

# Uncovering the effectual-causal resilience nexus in the era of Covid-19: A case of a food sector SME's resilience in the face of the global pandemic

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## ABSTRACT

This research explores the underlying roles of effectuation and causation logic as they impact upon firm resilience in Small and Medium Sized Enterprises (SMEs) in the unprecedented disruption caused by Covid-19. Because Covid-19 provides a unique and powerful discontinuance to internal and external environments, it requires firm adaptation in a wide variety of areas, as they seek to find a new “normal”. Our study contributes to the literature by applying effectuation to understand how an SME can experiment and learn in the face of disruption, and then subsequently causally adapt their resources and networks to achieve resilient outcomes. It adds to knowledge about the interaction between effectual and causal logic, leading to a more nuanced explanation of how and why an SME might apply each logic when responding to disruption caused by Covid-19.

## 1. Introduction

Covid-19 has created significant uncertainty (Sharma, Goyal, & Singh, 2020), resulting in lockdowns, disrupted travel and supply chains, reduced social activity and changing behavioural patterns (Evans, 2020; Sharma et al., 2020; WTO, 2019). Whilst unexpected disruptions take many organisations by surprise (Linnenluecke, 2017), others are capable of responding effectively, being more suited to survive extreme, unforeseen, and abrupt events (Ali, Nagalingam, & Gurd, 2017).

With the arrival of Covid-19, businesses have been confronted with something unexpected (coming from the external environment) that has seriously impacted their way of doing business. This situation offers researchers the opportunity to investigate how firms react to disruptive events, using resilience as a lens through which to view disruptions (Burnard & Bhamra, 2011) including Covid-19. While there is a plethora of occasionally conflicting definitions of resilience (see Conz & Magnani, 2020, for a comprehensive review) we follow Mithani (2020)'s understanding of resilience: the ability of a system to respond in multiple ways to disturbances in order to adapt to the challenges posed by the environment. More specifically, we utilise a dynamic resilience lens (Mithani, 2020), where the disruption / threat is recurring and ongoing, rather than a static resilience lens, where the threat is a one off. This

allows analysis of the organisation's adaptation to change, new equilibria, and potentially new identities (Mithani, 2020).

This dynamic resilience lens is used in the paper to address the multiple research gaps that currently exist in our understanding of resilience and responses to disruptions in small and medium enterprises (SMEs), specially why some SMEs respond better to disruptions than others. Whilst many resilience studies have been conducted in larger organisation contexts (Linnenluecke, 2017; Sullivan-Taylor & Branicki, 2011), studies of smaller businesses remain inadequate (Battisti & Deakins, 2017). Within the limited studies of SME resilience, the focus is placed on relationships between leadership and resilience (Zehir & Narcikara, 2016), proactive posture, resource integration and resilience (Battisti & Deakins, 2017), or learning and resilient outcomes (Battisti, Beynon, Pickernell, & Deakins, 2019). On the other hand, studies examining the relationship between resilience to disruption and the application of effectual and causal decision-making logic are limited. This gap matters, because effectuation and causation are alternative decision-making logics that can not only result in different SMEs responses to environmental challenges (Henninger, Brem, Giones, Bican, & Wimschneider, 2020) but also have distinctive performance implications in a context of disturbance (Laine & Galkina, 2017; Shirokova, Osiyevskyy, Laskovaia, & MahdaviMazdeh, 2020). A causation logic in decision-making focuses on selecting between means (tools, resources,

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strategies) to create a particular effect (goal or impact) that is taken as given. Conversely, effectuation logic focuses on selecting between possible effects that can be created using a particular set of means, which are taken as given (Sarasvathy, 2001a).

Effectuation is an approach that can build resilience in different contexts, including innovation in family firms (Chrisman, Chua, & Steier, 2011), nascent entrepreneurship success (Chadwick & Raver, 2020), and business takeover negotiations (d'Andria, Gabarret, & Vedel, 2018). Effectuation has been found to impact buying decisions (McGowan, 2018) and enable resource acquisition (McGowan, Simms, Pickernell, & Zisakis, 2020). Studies have also linked effectuation to disruption (Laine & Galkina, 2017), but insights remain limited. Whilst causal decision-making is arguably founded on the ability to plan and predict, which is challenged by a disruptive event, how and when a firm utilises effectual and causal logics has not been investigated; nor the implications of these uses for short-term and long-term organisational outcomes. This informs our rationale for examining how and when effectuation may be used by firms in response to a disruptive event and what are the consequences. Consequently, our research question is:

Given the challenges and disruption presented by the pandemic, how, when and why do SMEs respond with resilience-enhancing stages using effectual and causal logics, and how does this affect short term stability and longer-term organisational outcomes?

