n. 18, pp. 5565-5579.
- SUTCLIFFE K.M., VOGUS T.J. (2003), "Organizing for resilience", Positive Organizational Scholarship, in: Cameron K.S., Dutton J.E., Quinn R.E. (Eds), *Positive organizational scholarship: Foundations of a new discipline*, Berrett-Koehler, San Francisco, CA, pp. 94-110.
- TIERNEY K. (2003), "Conceptualizing and measuring organizational and community resilience: Lessons from the emergency response following the September 11, 2001 attack on the World Trade Center", *Paper presented at the Third Comparative Workshop on Urban Earthquake Disaster Management*, Kobe, Japan.
- VARGO J., SEVILLE E. (2011), "Crisis strategic planning for SMEs: finding the silver lining", *International Journal of Production Research*, vol. 49, n. 18, pp. 5619-5635.
- WASILESKI G., RODRÍGUEZ H., DIAZ W. (2011), "Business closure and relocation: a comparative analysis of the Loma Prieta earthquake and Hurricane Andrew", *Disasters*, vol. 35, n. 1, pp. 102-129.
- WEBB G.R., TIERNEY K.J., DAHLHAMER J.M. (2000), "Businesses and disasters: Empirical patterns and unanswered questions", *Natural Hazards Review*, vol. 1, n. 2, pp. 83-90.
- WILLIAMS T.A., GRUBER D.A., SUTCLIFFE K.M., SHEPHERD D.A., ZHAO E.Y. (2017), "Organizational response to adversity: fusing crisis management and resilience research streams", *Academy of Management Annals*, vol. 11, n. 2, pp. 733-769.
- YAMORI K., GOLTZ J.D. (2021), "Disasters without Borders: The Coronavirus Pandemic, Global Climate Change and the Ascendancy of Gradual Onset Disasters", *International Journal of Environmental Research and Public Health*, vol. 18, n. 6, p. 3299.
- ZHANG Y., LINDELL M.K., PRATER C.S. (2009), "Vulnerability of community businesses to environmental disasters", *Disasters*, vol. 33, n. 1, pp. 38-57.

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