



THE UNIVERSITY  
*of* ADELAIDE



**2020.59 MODELLING BUSINESS CLUSTERS' READINESS AND  
RESILIENCE IN MANAGING AND RESPONDING TO COVID-19**

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## **Executive Summary – Progress Report 1**

The Local Government Association has requested this research into the best ways to support local businesses' recovery and growth after the COVID-19 crisis. Without a doubt, understanding the resilience and readiness of South Australian businesses could help local governments to create targeted support, leading to better use of existing and limited resources.

Overall, our research project will focus on clustering business to provide the basis for more effective targeted support. This first progress report will focus on what aspects and antecedents are relevant and how important they are for businesses recovery and growth. Therefore, our focus is first on defining the concepts of resilience and readiness, and then on the implications of COVID-19 in South Australia. In this report, we present multiple resilience concepts and a taxonomy to understand how bouncing back or forward capabilities can work—the ex-ante and ex-post concepts of resilience.

We will then explain our focus and present the literature on three major components of resilience recovery—people, process and tooling.

As part of this report, an integrative framework will be presented to help assess and understand how business performance has dropped and how the functionality can be recovered. This will provide antecedents for the next progress report where the analysis of South Australian firms will be done and clarity on the value and use of this classification will be presented.



## Section 1: Modelling business clusters' readiness and resilience in managing and responding to the COVID-19 crisis

### 1.1 Objectives

Resilience and readiness play crucial roles in potential business recovery after a crisis event. The unprecedented impact of the COVID-19 pandemic on business performance is a new phenomenon witnessed worldwide. Now, more than ever, the time is ripe for businesses to enhance their resilience. In this challenging time, governments and particularly local governments, have essential roles in business recovery. However, the economic shock of the pandemic has affected businesses disproportionately, and it is becoming increasingly clear that different businesses require different types of support to build resilience.

In this context, this project aims to build a framework which clusters businesses so that policymakers (more specifically, local government) can better understand the required initiatives/programs depending on businesses' specific circumstances. As such, the current project will consider the readiness to face the crisis before the pandemic, and the ability and agility to change, innovate, and adapt to the new economic and social conditions. We aim to achieve three connected objectives as follows. First, the project will articulate the factors that enable businesses to succeed in the current crisis. Second, it will unfold how to classify businesses across South Australia based on their specific needs and expectations in their recovery processes. Third, the current project will offer several starting points that will enable businesses to recover quickly and possibly even grow.

This project is funded by the Local Government Association (LGA) and undertaken by researchers from the University of Adelaide and Torrens University.

### 1.2 Our approach

To achieve our objectives, this project was conducted in three parts, one of which is presented here, the other two will be presented in the next reports. In the first part, we collated relevant information and documented resilience and readiness (preparedness) concepts in the business context: what do we know? Later, we provide a synopsis of the most relevant themes that emerged from the literature to evaluate, review, synthesise, and classify previous business resilience work which has been undertaken during the past 20 years. In doing so, we reviewed 157 peer-reviewed journal articles, providing the depth and breadth required for understanding readiness and resilience. Our review was further extended with grey literature which covered the industry- or government-specific areas to provide a comprehensive account of the current state of business resilience in

academic, government and industry discourse. The results of this review will be presented in this progress report.

To accomplish the second objective of this project, we will conduct a survey with South Australian businesses. The survey findings will allow us to identify the factors related to resilience and readiness that have affected the business performance in South Australia during the COVID-19 pandemic. Built on the collected data, descriptive statistics will be presented later in the second progress report. We then carried out an exploratory statistical analysis to cluster the businesses based on their vulnerability characteristics. In other words, we utilised cluster analysis to develop a taxonomy of vulnerabilities based on the industry-specific vulnerability indicators for a diverse range of business sectors in Australia's economy. Our aim is to create meaningful business groupings, based on the extent of vulnerability faced during the recent COVID-19 pandemic. . The clustering analysis will become part of the second progress report.

In the third part, we will propose a number of recommendations that may improve local government initiatives/programs which will be provided in the final report. This will be accomplished by interpreting the results of cluster analysis developed in the second step. This part aims to provide local government officials a snapshot of the specific business needs and expectations across South Australia. The purpose is to increase knowledge on the disruption caused by COVID-19, the complex policy implications of this rapidly unfolding crisis, and how, in the future, the government can provide support to transform and foster the SMEs ecosystem in SA. This will facilitate the development and implementation of government initiatives and supports, thereby supporting businesses in building resilience in the context of COVID-19 recovery.

### 1.3 What does it mean for businesses?

On 11 March 2020, the World Health Organization (WHO) declared the outbreak of the highly transmissible virus, known as COVID-19, as a public health emergency of international concern (WHO, 2020). On 31 March 2020, António Guterres, the Secretary-General of the United Nations, began his message with the following statement: "The recovery from the COVID-19 crisis must lead to a different economy" (United Nations, 2020). While the COVID-19 pandemic is primarily a life-and-death matter, this statement reflects the devastating impact of the outbreak on businesses worldwide (Kraus et al., 2020).

The pandemic has plunged the global economy into the worst recession since the Great Depression (Trautrimis et al., 2020). The global hotel occupancy rates have remained astonishingly low (Filimonau and De Coteau, 2020), government bans on travel have culminated in a revenue loss of US\$250 billion for the airline industry in 2020 (Amankwah-Amoah, 2020), and many businesses have been forced to close (Donthu and Gustafsson, 2020).

Many businesses have been teetering on the edge of a pandemic crisis over the past two decades. The 2003 SARS outbreak in southwest China and Hong Kong attacked the global IT supply chain and forced many electronic manufacturing plants to shut down (Cavinato, 2004). The economic loss suffered from the 2015 MERS outbreak extended beyond its origin in the Middle East and caused a substantial loss in the tourism-related industries worldwide (Joo et al., 2019). The deleterious effects of previous outbreaks on the world's economies are well known; however, the COVID-19 pandemic has presented unprecedented challenges to people's lives and business operations worldwide (Lu et al., 2021; Ebersberger and Kuckertz, 2021). What is unique about the recent pandemic is the breadth and diversity of its impacts on businesses (He et al., 2020).