Our study examines a single case of a horticultural producer and packer of tomatoes for UK food supply chains, supplying food service and retail outlets, and manufacturing a line of processed tomato products. Focusing on a six-month period covering the first Covid-19 wave and subsequent response, we consider this context appropriate for several reasons. First, UK manufacturing has been exposed to business performance disruptions in increasingly complicated environments (Thomas, Pham, Francis, & Fisher, 2015), heightening the need for firms to bounce back to normalcy or thrive after adversity (Thomas et al., 2015). Second, UK food and drink SMEs were already facing severe challenges (Thomas et al., 2015). Prior to the pandemic, there were already concerns over the lack of agility within food supply systems and the need to improve resilience (UK Parliament, 2020a, 2020b), issues exacerbated by Covid-19. Specific Covid-19 problems highlighted were related to closures of catering establishments, limited packaging availability, logistics hindering redistribution, increases in food loss, outbreaks of coronavirus in facilities, and significant financial losses across the sector (UK Parliament, 2020a, 2020b). Hence the sector is vulnerable to public health shocks, creating an appropriate context for our study, where evidence-based policy measures are valuable.

Our main contribution is extending SME's theory by conceptualizing how SMEs can apply effectual logic in their initial response to a disruption in order to acquire and reconfigure necessary resources, subsequently employing causal rebuilding, in its resource reconfiguration and reorganisation, once a new normal has emerged, leading to resilient outcomes. In doing so, we illustrate how the transition between effectual and causal logics enables firms to learn and respond during a period of uncertainty when events cannot be predicted.

This helps explain why some SMEs adjust better to disruptions and are consequently more resilient. In doing so, we contribute to addressing calls by Laine and Galkina (2017) and Harms, Alfert, Cheng, and Kraus (2021) by further uncovering relationships between effectual and causal logics in response to disruption. We show how an SME can move from one logic to another in the context of a disruptive event. Our study also contributes to expanding theory in SMEs' responses to disruptions (e.g. Guo, Zhang, & Gao, 2018; McGowan et al., 2020) by showing how a resource-constrained firm can, by the application of effectual logic, acquire the resources needed and configure them to respond to a disruption. Next, we review relevant literature in section 2. This is followed by methods in section 3 and findings in section 4. We conclude with a discussion of results in the context of extant literature and its contribution to knowledge.

## 2. Literature review

The following literature review addresses challenges and disruption businesses face, how, when and why SMEs respond with resilience enhancing stages using effectual and causal logics, and how this may affect short term stability and longer-term benefits.

### 2.1. Challenges and disruptions

Disruptions to the business environment demand rapid decision-making, which is context-specific and takes place not only under stress (Burnard, Bhamra, & Tsinopoulos, 2018) but also with information inconsistency (Wilson, Branicki, Sullivan-Taylor, & Wilson, 2010). While the impacts of pandemics often take organisations by surprise (Juergensen, Guimón, & Narula, 2020; Pereira, Temouri, Patnaik, & Mellahi, 2020), the literature on pandemics and SMEs suggests some are capable of responding more rapidly and effectively than peers and larger organisations (Gerald, Obianuju, & Chukwunonso, 2020; Kuckertz et al., 2020; Maritz, Perenyi, de Waal, & Buck, 2020).

Disruptions such as that caused by COVID-19 also increase the fluidity of work and organisations (Yeganeh, 2021), for entrepreneurs, fluidity produces complex environments, creating questions on how to re-establish stability when prior assumptions no longer apply (Stephens et al., 2020), the implications of change are uncertain, the likely effectiveness of responses is unclear when enacted (Denrell, 2003; Walrave, van Oorschot, & Romme, 2011), and new equilibriums are created (Meerow & Newell, 2015). Accordingly, this literature review focuses on how such disruption can be dealt with through resilience enhancing stages that are enabled by using effectual learning and effectual, and then causal, application resources.

