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Resilient Roadmap to Minimise the Impact of COVID-19 in the Spanish Enterprises

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Abstract: If something has failed in the management of COVID-19 crisis, this has been the lack of resilience to anticipate, adapt and recover from this event. This paper analyses the impact of COVID-19 in different sectors in Spain, highlighting which ones were more negatively affected by the pandemic after the first COVID-19 wave and which ones created growth and employment during the recovery phase. In this sense, the most negative impacted sectors were culture, tourism and retail while tobacco, pharmaceuticals computer, electronic and optical products sectors pushed the Spanish economy towards recovery. Moreover, the impact of COVID-19 in different aspects such as employment, workers' health, reputation, productivity, among others was also studied. The results reveal that firms invested a lot of time in organising and restructuring work planning to adapt to the new constraints. Finally, based on the findings about the most impacted sectors and the most negatively affected aspects, a set of dimensions and policies are proposed in a roadmap to support the improvement of enterprise resilience capacity to face up to crisis situations such as the one caused by COVID-19.

Keywords: Enterprise resilience, sector, Spain, impact, roadmap, dimensions.

1. INTRODUCTION

Along with the tragic loss of human beings due to COVID-19, if something has failed to address this crisis, this has been the lack of resilience to anticipate, adapt and recover from this event. The lack of visibility of COVID-19, the underestimation of the negative effects of the coronavirus, the perhaps excessive confidence in the welfare state, among other factors, may have influenced the collapse of health systems worldwide and the failure of companies to proactively implement preparedness actions to minimise the devastating effects of the pandemic. While it is true that each country has reacted differently to the threat of COVID-19, what is unquestionable is that many countries, companies and even citizens underestimated the devastating effects of this pandemic (Sanchis and Poler, 2020).

In this context, the need of resilience to bounce back to "normality" in these difficult times is essential to guarantee the long-term continuity of all the economic and social systems. Resilience, although it seems to be a recent concept, due to the events that have taken place in these recent times, has been a very important area of study over the last 30 years. Its predecessor, risk management, has always been present in the business world and a great deal of resources and efforts have gone into addressing the different vulnerabilities to which companies were exposed. La Palma volcanic eruption in 2021 in Spain and the cold drop that affected the companies located in the Vega Baja in Alicante (Spain) are vulnerabilities and threats to which companies are constantly exposed. The capacity to anticipate and be prepared to face disruptive events such the ones mentioned before and, if unavoidable occurrence takes place, the capacity to recover as quickly and efficiently as possible determines their degree of enterprise resilience (Sanchis et al., 2020).

From a psychological perspective, many experts argue that the measure of house confinement has not only been a threat to people's physical lives, but also to their psychological stability. In this case resilience is defined as the process of successfully adapting to adverse situations and crises. People adapt efficiently when they are able to interpret the situation as a learning opportunity, overcome it and emerge, if possible, stronger from it.

From the business point of view, enterprise resilience management is an iterative process to ensure long-term continuity and should not be treated as a mechanism to manage one-off crises (McManus et al., 2007). Therefore, companies need to be constantly aware of their environment and at the slightest sign of threat, they should diagnose their ability to prepare, adapt and recover from the new crisis (Sanchis and Poler, 2020b). However, this ideal situation was not what happened in March 2020. Following the declaration of the state of alarm to manage the health crisis situation caused by COVID-19 according to Royal Decree 463/2020 of 14 March

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2020 (BOE, 2020), a set of measures were adopted in Spain, including the confinement of the population in their homes, the standstill of economic activity of the non-essential sectors, among other restrictions. All this had a high negative impact on the different sectors. However, due to the country's particularities, some sectors were much more affected by the pandemic than others. This article aims to analyse which sectors were most negatively impacted and which ones helped the economy to recover to some extent after the first COVID-19 wave. The article also analyses the impact of COVID-19 on different aspects such as employment, security, personnel, health, productivity, to name a few. Based on the results obtained, the general dimensions of the roadmap addressed to enhance the capacity of enterprise resilience to minimise the negative impact of COVID-19 are proposed. This is motivated by the fact that so far, to our best knowledge, no holistic roadmaps addressed to all the dimensions of an enterprise have been proposed. The ones developed are addressed to an only one specific dimension (such as Bonin et al., 2021) or a particular sector (such as Rinaldi et al., 2021 or Boyacı-Gündüz et al., 2021).