In this uniquely challenging environment, maintaining continuity and mitigating the pandemic's deleterious effects are vital for every business. Indeed, the pandemic highlights the urgent need among scholars and practitioners to build a practical instrument that facilitates the response to and recovery from the current crisis.

Thus, the evaluation of the impacts of the COVID-19 pandemic on businesses is currently underway. Some efforts have recently been made to determine the changes and adjustments that businesses have to undertake in order to respond to the pandemic (Roggeveen and Sethuraman, 2020; De Massis and Rondi, 2020). However, while the pandemic's disproportionate impact across business sectors is widely recognised (Bapuji et al., 2020), no attempt has been made to classify businesses based on the factors that make some firms more vulnerable to the pandemic. For example, home confinement, imposed as part of the Australian government measures to limit the pandemic's spread, is a key factor that affects many firms and businesses' functionality. Nevertheless, the work from home capacity to compensate for the drop in performance varies depending on the type of business. In neither case has there been an attempt to evaluate the pandemic's differing impacts on the operation of different business sectors worldwide and in particular in South Australia. Indeed, building resilience and responding rapidly during this time of volatility requires a thorough understanding of a business's vulnerabilities. This project will fill a significant gap in evaluating and classifying various factors that disproportionately contribute to the vulnerability of South Australian businesses. We have developed a taxonomy of vulnerabilities based on industry-specific vulnerability indicators across different sectors of South Australia's economy.

#### **1.4 What does it mean for businesses in South Australia?**

Overall, the South Australian economy and South Australian businesses have seen a turbulent year 2020: For more than 15% of South Australian businesses, revenue remains more than 50% below pre-COVID levels (Business SA - Chamber of Commerce and Industry South Australia, 2021a). Furthermore, difficulties for businesses are highlighted by a decrease of 4.3% in the total number of hours worked in all jobs in South Australia (Australian Industrial Transformation Institute, 2021).

While government programs have helped many businesses in South Australia in facing this unprecedented crisis, the future remains uncertain when these programs end. In a recent survey, 51% of South Australian businesses reported to have received JobKeeper support in 2020, with 59% of businesses having been restricted but able to trade because of being exposed to COVID-19 limitations (BDO Advisory (SA), 2020). However, South Australian businesses also showed their adaptability, with more than two thirds of businesses reported having been transformed because of COVID-19 in areas such as, for example technology adoption and working arrangements (BDO Advisory (SA), 2020).

Regional businesses in South Australia severely felt the impact of COVID-19: Business confidence in the state and national economy in 2020 dropped compared to 2018 (Business SA - Chamber of Commerce and Industry South Australia, 2021b) with skills availability and COVID-19 restrictions seen as main problems affecting businesses (Business SA - Chamber of Commerce and Industry South Australia, 2021b). A large proportion of businesses in accommodation & food retail (33%), professional, scientific & technical services (19%), and the tourism sector (19%) reported that COVID-19 restrictions were seen as a key issue by businesses (Business SA - Chamber of Commerce and Industry South Australia, 2021b).

The pandemic's disproportionate impact across business sectors is further highlighted by figures from the tourism sector: It has seen a sharp loss (-73%) in interstate and international overnight trips between January and October 2020 when compared to the same timeframe in 2019 (Deloitte, 2021). Moreover, the hotel industry was strongly exposed to the unexpected short lockdown in November 2020, resulting in a sharp drop in employment during this period and a waste of stock of approximately \$7 million to \$10 million (O'Neil, 2021).

Without a doubt, not only short-term, but also medium- to long-term effects of the COVID-19 pandemic will be a challenge for businesses. For example, 2020 has seen a considerable decline in annual growth (-16.9%) in equipment investment in South Australia (CommSec, 2021).



## Section 2: Business resilience's role in COVID-19 recovery

### 2.1. What is business resilience?

The concept of business resilience has stimulated great interest within government, NGOs, research organisations, and universities. Nevertheless, the business research community has not reached a consensus on the definition of resilience. Broadly classified by Conz and Magnani (2019), resilience can be defined across three main temporal phases: 1) before the crisis strikes, 2) while the crisis occurs, and 3) after the crisis has become manifest. Building on this classification, we disentangle different definitions of resilience as a set of capabilities that assist businesses with providing a reliable recovery process and minimal adverse consequences on their functionality.

Furthermore, we explain the relationships between businesses' resilience capability and their functionality before, during, and after the crisis. This explanation can inform pre-and post-event governmental and community actions related to business recovery in the aftermath of the COVID-19 pandemic.

#### Resilience as an ex-post concept

The first stream of definitions explores the notion of business resilience as an ex-post concept. By this scheme, resilience refers to a set of capabilities that allows firms to deal with a disruptive event once it occurs, and subsequently, to bounce back from crises either to the previous stage or even stronger than before. Hence, we unpack the definitions of business resilience and categorise them into two dimensions.

- *Bouncing back capabilities*: Business scholars have traditionally considered the notion of resilience as the ability to spring back or return to the previous circumstances after the occurrence of a disaster (Danes et al., 2009). From this perspective, resilience is commonly understood as the ability of a firm to return to homeostasis, thereby re-pursuing former opportunities (Manfield and Newey, 2018).
- *Bouncing forward capabilities*: The extant literature in this category goes beyond bouncing back to the previous state, as it implies going back to the same vulnerabilities (Esnard, 2013). In light of this, many studies define resilience as the ability to react to disruptive events and modify behaviour accordingly (Reddy et al., 2020).

#### Resilience as ex-ante and ex-post concepts

The second stream of definitions includes all the different resilience stages (before, during and after crises) in one resilience definition. The literature in this scheme advocates the fact that resilience capabilities are interrelated (Duchek, 2020). This implies that firms cannot bounce back effectively from a crisis without considering the preventive aspects of threatening situations. Thus, ex-post capabilities should be supplemented by developing preparedness capabilities. Following this philosophy, the extant literature in this stream has integrated firms' preparedness capabilities into prior definitions of resilience.

The works on the definition of resilience under the two main streams discussed earlier can be further delineated into the following four sub-streams.