### 2.2. SME responses

#### 2.2.1. Resilience

Covid-19 created disruption through both ambiguity and risk (Ali et al., 2021; Amankwah-Amoah, Khan, & Wood, 2020). Resilience covers the capability to respond to different disruptive situations (Burnard et al., 2018), rigid response regarded as a 'negative adjustment', and flexible response considered to be 'resilient' or a 'positive response' (Burnard & Bhamra, 2011). Different responses towards disruption (Sutcliffe & Vogus, 2003) then lead to different resilience pattern outcomes: survival, stability or sustained performance (Battisti et al., 2019). Responses to disruption, however, require changes to the firm and its internal organisation. The resilience factors relevant to these changes are specifically relevant to SMEs (Demmer, Vickery, & Calantone, 2011), including managers' ownership of management activities, dedication to being innovative, dynamic patterns for planning, continuous participation in customer-related tasks, focus on innovation, and mental focus on recruitment and training (Demmer et al., 2011).

Billington, Karlsen, Mathisen, and Pettersen (2017) found that owner-managers play significant roles in increasing resilience, by transforming firm "tradition and custom" (p. 427). They are typically decision-makers (Piperopoulos, 2010) and play a key role in resilience. Owner-managers communication of firm vision influences employee commitment levels (Sadler-Smith, Hampson, Chaston, & Badger, 2003). Hence, they play a key role in changes and reorganisation.

There is, however, debate over the definition and conceptualisation of organisational resilience (Linnenluecke, 2017). Organisational resilience can be conceptualised as (1) Outcome, (2) Process (McLarnon & Rothstein, 2013), and (3) Resource (Fisher, Ragsdale, & Fisher, 2019). Relatively few studies, however, examine resilience as a process (Duchek, Geithner, & Kalwa, 2019). Organisational resilience as a process can be seen to have phases including anticipatory adaptation, exposure, recovery, restoration, and post-impact firm total resilience calibration, (Goll & Rasheed, 2011; Linnenluecke, Griffiths, & Winn, 2012; Ortiz-de-Mandojana & Bansal, 2015; Taşan-Kok, Stead, & Lu,

2013). Conversely, [Burnard and Bhamra \(2011\)](#) argue for process stages of detection (and activation), responses demonstrating resilience and learning with resilience capacity. Others see resilience as a developmental process, affecting the physical and emotional wellbeing of organisations ([Bonanno, 2004](#); [Monllor, Pavez, & Pareti, 2020](#)). We therefore conceptualise resilience as a dynamic process ([Billington et al., 2017](#)), a lens well suited to uncovering mechanisms and how this relates to different resilience patterns.

Resources also form a key aspect of resilience in an SME context. SMEs often have weak cash flows, reducing their capacity to implement the long-term strategies required to promote resilience ([Ates & Bititci, 2011](#); [Pal, Torstensson, & Mattila, 2014](#)). Access to finance is therefore crucial – with sufficient and continuous access benefitting resilience ([Cowling, Siepel, Liu, & Murray, 2014](#)). Whilst a vulnerability perspective posits that SMEs are vulnerable to disruptions due to their lack of resources ([Dahlberg & Guay, 2015](#); [Smallbone, Deakins, Battisti, & Kitching, 2012](#)), resilience perspectives ([Alesch, Holly, Mittler, & Nagy, 2001](#)) argue their ability to survive the immediate aftermath of disruptions, as owner-managers often know what steps are required to adapt. Hence they are capable of being resilient, despite relative resource constraints ([Dahlberg & Guay, 2015](#)), because SMEs benefit from having less bureaucracy, thus enabling faster communication ([Sullivan-Taylor & Branicki, 2011](#)).

Additionally, extreme events affect SMEs directly and indirectly, given their scarce resources to plan, respond, and recover ([Sullivan-Taylor & Branicki, 2011](#)). SMEs face various adversities with high variabilities ([Lee, Vargo, & Seville, 2013](#)), with SMEs making investments to boost resilience and reduce vulnerability ([Herbane, 2013](#)). They also experience more uncertainties, providing opportunities to learn and develop more flexibility and responsiveness ([Dahlberg & Guay, 2015](#)). Notably, they have also been shown to be resilient by adapting and learning ([Battisti et al., 2019](#)), continuously improving, and adopting more flexible, adaptable, ways of doing things ([Altinay, Madanoglu, De Vita, Arasli, & Ekinci, 2016](#)). This implies that, during times of disruption, learning fosters resilience ([Weick & Sutcliffe, 2011](#)).