The paper is structured as follows. Section 2 describes the research methodology used in this study. Section 3 shows the findings related to the impact of COVID-19 in the Spanish Enterprises. Finally, section 4 depicts a first attempt of roadmap with general dimensions and indications about where the efforts should be directed to minimise the impact of COVID-19 and section 5, which shows the most relevant conclusions of this research.

2. RESEARCH METHODOLOGY

The research methodology, that covers from March 2020 to January 2022, mainly consists of 2 phases (Figure 1), a first phase in which a review of documentation related to the pandemic and the Spanish economic activity was carried out to find out, in general terms, the most critical impacts. Since it is an emerging issue, most of the sources of information used were reports developed and published by public institutions: national (e.g. CEPREDE, 2020; ICO, 2022; MISSM, 2020 to mention a few) and international (e.g. Eurostat, 2021; Statista, 2022) together with scientific articles from Web of Science database (e.g. Modgil et al., 2021; Legido-Quigley, 2020, among others).

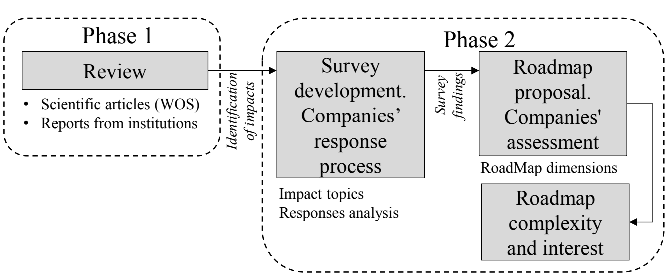

Figure 1. Research Methodology.

In the second phase, in order to obtain first-hand information, a survey was developed based on the impacts analysed in phase 1 and sent to more than 1.500 companies by email, obtaining responses in only 75 different companies and performing 23 structured interviews (closed questions) with diverse managers from those companies of various sectors to obtain direct information on the negative effects that the pandemic has had on Spanish companies. Highly relevant information was obtained on how COVID-19 affected the different sectors. Based on these findings, a roadmap was proposed and assessed by companies again to quantify the interest of each of the policies proposed and the complexity to implement them.

3. IMPACT OF COVID-19 IN THE SPANISH ENTERPRISES

3.1 Findings through review

Table 1 shows the most impacted sectors in Spain by the COVID-19 pandemic. The length of the red bars indicates the degree of the negative impact of the pandemic, while the length of the green bars indicates the degree to which these sectors have grown and are driving the economic recovery. The degree of the impact is expressed as the ranking of such a sector in each of the studied information sources. Jobatus (2020) shows the sectors in which the demand for professionals fell at the national level, while the Spanish Economic Prediction Centre (CEPREDE, 2020) shows the same information, but in Madrid. Likewise, the Ministry of Inclusion, Social Security and Migration - MISSM (2020) classifies the sectors most workside affected by the crisis. Other reports focus on the positive side by pointing out the sectors that have created growth and employment during the recovery of the different COVID-19 waves (Business Insider, 2020). Other interesting data includes the sectors that have benefited most from the loans granted under the COVID-19 guarantee line of the Official Credit Institute (ICO) that is a Spanish lending institution whose functions include funding investment projects and the assistance for the liquidity needs of Spanish companies (ICO, 2022). In this sense, the sectors that have benefited most from ICO aid can also be considered to be those that have been most negatively impacted by COVID-19 (epdata, 2020).

The most negatively impacted sectors based in the different sources of information summarised in Table 1 are culture, tourism and retail. Restricting social contact and avoiding crowds means that people attend fewer cultural and leisure activities and travel less. Spain is the world's leading tourist destination. Since 2015, it has occupied first place on this podium of the World Economic Forum, which rewards the most competitive countries in the tourism sector among 140 economies and its contribution to Spain's gross domestic product (GDP) and employment in 2018 was 191,000 million (15% of GDP) what is, in fact, three times the contribution of another vital sector such as the automotive industry, with 60,000 million and 5% of GDP (WTTC, 2018).

According to the results shown in Table 1, the sectors that, after the first wave of COVID-19 (June 2020), were driving Spanish economic activity were tobacco, pharmaceuticals computer, electronic and optical products. These sectors, especially tobacco and pharmaceuticals, were not as affected by COVID-19 as others because they are classified as essential sectors, and during the period of confinement, they remained open. As for the technology sector, it seems that the increase

Table 1. Impact of COVID-19 in different sectors in Spain ranked-classified.

in teleworking to avoid social contact and to comply with the state of emergency regulations led to a significant increase in the use of electronic devices for teleworking, which had a positive impact on this sector. Another sector that has been positively impacted is the health care sector, as during the worst months of the pandemic, the national health care system collapses and citizens seem to look for private alternatives to guarantee their health care.