- First, there is a body of research which views resilience simply as a firm's ability to bounce back from adversity to normal (Karman, 2020; Duarte Alonso and Kok, 2020; Scott and Laws, 2006; Alonso et al., 2020).
- Second, some researchers are concerned with a business's ability to reach a higher level of performance than before, known as its bouncing forward capabilities (Fiksel, 2006; Knemeyer et al., 2009; Marshall and Schrank, 2014; Tognazzo et al., 2016; Yao and Fabbe-Costes, 2018; Asamoah et al., 2020).
- The third branch of study incorporates the preventive aspects of resilience into the definition. However, these articles have not gone beyond the bouncing back capabilities (Danes et al., 2009; Somers, 2009; Ambulkar et al., 2015; Chowdhury and Quaddus, 2016; Adobor and McMullen, 2018).
- A fourth stream pays simultaneous attention to both the preventive aspects and a firm's ability to transform crisis into success by virtue of bouncing forward capabilities (Seville et al., 2015; Hohenstein et al., 2015).

### 2.2 Why does resilience matters for businesses? An integrative framework

In the following section, we provide an instructive demonstration of the resilience definitions by shifting the discussions to a more practical arena. With different categories of resilience definitions, we develop a framework to better explain the interdependencies between the resilience capabilities and businesses' functionality before, during, and after crises. This framework is used as an apparatus to foster a comprehensive understanding of the resilience definitions.

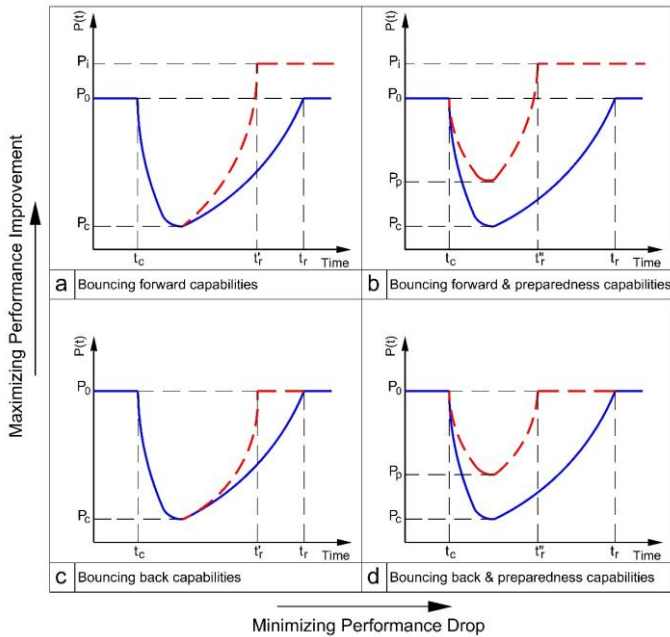
To provide better visualisation of the concept of business resilience, we turn the preceding discussions into a set of curves to address the following questions:

- To what extent does the performance of the business system drop after a disruptive event strikes?
- How does the business system return to the same or a higher level of functionality and performance?

Fig. 1 provides the conceptual illustrations of the effects of resilience capabilities on business performance. As can be observed from this figure, a disruptive event at the time  $t_c$  leads to a drop in the business performance, represented by a business state indicator,  $P(t)$ . After a disruption occurs, the level of business functionality decreases from  $P_0$  to  $P_c$ . The loss of functionality ( $P_0 - P_c$ ) depends on the intensity of the disruption. Different resilience capabilities are required to restore the functionality of the business as swiftly as possible.

We now incorporate two main streams of business resilience definitions into the curve. The incorporation of three resilience capabilities results in four distinctive patterns, represented by four different curves.

**Fig. 1** - Conceptual illustrations of the effects of various resilience capabilities on business performance



First, as shown in quadrant (a) in Fig. 1, the firm undergoes a recovery process to achieve the level of functionality,  $P_i$ , stronger than before, by leveraging a set of bouncing forward capabilities. The recovery time is reduced by  $(t_r - t'_r)$ .

Second, the firm combines a set of active bouncing forward capabilities with the preparedness perspective. As shown in quadrant (b) in Fig. 1, this finally culminates in the rapidity of the recovery process,  $t''_r < t'_r < t_r$ , to a higher level of functionality,  $P_i > P_0$  than before the occurrence of the crisis. This can be considered as the most desirable recovery process.

Third, quadrant (c) in Fig. 1 illustrates the effect of the bouncing back capabilities on a firm's resilience. This figure reflects that the business returns to the same functionality level,  $P_0$ , at time  $t'_r$ . It also indicates that resilience capabilities accelerate the recovery process by reducing the recovery time from  $t_r$  to  $t'_r$ .

Fourth, as illustrated in quadrant (d) in Fig. 1, the firm suffers a lower degradation and loss of performance,  $P_p > P_c$ , by implementing preventive strategies to mitigate the negative effect of disruptions. This, coupled with the bouncing back capabilities, have resulted in a fast recovery process at  $t''_r < t'_r < t_r$ .

The illustrative framework presented herein highlights the potential alternatives where the local government can work with businesses to get the best outcomes connected with resilience and readiness for recovery. Indeed, this illustrative framework enables the local government officials to prioritise the support packages based on the extent to which businesses experience

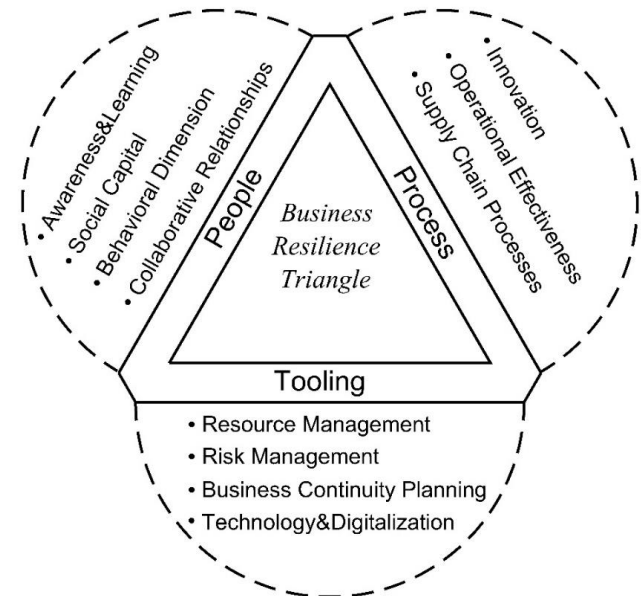
the loss of their functionality and potential recovery based on resilience and readiness. In addition, this framework demonstrates the required level of business recovery during and after the COVID-19 crisis. It also helps the local government with disaster planning and mitigation based on required capabilities (bouncing back and/or bouncing forward capabilities).