Consequently, Organisational Learning (OL) is a relevant theoretical perspective to explain firm performance in uncertain and turbulent environments ([Zhou, Battaglia, & Frey, 2018](#)). [Altinay et al. \(2016, p. 872\)](#), define such learning as the “ability of an organisation to create, transfer, and integrate knowledge and modify its behaviour with a view to improving performance”, which decreases inertia, increases resources, and improves environmental alignment ([Fainshmidt, Pezeshkan, Lance Frazier, Nair, & Markowski, 2016](#)). In SMEs, owner-managers are key in driving strategic directions ([Deakins, Battisti, Coetzer, & Roxas, 2012](#)), with three interlinked mechanisms of particular importance in learning contexts being: (1) firm proactive posture, (2) owner-manager learning goal orientation, and (3) knowledge acquisition activities.

Proactive strategic posture is defined as “strategic and behavioural readiness to respond to early warning signals of change in organisations’ internal and external environment” ([Lee et al., 2013, p.34](#)). Learning goal orientation is then a cognitive pattern resulting from consistently pursuing goals ([Dragoni, Tesluk, Russell, & Oh, 2009](#)), differences in individual cognition leading to differences in behaviour ([Felin, Foss, Heimeriks, & Madsen, 2012](#));).

Knowledge can then be acquired from learning sources particularly relevant for SME performance: proximal, distal, and practice-based. Proximal involves learning from peers and trusted advisers, such as accountants and bank managers. Distal includes management training programmes, university courses and seminars run by chambers of commerce ([Deakins et al., 2012](#)). Proximal and distal learning rely on acquiring and embedding knowledge from external environments ([Dess et al., 2003](#)). This allows acquisition of knowledge, facilitating exploration and product or service development ([Zhao, Li, Lee, & Chen, 2011](#)), but the benefits are uncertain ([March, 1991](#)) and require resources. Because acquisitive learning indirectly complements experimental learning, [Zhao et al. \(2011\)](#) found firms derive greater value

from internal knowledge sources. Such practice-based learning comprises including reflection on challenging work experiences, observation, and trial-and-error ([Deakins et al., 2012](#)). Learning is experimental ([Dess et al., 2003](#)), and whilst not broadening knowledge bases ([Zhao et al., 2011](#)), is based on firms’ inimitable and unique ([Barney, 1991](#)) experiences. The degree of manager learning orientation contributes to the extent to which they access external sources of learning ([Dragoni et al., 2009](#)) – combinations of internal and external knowledge are important for performance ([Lin & Wu, 2014](#)). [Castro and Zermeño \(2020\)](#) argue that resilience requires the support of OL, but further research is needed to understand mechanisms linked to resilience.

### 2.2.2. Effectual and causal logics

Given the resource implications of learning, the following section identifies the need to understand the roles of effectual and causal decision-making approaches to such resource allocation. [Table 1](#) summarises the key differences for firms between effectual and causal logics, first in terms of learning, discussed above, but also in terms of resources and organisation of the firm.

As effectuation incorporates learning, it assists development of resilience, and firm response to crises or environmental events ([Saunders, Gray, & Goregaokar, 2014](#); [Scazzotta, Andreassi, Serra, & Guerazzi, 2020](#)). Organisational resilience requires a ‘resilient’ or ‘positive’ response to disruptions ([Burnard & Bhamra, 2011](#)).

Response to a crisis may include: experimentation while constraining loss potential ([An, Rüling, Zheng, & Zhang, 2019](#); [Berends, Jelinek, Reymen, & Stultiens, 2014](#)); acquisition of resources through personal means and self-selecting partnerships ([Ortega, García, & Santos, 2017](#));