3.2 Findings through survey and interviews

This section describes the most relevant findings related to the impact that COVID-19 has had on the Spanish enterprises, through the information obtained by means a survey. Table 2 shows the sectors that participated in the study, highlighting the metallurgy sector as the one that most participate in this analysis. One of the limitations of this study is that, taking into account level 2 of NACE which covers 88 sectors identified by two-digit numerical codes, this study only represents almost 20% of the total NACE level 2 sectors.

Table 2. Main sectors of the surveyed enterprises.

Sectors	%
Metallurgy	12%
Health	9%
Chemicals	7%
Plastics	7%
Paper	7%
Furniture	7%
Ceramics	7%
Construction	7%
Technology	7%

Sectors	%
Agri-food	6%
Energy	5%
Textiles	4%
Automotive	2%
Catering	2%
Cement	1%
Tertiary	1%
Other	5%

The size of the enterprises that have participated in this study is diverse as it is shown in Figure 2.

The impact of COVID-19 has been analysed in terms of the following items that are based on research methodology phase 1 (literature) and further enriched by interviews:

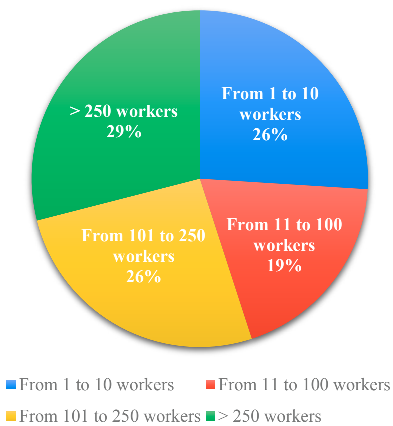

Figure 2. Size of the surveyed enterprises.

- Employment: This aspect is related to the negative effects of COVID-19 on employment conditions. In March 2020, Spain decreed a state of health scare, whereby companies in non-essential sectors had to remain closed and other companies, while continuing to work normally, experienced a significant drop in demand for their products. This led many companies to adopt, and even continue to adopt today, record of temporary employment regulation.
- Reputation: This aspect is related to some strategies adopted by companies, especially service companies, in which they publicize the security measures adopted to guarantee the safety of human resources and clients, among other factors, which has a direct relationship with their reputation.
- Workers' health: This item involves the wellbeing of workers with respect to the coronavirus and it analyses how COVID-19 impacted on workers' physical conditions.
- Organisation and restructuring the work: This item covers the study of the impact of COVID-19 on the establishment, planning and programming of work activities.
- Safety measures: This factor analyses the extent to which companies had to modify their security protocols to adapt to the new pandemic situation.
- Procurement of COVID-19-related products: This factor covers all those activities: management, purchase, distribution of COVID-19 protection articles such as masks, hydroalcoholic gel, etc.... This item involves the extent to which companies had to add these new items to their list of procured materials.
- Commercial visits to customers: One of the commercial actions that companies normally adopt is to visit customers directly or to exhibit and visit trade fairs in order to promote their products. This factor examines the impact that mobility restrictions due to COVID-19 had on companies.
- Physical sales of products: As in the previous case, mobility restrictions affected the physical sale of products, changing consumers' and customers' online sale behaviour.
- Legal aspects: In this element, it is studied if companies were affected in their legal and juridical aspects due to the official actions taken because of COVID-19.
- Staff productivity: Many companies were forced to telework what changed the working environment of the employees and impacted on their productivity. This item analyses the extent to which COVID-19 affected workers' efficiency.
- Working hours: Continuing with teleworking, as the working environment of many professionals changed, the working hours and even their working timetable was affected to reconcile, among other aspects, work and family life.

The impact of all these items has been assessed through a 5 Likert scale: 1 (very low impact), 2 (low impact), 3 (medium impact), 4 (high impact) and 5 (very high impact). The results are shown in Table 3, in which the length of the bars represent the % of companies that select each of the 5 Likert scale point.

Table 3. Impact per analysed item.