### 2.3 How can governments help businesses to achieve resilience and readiness to overcome the crisis?

The section is intended to answer the question of where local governments should focus their attention to best support business recovery. We provide a guiding conceptual framework—what we coin the Business Resilience Triangle (Fig.2).

The suggested business resilience triangle describes the antecedents and their contributions to business resilience development. These antecedents are arranged under three major headings: people, process, and tooling. Before beginning the discussion, a caveat must be sounded. We have attempted to reduce overlaps and complexity; however, certain antecedents may still overlap, rendering them not mutually exclusive.

**Fig. 2** - Business resilience triangle



#### People

People are the core facet of building resilience to crises. Our review highlights that the people-related antecedents have been identified across a wide variety of elements based on various attributes such as roles, relationships and behaviour. This subsection seeks to identify, synthesise and classify these elements into four major categories: awareness and learning, social capital, behavioural dimensions, and collaborative relationships.

### Awareness and learning

As a key antecedent of business resilience, situational awareness has been subject to investigation in many studies (Tyler et al., 2020; Filimonau and De Coteau, 2020). The literature suggests that a firm's recognition and awareness of disruptive events is a key success factor in enhancing its resilience (Ambulkar et al., 2015; Riley et al., 2019; Vargo and Seville, 2011). Research has consistently indicated that the role of staff training (Brown et al., 2019), information sharing and spreading awareness within firms (Mandal, 2017) are foundational elements for resilience to crises.

Lessons learned from prior disruptions appear in the literature as a critical factor to building resilience (Ambulkar et al., 2015; Knapp, 2016; Chowdhury and Quaddus, 2016; Turner et al., 2019; Rice and Caniato, 2003; Christopher and Peck, 2004; Jüttner and Maklan, 2011). The literature indicates that an interpretive framework driven by previous disruptions (Harries et al., 2018), as well as repositories of knowledge elicited from previous history (Adobor and McMullen, 2018), can be adopted to respond to similar future disruptions (Yao and Fabbe-Costes, 2018; Riley et al., 2019).

### Social capital

A crucial requirement for boosting resilience in the face of natural disasters concerns support received from households, community, family, and friends, which is cited as social capital (Chowdhury et al., 2019; Mzid et al., 2019; Alonso-Dos-Santos and Llanos-Contreras, 2019; Watson et al., 2020). The most recent and comprehensive theorisation of social capital and its role in thriving after natural disasters is found in Torres et al. (2019). This work defines the positive impact of the three categories of social capital on resilience building, which are 1) bonding, which refers to support received from family and friends, 2) bridging, which is concerned with support offered by community organisations, and 3) linking, which refers to support received from institutions.

### Behavioural dimension

Researchers have pointed to business owners' behavioural and attitudinal attributes and top managers in shaping business resilience (Duchek, 2018). Along with trust and commitment (Chowdhury and Quaddus, 2016; Adobor and McMullen, 2018), researchers have also paid attention to various personal attributes, including adaptability, purposefulness, confidence, and sociability (Wall and Bellamy, 2019).

### Collaborative relationships

Our review illustrates that collaborative relationships between customers and businesses and the mutual interactions among business partners are key enablers of achieving resilience. Different types of relationships for building resilience have been outlined, including, for example, between supply chain partners (Mandal and Sarathy, 2018; Hosseini et al., 2019; Aggarwal et al., 2020), the collaboration between focal firms and buyers (Pereira and Miguel, 2018; Watson et al., 2020), the interaction between firms (Adobor and McMullen, 2018; Williams et al., 2020), the support from and collaboration with the government (Filimonau and De Coteau, 2020), and the

interaction between non-profit organisations and the affected businesses (Ballesteros and Gatignon, 2019).

### **Process**

The business research community has made significant progress in understanding the role of effective business processes as key contributors to fostering resilience to crises. In this subsection, three main process-related antecedents, including innovation, operational effectiveness, and supply chain processes, are touched upon.

#### Innovation

Several studies have favoured the fact that firms with stronger innovations can cope better with disruptive events (Dahles and Susilowati, 2015; Orchiston et al., 2016; Kwak et al., 2018; Chowdhury et al., 2019; Brown et al., 2019; Duarte Alonso and Kok, 2020). Innovativeness enhances businesses' capacity to cope with disruptions through strategic renewal (Sá et al., 2019), deploying non-traditional processes, and market strategies (Alonso-Dos-Santos and Llanos-Contreras, 2019). Further, empirical studies have explored the triggers of innovation (Williams and Vorley, 2014; Kraus et al., 2020) and the mediating roles of different organisational capabilities in the relationship between innovation and resilience (Sabahi and Parast, 2020).

#### Operational effectiveness

A critical factor across this category's three elements is the operational effectiveness that enables firms to ameliorate disruptive events' negative effects. Several studies state that operational effectiveness (or lack thereof) is an important concept that must be taken into account when studying business resilience (Parast, 2020). The research literature in operational effectiveness follows two main lines of inquiry. The first stream of research focuses on the implementation of various business process methodologies, such as lean practices (Ruiz-Benítez et al., 2018; Bevilacqua et al., 2019), effective operational policies (Cheng and Lu, 2017), and flexibility and leadership (Childerhouse et al., 2020), to build operational resilience. The second research line highlights the lack of operational effectiveness caused by different factors, such as ineffective organisational processes (Burnard et al., 2018), the lack of adequate infrastructure (Gibb and Buchanan, 2006), bureaucracy and an extended chain of administration (Shareef et al., 2020), which leads to longer disruption response times.