**Table 1**  
Effectual and Causal Logics to promote organisational resilience.

	Effectual Logic	Causal Logic
<b>Learning</b>	Practice-based- “Effectual” learning. ( <a href="#">Deakins et al., 2012</a> ). Leverage surprises, experimentation ( <a href="#">Haneberg, 2019</a> ; <a href="#">Sarasvathy, 2009</a> ). Maximise external environmental ( <a href="#">Webb et al., 2011</a> )	Proximal and distal learning ( <a href="#">Deakins et al., 2012</a> ) designed to align firm capabilities with strategic aims ( <a href="#">Cooper, 2018</a> ; <a href="#">Klein &amp; Heuser, 2008</a> ; <a href="#">Klein &amp; Polin, 2012</a> )
<b>Firm resources</b>	Constrained by available resources ( <a href="#">An et al., 2019</a> ; <a href="#">Berends et al., 2014</a> )	Apply resources to achieve pre-defined strategic goals ( <a href="#">Ivens &amp; Pardo, 2007</a> ; <a href="#">Yang et al., 2020</a> ). Ends-orientated strategic planning utilising pre-defined resources ( <a href="#">Cooper, 2018</a> ; <a href="#">McKelvie et al., 2019</a> )
<b>Organisation</b>	Extend resources through self-selecting partnerships ( <a href="#">Ortega et al., 2017</a> ) and stakeholder pre-commitments ( <a href="#">Sarasvathy, 2009</a> ) Action-orientated effectual strategy ( <a href="#">Hauser et al., 2020</a> ; <a href="#">Yang et al., 2020</a> ). Control the future through value creation ( <a href="#">Sarasvathy, 2009</a> ). Identification of short-term, realisable business opportunities ( <a href="#">Ortega et al., 2017</a> ; <a href="#">Sarasvathy, 2009</a> ). Sell what can be made ( <a href="#">Sarasvathy, 2009</a> ) Affordable loss: Manage loss potential to what can be afforded without significant risk to the overall venture ( <a href="#">Dew et al., 2009</a> ; <a href="#">Sarasvathy, 2009</a> ) Partnerships are opportunities ( <a href="#">Sarasvathy, 2009</a> ). Self-selecting partners co-creating solutions based upon available means ( <a href="#">McKelvie et al., 2019</a> )	Plan-orientated strategy ( <a href="#">Hauser et al., 2020</a> ; <a href="#">Yang et al., 2020</a> ). Predict, plan and control with a long-term orientation ( <a href="#">Henninger et al., 2019</a> ; <a href="#">Ivens &amp; Pardo, 2007</a> ) Return on Investment ( <a href="#">Hauser et al., 2020</a> ; <a href="#">Henninger et al., 2019</a> ) Partnership to meet pre-defined, market driven, needs ( <a href="#">Hakansson et al., 2009</a> )

practice-based learning (Deakins et al., 2012); maximising external change (Webb, Ireland, Hitt, Kistruck, & Tihanyi, 2011) and leveraging surprises (Haneberg, 2019; Sarasvathy, 2009). Effectuation is also an action-orientated decision-making strategy (Hauser, Eggers, & Guldenberg, 2020; Sarasvathy, 2009; Yang, Hughes, & Zhao, 2020). It provides principles to enable SMEs to overcome uncertainty and resource restriction. Effectuation promotes the use of personal means to acquire resources, self-selecting partnerships, constraint of loss to what is affordable and leveraging surprises as opportunities (Hauser et al., 2020; Sarasvathy, 2001b, 2009; Yang et al., 2020).

Conversely, with causal logic, a traditional predict, plan, and control strategy is enacted with regards to resources and organisation (Hauser et al., 2020; Sarasvathy, 2001b, 2009; Yang et al., 2020). Causal logic tends to promote more proximal and distal learning (Deakins et al., 2012) designed to align firm capabilities with strategic aims (Cooper, 2018; Klein & Heuser, 2008; Klein & Polin, 2012). Resources are also applied (and if necessary acquired) to achieve pre-defined strategic goals (Ivens & Pardo, 2007; Yang et al., 2020), this ends-orientated strategic planning approach utilising pre-defined resources (Cooper, 2018; McKelvie, Chandler, DeTienne, & Johansson, 2019). Causal organisation then uses a plan-orientated strategy (Hauser et al., 2020; Yang et al., 2020), predicting, planning and controlling with a long-term orientation (Henninger et al., 2020; Ivens & Pardo, 2007), focus on Return on Investment (Hauser et al., 2020; Henninger et al., 2020), where partnerships are cultivated to meet pre-defined, market driven, needs (Hakansson, Ford, Gadde, Snehota, & Waluszewski, 2009).