	Very High	High	Medium	Low	Very Low
Employment	17%	17%	29%	14%	22%
Reputation	16%	18%	22%	25%	17%
Workers' health	30%	11%	17%	21%	21%
Organisation and restructuring the work	34%	14%	20%	16%	16%
Safety measures	26%	14%	24%	17%	18%
Procurement of COVID related products	28%	18%	13%	18%	22%
Commercial visits to customers	22%	27%	13%	18%	19%
Physical sales of products	17%	14%	24%	18%	26%
Legal aspects	17%	21%	13%	25%	24%
Staff productivity	18%	20%	24%	17%	21%
Working hours	16%	13%	24%	21%	26%

Figure 3, that represents the average of the 5-Likert scale responses, shows that COVID-19 had the greatest impact on the organisation and restructuring of work, as the pandemic led to restrictions in terms of social contact, mobility, legal restrictions, among others, which greatly affected the way companies worked, as they had to reorganise and plan their activities taking into account all the above restrictions. Likewise, the adoption of extraordinary security measures as well as the procurement of COVID-19 prevention articles are other aspects that companies have had to modify the most in order to deal with the coronavirus. Companies have been also impacted by COVID-19 in terms of their sales representatives' visits to customers and workers' health. While the companies surveyed indicated that COVID-19 has not had a major impact on aspects such as reputation, working hours or staff productivity.

4. ROADMAP TO MINIMISE THE COVID-19 IMPACT

Based on the impacts identified, a set of improvement policies are defined to deal with the situation caused by the coronavirus, which are validated by a panel of experts with different profiles and experience through a Delphi study. The policies to minimise the COVID-19 impact and to improve the resilience capacity to face this situation are grouped into 8 dimensions, based on research methodology phase 1 (literature) and further enriched by interviews which are as follows:

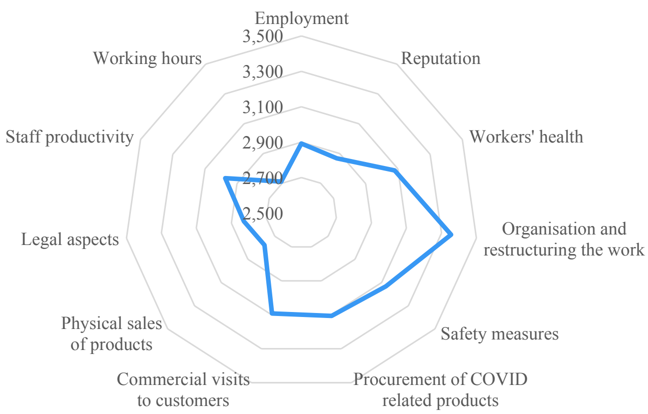

Figure 3. Summary of the negative impact (5-Likert scale) of COVID-19 on surveyed companies.

- Communication: this approach aims to establish the necessary and appropriate mechanisms to ensure that all the information flows efficient and rapidly to ensure that all parties are duly informed, e.g. in the event of a health alert.
- Coordination: it aims to set up all the necessary means and resources to facilitate to manage critical situations with regard to the COVID-19 as well as to encourage the decision process collaboratively among the different actors of the supply chain to adopt measures in a coordinate and collaborative way.
- Strategy: this policy is focused on the management level in which innovation and reinvention strategies should be promoted as drastic times call for drastic strategies.
- Financial: this deals with financial problems. For this reason, this policy objective search for the study and analysis of different options such as applying for government grants, and/or for credit from banks, … to bounce back from this one-off situation.
- Products diversification: this alternative aims to re-think about the current products from the company's catalogue and search for alternative products. This policy is in line with what many textile enterprises did during the first wave of the pandemic. They add to their existent catalogue, the manufacturing of other COVID-related products such as personal protective equipment, gowns, masks... among other.
- Marketing: this line is oriented to give visibility to the safety measures adopted by the companies to guarantee the health of their workers and the health of their visitors. This is very important for service companies and less so for the industrial sector, although its promotion could also mitigate the impact of the pandemic.
- Human resources: this action focuses on workers in order to maximise their welfare, safety and protection. This policy is addressed to the creation of employee bubble groups, training for virus prevention, to name a few.
- Security: it aims to minimise the company's risks, especially those related to employee safety. This policy promotes teleworking, the reduction of company events and travels, among other actions.

The dimensions of this roadmap were ranked by companies through the questionnaire and interviews according to: their interest in each of the policies and the complexity to implement them. A Likert scale was used to quantify both factors based on the following criteria: (i) interest: 1 (very low interest), 2 (low interest), 3 (medium interest), 4 (high interest) and 5 (very interesting); (ii) complexity: 1 (very easy), (easy), 3 (medium complexity), 4 (difficult) and 5 (very difficult). The average of the 5-likerts scale results obtained are shown in Figure 4.