#### Supply chain processes

Many business research articles have emphasised the significance of Supply Chain Networks (SCNs) for fostering resilience to crises (Biggs et al., 2012; Chowdhury et al., 2019; Childerhouse et al., 2020). The mainstream of research in this category treats a firm and its suppliers as a network of interacting entities (Yang and Hsu, 2018; Zhao et al., 2019; Ponomarov and Holcomb, 2009). Rooted in network theory, the interdependencies between firms and suppliers are then evaluated. In light of this, a great deal of research advocates that the structure of SCNs account for supply chain resilience (Yao and Fabbe-Costes, 2018; Macdonald et al., 2018; Shin and

Park, 2019). Using graph-theoretic concepts, business scholars have studied the correlation between various structural characteristics of SCNs and the resilience to crises (Pavlov et al., 2018). The main emphasis is on maintaining the connectedness of supply networks when disruption occurs (Bevilacqua et al., 2019). The examples of the structural properties under investigation are network density, the criticality of nodes (Chowdhury and Quaddus, 2017), and the most significant remaining subnetworks after a disruption (Li et al., 2020). Researchers have also stressed the locational contiguity's antecedent roles (Herbane, 2020) and suppliers' size and diversity (Kahiluoto et al., 2020) within the networks of firms and suppliers.

## **Tooling**

Tooling, as an enabler of business resilience, is of utmost importance. In fact, tooling facilitates organisations' resilience by providing a set of practices and processes (Kogenhop, 2020). The literature has identified various tools and methodologies that can assist businesses with fostering resilience to disruptive events. Key tools and methodologies that support business in building resilience include resource management, risk management, business continuity planning, technology, and digitalisation.

### Resource management

There has been a growing realisation that effective resource management is one of the key factors in enhancing organisations' resilience. In this context, many studies on the concept of business resilience embrace the notion of resource management. The literature has referred to effective resource management as a firm's ability to reconfigure, realign, restructure, and renew its resources in response to disruptions caused by disasters (Ambulkar et al., 2015). Extant empirical and conceptual studies have acknowledged that the following resource management techniques and concepts are key contributors to bolstering resilience in organisations: 1) slack resources that refer to the financial reserves of an organisation, diversity and redundancy of suppliers (Linnenluecke, 2017), 2) resource integration from external sources (Battisti and Deakins, 2017), and 3) the availability of different and heterogeneous resources, which is known as resourcefulness (Conz and Magnani, 2019).

### Risk management

A business's risk management infrastructure as an antecedent of resilience has gained recognition in the business management literature (Ambulkar et al., 2015; Chowdhury and Quaddus, 2016; Bevilacqua et al., 2019). Thus, the development of risk management frameworks to bolster resilience in businesses has gained special attention. The findings of our review have revealed the following risk management processes that have been used to explain business resilience: risk identification (Zhao et al., 2019), risk monitoring and analysis (Bühler et al., 2016), and risk mitigation strategies (Ravulakollu et al., 2018; Sáenz et al., 2018).

### Business continuity planning

A few studies have found an overlap between business continuity planning and resilience building. These studies stress the necessity of business continuity management programs, which enhance resilience and strengthen preparedness in the event of natural disasters (Coullahan and Shepherd, 2008). Scholars have identified elements that a continuity plan must have, including a management and information system, a strategy to transition from routine to crisis mode, and a preparation strategy (Brown et al., 2017). Moreover, a sound business resiliency strategy, as a closely-related concept, has been identified as a key contributor to enhancing business resilience (Lengnick-Hall et al., 2011; Danes et al., 2009; Aleksić et al., 2013).

### Technology and digitalisation

There appears to be consensus in the literature that the business community has engaged with technology and digitalisation to strengthen resilience to crises (Lu et al., 2020). However, there is scant consideration given to how technology and digitalisation might be employed and applied effectively to build resilience. Though sparse, the following recent articles are examples worth noting. Within the tourism context, Žebrytė et al. (2019) explored the potential of using digital resources, such as open data, to aid entrepreneurial decision-making and build natural disaster resiliency. Ralston and Blackhurst (2020) noted that Industry 4.0 and smart systems as capability enhancers allow firms to deal with unexpected events, thereby enhancing their resilience to disruptions. Kraus et al. (2020) put forward the operational use of a digital tool to fast-track disaster relief efforts.

## **2.4. Building Resilience to facilitate Businesses' recovery**

The recent COVID-19 pandemic has presented significant business challenges to organisations around the world. Under the current circumstances, businesses face financial upheavals, cash flow challenges, and novel risks that have threatened their operations' continuity (De Massis and Rondi, 2020). In the face of the recent crisis, businesses require an assortment of antecedents to respond to the pandemic effectively. Nevertheless, the COVID-19 pandemic, as a specific crisis, requires specific capabilities for building resilience (Manfield and Newey, 2018). Given this main concern regarding the situation-specific characteristics of resilience to the coronavirus outbreak, the remainder of this section offers suggestions for building business resilience and aiding recovery in the current COVID-19 pandemic context.

### **People**

People are at the core of the battle against the COVID-19 pandemic. There are encouraging examples of where people, as a key element of the business resilience triangle, have strengthened businesses' ability to deal with the pandemic. The empirical evidence shows that social capital and collaborative endeavors have enabled businesses to ameliorate the coronavirus pandemic's deleterious effect on business performance (Al-Omouh et al., 2020; Wu, 2020). Indeed,

fostering collaborative endeavours between participating actors is essential for business recovery in the wake of the COVID-19 pandemic. Collaboration should be established between business partners and between academia, industry, local and national governments. As suggested by Liu et al. (2020), designing a collaborative network as a new corporate governance structure would facilitate the response and recovery to any crisis, including coronavirus outbreaks.

Moreover, social capital, a concept referring to formal and informal norms within the community, is now a key component of building resilience in businesses. Preliminary studies support the useful role of different social capital types, namely bonding capital, bridging capital, and linking capital, to help firms prepare for and recover from the COVID-19 pandemic (Wong and Kohler, 2020). Two areas would need to be further addressed. First, implementation programs would need to be created to build awareness of the pandemic's potential impacts on operations and revenue. Second, pandemic learning programs would need to be developed to encourage business resilience. The learning programs could help firms succeed in the current crisis and prepare for any potential crises that cannot be foreseen.

## Process

The COVID-19 pandemic has offered many lessons about developing effective business processes that seek to stay on top of challenges. The pandemic has confirmed that the practice of innovation, which is positively associated with boosting resilience in businesses, is imperative for business continuity and survival in uncertain and turbulent conditions (Lee and Trimi, 2020). Innovation has now become a strategic priority for many organisations around the world. The COVID-19 pandemic has accelerated innovation for developing resilient operating systems in a wide variety of fields as diverse as education (Morley and Clarke, 2020), and the hospitality industry (Breier et al., 2021).

In calling for effective operational practices, substantial emphasis has been placed on implementing various business methodologies to confront current operational disruptions. To adapt to the pandemic's obstacles for business recovery and bouncing forward, practitioners and scholars alike have suggested a range of methodologies and frameworks that maximise operational processes' flexibility. Implementing lean and agile frameworks to improve global sourcing and delivery practices currently serves as the most prevailing approach to battle the pandemic survival threats (Rashad and Nedelko, 2020; Leong and Hock, 2020).

Moreover, the coronavirus pandemic has drawn considerable attention to the responsiveness of supply chain processes. The recent pandemic has indeed questioned the effectiveness of traditional approaches to supply chain management. For example, during the darkest days of the COVID-19 pandemic, healthcare providers in Italy encountered shortages of personal protective equipment, which led to high rates of infection and death among frontline healthcare workers (Ranney et al., 2020). The closure of foodservice outlets in Canada during the

coronavirus spread has caused the realignment of fresh produce supply. This, in turn, has imposed a significant burden on distribution infrastructure specific to retail (Richards and Rickard, 2020). As a consequence, building a resilient network of suppliers has recently come to prominence. To enhance resilience, firms have reacted to the pandemic by implementing new strategies, such as diversifying SCNs, technology deployment (Sharma and Soederberg, 2019), and reinvigorating local suppliers.

## Tooling

As the pandemic unfolded, the adoption of various tools and technology became critical to keep business thriving. When face-to-face interactions between businesses and their customers had to be avoided, digitalisation enabled both individuals and firms to continue carrying out many daily tasks that previously required physical proximity (Katz et al., 2020). Consequently, businesses have turned to different digital platforms in this time of upheaval. Many firms have benefited from using technology, purchasing laptops, webcams, and audio equipment. E-commerce platforms (Tran, 2020) and online applications such as Zoom and Microsoft Teams are becoming increasingly commonplace.

In any discussion on business resilience, it must be noted that thorough risk analysis and a sound resource management plan are both critical for supporting businesses during this challenging period. In fact, firms can determine whether their exposure to the recent pandemic is consistent with their risk appetite (Richter and Wilson, 2020). However, due to each crisis's unique characteristics, there will not be a 'one size fits all' risk management framework. Thus, as (Oehmen et al., 2020) suggested, firms should customise their risk management framework according to the availability and quality of data.

Further, in the wake of the current pandemic, traditional approaches to resource management, such as inventory positioning and protected suppliers are necessary, but not sufficient, factors for building business resilience. Thus, we are witnessing a growing interest in new resource management strategies that advocate building affordable redundancy. This new approach allows firms to activate an alternative supply of their required resources in a short period of time (Taqi et al., 2020).

Table 1 summarises the connection between levels of resilience and potential recovery traits.

**Table. 1** Business resilience and recovery ability

Resilience levels ->	Level 1	Level 2	Level 3	Level 4
<b>People Readiness (roles, relationships and behaviours)</b>	<ul style="list-style-type: none"> <li>Awareness</li> <li>Social capital not existence</li> </ul>	<ul style="list-style-type: none"> <li>Information sharing and spreading awareness within firms</li> <li>Support family and friends (informal to formal)</li> </ul>	<ul style="list-style-type: none"> <li>Lessons learned from prior crisis / Staff training based on gaps</li> <li>Support from family and friends and community organisations</li> </ul>	<ul style="list-style-type: none"> <li>Ability to adopt previous knowledge to respond to crisis</li> <li>Support from family and friends and community organisations or other institutions</li> </ul>
<b>Process Readiness (innovation and operational practices: lean and agile)</b>	<ul style="list-style-type: none"> <li>No innovation</li> <li>No lean or agile practices</li> </ul>	<ul style="list-style-type: none"> <li>Few incremental innovation (four areas)</li> <li>Weak lean or agile practices</li> </ul>	<ul style="list-style-type: none"> <li>Several incremental innovation (four areas)</li> <li>Moderate lean or agile practices</li> </ul>	<ul style="list-style-type: none"> <li>Several incremental innovations or radical innovations (four areas)</li> <li>Strong use of lean or agile practices</li> </ul>
<b>Tooling Readiness (resource management, risk management, technology and digitalisation)</b>	<ul style="list-style-type: none"> <li>No ability to reconfigure, realign, restructure or renew resources</li> <li>No risk management</li> <li>No use of digital technologies (open data, to aid entrepreneurial decision-making Industry 4.0 and smart systems; use of a digital tool)</li> </ul>	<ul style="list-style-type: none"> <li>Low ability to reconfigure, realign, restructure or renew resources (slack resources; diversity and redundancy of suppliers; resource integration from external sources; and resourcefulness)</li> <li>Low risk management practices (identification, monitor and analysis, risk management strategies)</li> <li>Low use of digital technologies (open data, to aid entrepreneurial decision-making Industry 4.0 and smart systems; use of a digital tool)</li> </ul>	<ul style="list-style-type: none"> <li>Moderate ability to reconfigure, realign, restructure or renew resources (slack resources; diversity and redundancy of suppliers; resource integration from external sources; and resourcefulness)</li> <li>Moderate risk management practices (identification, monitor and analysis, risk management strategies)</li> <li>Moderate use of digital technologies (open data, to aid entrepreneurial decision-making Industry 4.0 and smart systems; use of a digital tool)</li> </ul>	<ul style="list-style-type: none"> <li>High ability to reconfigure, realign, restructure or renew resources (slack resources; diversity and redundancy of suppliers; resource integration from external sources; and resourcefulness)</li> <li>High risk management practices (identification, monitor and analysis, risk management strategies)</li> <li>High level use of digital technologies (open data, to aid entrepreneurial decision-making Industry 4.0 and smart systems; use of a digital tool)</li> </ul>