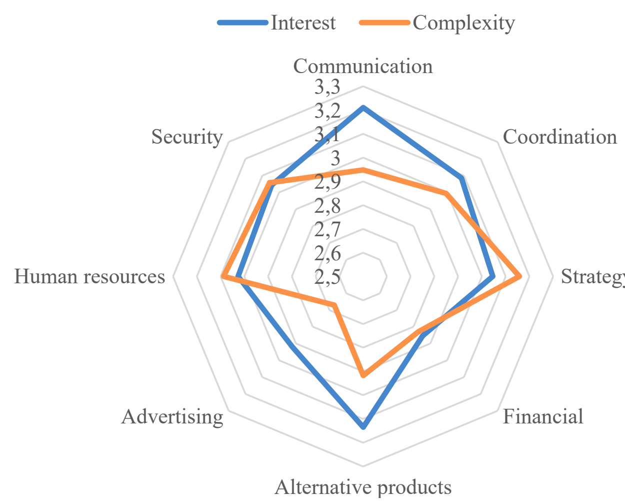

Figure 4. Interest and complexity of the roadmap dimensions.

There are no major differences among the different dimensions of the roadmap, as all of them will fall within a range of interest and/or complexity between 2,6 and 3,3, that is low-medium-high interest and easy-medium-difficult complexity. None of the roadmap dimensions are at the extremes of very low or very high. This is probably due to the fact that companies have been conservative in their responses, perhaps because of the uncertainty of the pandemic and how they will deal with it.

The dimension of communication is one of the most interesting ones according to the responses of the enterprises. Moreover, they also consider that the enhancement of communication mechanisms does not present much difficulty in being implemented. The second most interesting policy is related to products in terms of rethinking and renewing the products catalogue, focusing on products that are necessary to tackle the pandemic, e.g. bleach, hydroalcoholic gel, among others. In fact, in Spain, during the early and harshest times of pandemic and confinement, several cosmetic companies reengineered their processes to adapt their production systems to the manufacture of hydroalcoholic gel. Moreover, this policy does not require much effort to be implemented as, according to the responses, it is the third easiest policy to adopt out of the 8 proposed. In the top 3, the last policy is the coordination policy. In this sense, this policy considers that the impact of COVID-19 could be minimised through collaborative, cooperative and coordinated decision-making between the different entities in the supply chain. However, this policy has been assessed as rather complex.

The most complex policy is related to the strategy dimension, in which the responsibility and commitment of all the members of the enterprise is needed. In this sense, and related to the second most difficult policy that is related to huma resources, it is worth mentioning that it is widely recognised that human are averse to change, which is why any measure adopted in the company will be difficult to develop satisfactorily because of this fact. The third most complex policy, according to the companies surveyed, is security, perhaps because it is the first time in the last 100 years that companies and society in general have had to deal with a global pandemic and, therefore, the complexity of implementing security measures is high. Moreover, this complexity is not so much due to the actions to be implemented but to the uncertainty related to which security measures are the most appropriate to deal with the virus.

5. CONCLUSIONS

This paper analyses the impact of COVID-19 in different sectors in Spain, highlighting which ones were more negative affected by the pandemic after the first COVID wave and which ones created growth and employment during the recovery phase. In this sense, the most negative impacted sectors were culture, tourism and retail. On the other, the study also reveals that the sectors that growth and pushed the Spanish economy towards recovery were tobacco, pharmaceuticals, computer, electronic and optical products. Moreover, through a survey and interviews with different companies from diverse sectors, which aspects were more impacted by COVID-19 were identified. In light of this, the organization and restructuring of how companies had to work was notably affected, since companies were more vulnerable to the lack of key personnel due to coronavirus illness, to new security protocols to which they were not accustomed, among others. Other aspects that affected the normal and daily operation of companies involve the adoption and implementation of safety measures and the purchase of all the necessary materials to safeguard the health of the workers. On the other hand, it should be noted that companies have reported that aspects such as reputation, working hours or staff productivity have not had a major impact. Finally, based on the findings, a set of dimensions and policies are proposed, which will involve concrete actions to build a complete roadmap to support the improvement of enterprise resilience capacity to face up to crisis situations such as the one caused by COVID-19.

The limitations of this research encompass those of studies using surveys and interviews as exploratory methods as well as the limited number of companies participating in the study. Another limitation is the narrow scope of the study, as the analysis only covers Spain, and the particularities of this country may limit the universal drawing of conclusions for other countries. However, in this sense, the dimensions of the roadmap have been defined in a general and global way, to include as further research, particular actions per dimension that can be customised for companies of different country.

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