Adapted from Uhl and Gollenia (2012: 43)

### Enhancing preparedness and bouncing forward capabilities

COVID-19 pandemic is a complex crisis that has exposed the vulnerability of businesses around the world. The complexity of the pandemic and the interdependencies among a wide range of global actors have made businesses susceptible to failure during this challenging time. To tackle this complexity and keep businesses thriving, a range of capabilities has to be integrated. Numerous examples of business disruptions have demonstrated that the notions of readiness and bouncing forward capabilities should be incorporated into the concept of business resilience.

However, in many cases, what we are witnessing worldwide is the lack of preparedness capabilities in facing the pandemic. Even though it is recognised that enhancing levels of resilience or preparedness capabilities can help firms suffer a lower degradation of their performance during and after the pandemic, two significant barriers exist. First, firms are reluctant to face their vulnerabilities, thereby hindering them from preparing for crises (Menoni and Schwarze, 2020). Second, in the aftermath of the current pandemic, business recovery is characterised by high uncertainty and limited knowledge resources. Nevertheless, these barriers can be overcome by effective communication from public authorities, NGOs, and research

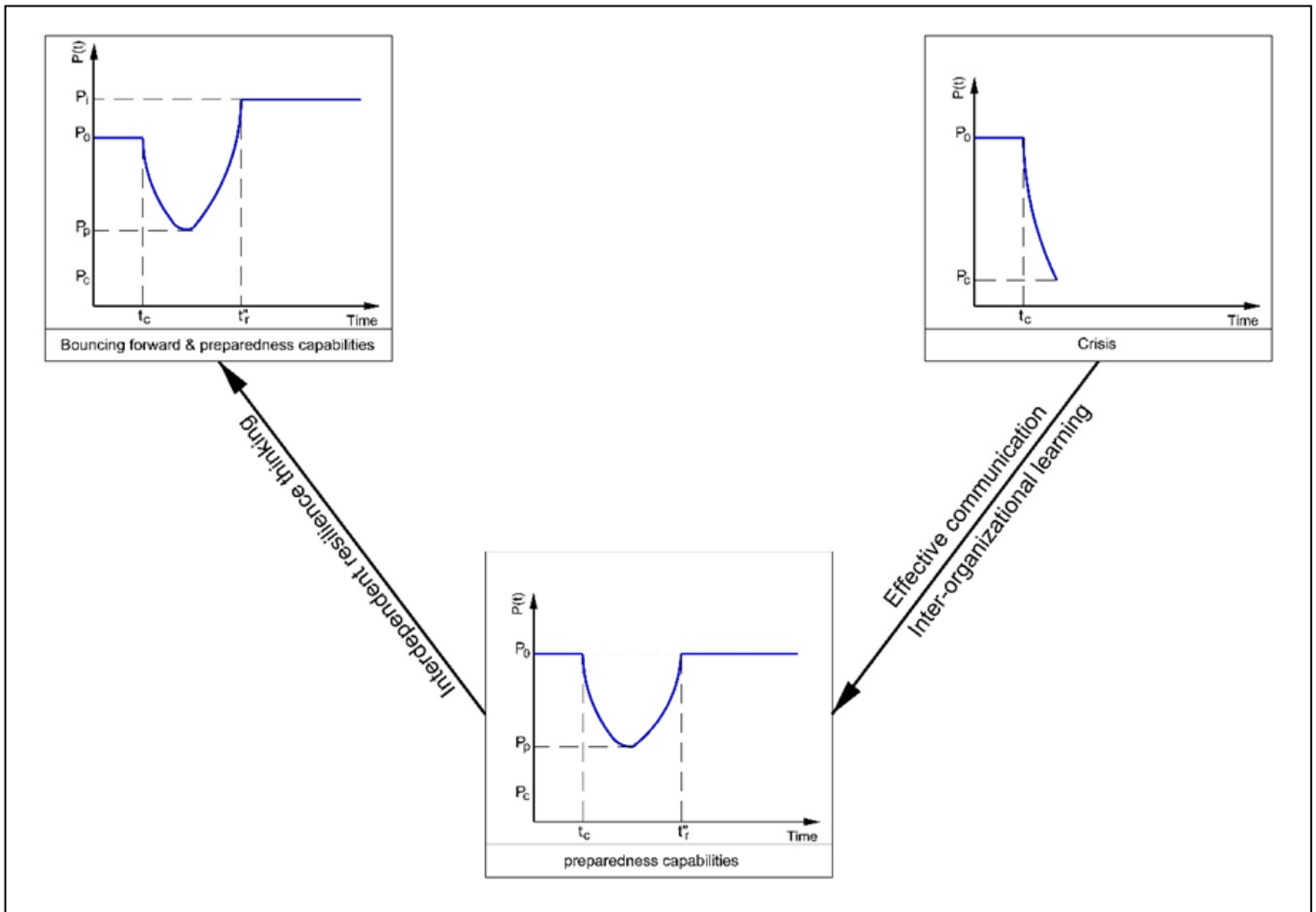
organisations emphasising the significance of the business owners' risk perceptions towards preparedness. As put forth by Haneberg (2020), inter-organisational learning through interactive learning between firms can help businesses reduce uncertainty in this challenging environment.

Moreover, firms have to abandon their traditional resilience culture that views resilience as the ability to bounce back from adversity to normal. Businesses should avoid the same vulnerabilities that led to a decrease in their functionality level during the pandemic. We advocate that interdependent resilience thinking, which is the product of multiple resilience antecedents, can ignite business growth and bouncing forward capabilities. In other words, the coronavirus crisis's complexity necessitates fostering a resilience thinking that entails the integration of various antecedents within the three main clusters of the business resilience triangle. To provide better visualisation of the discussions presented in this section, Fig. 3 illustrates the business resilience chain. The business resilience chain shows the required capabilities and initiatives that facilitate the response and recovery to the current crisis. As shown in Fig. 3, the chain's first element depicts the business's loss due to the pandemic.

The second element denotes the boost in preparedness capabilities through effective communication and inter-organisational learning, which has reduced the pandemic's negative effect. The interdependent resilience thinking in the firm, which encourages the integration of multiple antecedents, has restored the previous functionality and has also helped the firm achieve a stronger functionality level than before.

The literature review demonstrates the links between resilience and potential recovery or growth for business after the pandemic. The way that businesses are affected is connected to their readiness or preparedness to face the crisis. While there is sufficient literature in the area based on previous environmental or economic crises, the COVID-19 pandemic has unprecedented characteristics. The findings were utilised to create a framework that will be utilised in the practical application to South Australian businesses later in the research.

Fig. 3 - Business resilience chain







## Section 3: A practical perspective on the role of resilience in COVID-19 recovery: A grey literature review

### 3.1 What is grey literature?

The literature review for understanding readiness and resilience was extended with grey literature to give an overview on how governments have used targeted policies around the world to help businesses deal with the COVID-19 pandemic. In general, “grey literature comes from a complex landscape of information artefacts generated in the course of real-life practices” (Adams et al., 2017: 435) and is not necessarily academic or scholarly (Lawrence et al., 2014). Reports and news articles from Australian city councils but also from organisations such as the OECD and city councils worldwide were reviewed to gain an overview of how different levels of government globally have adopted targeted policy approaches for clusters of businesses.

### 3.2 Applying the business resilience triangle to grey literature

Both Australian and international cities exhibited various responses aimed at improving resilience for local businesses. We aligned the grey literature findings to the same three elements of the resilience triangle presented in section 2, as follows:

#### What has been done in Australia and globally?

#### People

In Australia, policies targeting people included grants for developing online capabilities in Melbourne (VIC) (City of Melbourne, 2020); establishing committees, local advisory groups, and business recovery centres on the Sunshine Coast (QLD) (Sunshine Coast Council, 2020); covering parts of the costs of business advice and training in Wanneroo (WA) (City of Wanneroo, 2020); and funding business networking and supporting local manufacturing through workshops in the City of Port Adelaide Enfield (SA) (City of Port Adelaide Enfield, 2020).

Globally, Antwerp (Belgium) provided support in vocational training for local businesses (OECD, 2020) and called for start-ups to develop digital solutions, supporting the development of a volunteering platform (Intelligent Cities Challenge, 2020a).

Policies targeting people aim to develop resilience by aiding staff training (Brown et al., 2019), increasing support from community organisations (Torres et al., 2019), and building stronger relationships with governments (Filimonau and De Coteau, 2020) and non-profit organisations (Ballesteros and Gatignon, 2019).

#### Process

Helping businesses to improve their processes has been widely achieved through supporting operational effectiveness, often by adapting legislation: Trading and parking conditions were relaxed to help restaurants as takeaway businesses in Parramatta (NSW) (City of Parramatta, 2020), procurement for local businesses was

improved (City of Port Adelaide Enfield, 2020; City of Parramatta, 2020), a dedicated business support hotline was established, (City of Melbourne, 2020) and a dedicated business advisor was hired to support businesses through free consulting (City of Port Adelaide Enfield, 2020).

In the Stuttgart area in Germany, a dedicated online platform for B2B businesses has been developed that enables businesses to seek for and offer things such as products, solutions, production capacities, and materials, thereby supporting and strengthening local supply chains and improving business resilience (Wirtschaftsförderung Region Stuttgart GmbH, 2020).

Policies targeting processes aim to increase resilience through stronger business processes by increasing companies’ innovation to better deal with disruptions (Sá et al., 2019), ensuring operational effectiveness (Parast, 2020), and improving supply chain networks (Biggs et al., 2012; Chowdhury et al., 2019; Childerhouse et al., 2020).

#### Tooling

To increase the adoption of tools and technology, grants for developing online services were offered (City of Melbourne, 2020) and programs are to be developed to aid businesses in increasing the use of digitalisation and e-commerce (City of Sydney, 2020).

On a worldwide scale, many cities have created and encouraged the use of online portals or directories for local businesses to support buying local (Intelligent Cities Challenge, 2020c; Intelligent Cities Challenge, 2020d; Intelligent Cities Challenge, 2020b; High Streets Task Force, 2020). The City of Cardiff (UK) worked with a local FinTech company that developed an app to allow customers to order food from local businesses that are then delivered to an outdoor dining area, helping businesses that struggle with the social distancing regulations (Cardiff News Room, 2020)

Policies aiming to support tooling use digitalisation for changing and improving daily tasks, substituting processes that previously required physical proximity (Katz et al., 2020).

### 3.3 Fit between grey literature and academic literature

The grey literature supports the academic literature, linking previous findings to case examples around the world. This section’s findings will be incorporated in the following research steps and provide evidence of governments’ activities around the world. Together with the literature review, it will provide the framework to investigate South Australian businesses.



## Section 4: Summary

### 4.1 Summary

The year 2020 may be remembered as the year the COVID-19 pandemic left businesses struggling to survive. The premise here is to apply resilience thinking in the context of the COVID-19 recovery to bolster firms' resilience to the pandemic. In this context, this report develops a conceptual framework that groups the existing definitions of resilience into a set of capabilities. The proposed framework explains the interdependencies between these capabilities and firms' functionality before, during, and after crises. This report also generates a business resilience toolbox in which the eleven antecedents of business resilience are grouped into three main clusters, namely people, process and tooling. The proposed toolbox serves as an instrument that helps businesses identify antecedents to enhance their resilience to crises and local governments to understand and provide targeted support.

This literature review will guide the next part of this research. The research team will investigate the South Australian business vulnerabilities to better understand how to support those businesses. Later, all the learning from this process will be combined in a third report, including how local governments can provide better support for business recovery or growth. The research team will also provide recommendations with guidelines to produce more targeted initiatives and programs for business recovery and growth.



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