### 2.3. Short-term stability and longer-term impacts from effectual learning and effectual and causal approaches to resources in resilience responses to disruptions

Whilst extant literature often posits positive outcomes when effectual logic is applied (Akinboye & Morrish, 2022; Hauser, Eggers and Guldenberg, 2020; McGowan, 2018, 2020; Nelson & Lima, 2020; Ortega et al., 2017; Roach, Ryman, & Makani, 2016; Sarasvathy, 2009; Wu, Liu, & Su, 2020), negative consequences may also result from inappropriate use (McGowan et al., 2020; Wu et al., 2020). To date, two studies adopted effectuation perspectives to discuss how SMEs cope with Covid-19: Harms et al. (2021) and Eggers (2020) – the latter not centrally, with further discourse relating to use in social enterprises (Chandra & Paras, 2020) and community response (Nelson & Lima, 2020). Each called for further research. Hence the efficacy and limitations of effectuation need further investigation, particularly in relation to when different logics are appropriate.

While effectual and causal logics are complex and distinct, however, it is possible and even desirable for combinations to be applied as circumstances dictate (Galkina & Lundgren-Henriksson, 2017; Sarasvathy, 2009; Smolka, Verheul, Burmeister-Lamp, & Heugens, 2018), the current pandemic being potentially one such situation. While recent studies confirm the desirability of combining logics (Galkina & Lundgren-Henriksson, 2017; Laskovaia, Marino, Shirokova, & Wales, 2019; Smolka et al., 2018; Welter & Kim, 2018), little empirical work exists that considers how and when such a combination might positively impact outcomes (McGowan et al., 2020).

Because effectuation allows firms to navigate waves of uncertainty using judgement and through experimentation (Galkina & Lundgren-Henriksson, 2017; Scazziotta et al., 2020), effectual logic may be dominant within the initial period of disruption, to test out ideas, experiment and learn, before more causal logic approaches can be used to embed that learning into the organisation. To advance knowledge into how SMEs, despite challenges, can foster resilience; we therefore aim to explore resilience mechanisms exhibited towards the achievement of resilience outcomes, as earlier studies highlighted SMEs' capability of being resilient (Dahlberg & Guay, 2015).

## 3. Method

From our review of the literature, the following question is clearly derived:-

Given the challenges and disruption presented by the pandemic, how, when and why do SMEs respond with resilience enhancing stages using effectual and causal logics, and how does this affect short term stability and longer-term benefits?

Our study addresses the above question through a longitudinal case which examines disruption caused by Covid-19, the responses of a single horticultural firm to this disruption and the outcomes of those responses. This enables in-depth understanding of an understudied phenomenon (Blaikie, 2007, 2010). Utilising an exploratory single case (e.g. Eisenhardt, 1989; McKelvie et al., 2019; Yin, 2012), we followed this firm from the first week of UK Covid-19 lockdown, which began in late March, through to September 2020. Additional interviews were undertaken after this period, in order to further explore the findings uncovered and elaborate pertinent aspects in the focus time period of this study. This enabled us to examine both Covid-19 impacts and decision-making when losing existing markets, finding new ones and simultaneously dealing with enforced changes to supply arrangements.

Abductive research enables the discovery of new things, allowing researchers to identify new variables and relationships (Dubois & Gadde, 2002, 2014). The approach is characterised as non-linear, involves overlapping data collection and analysis, and researchers able to match theory with observations (e.g. Dubois & Gadde, 2002; Eisenhardt, 1989). Following this approach Table 1 guided the study, providing basic theoretical constructs. We subsequently iterated between observing and analysing empirical phenomena and associated theory. This allowed us to understand disruptions caused, mechanisms through which they responded and their interrelationships, and outcomes produced throughout this process.

A single exploratory case approach was considered appropriate, allowing the generation of new theoretical insights into a poorly understood phenomenon (Dyer & Wilkins, 1991; Eisenhardt, 1989; Eisenhardt & Graebner, 2007). This provides rich and detailed understanding leading to identification of new theoretical relationships (Dyer & Wilkins, 1991). Cases enable the exploration of complex, multiple elements and problems evolving over time (e.g. Dodgson, Gann, & Salter, 2008; Langlely, 1999). This was considered key in the Covid-19 context. Cases are particularly appropriate for understanding unique situations, providing important lessons (Siggelkow, 2007; Yin, 2012). Studying the company from March–September 2020, during Covid-19 restrictions and impacts, avoided the limitations of studying cases based on retrospective reports (Runyan, 1982), whilst responding to McKelvie et al. (2019) call for longitudinal case research to understand how effectuation works in real-time, its antecedents and outcomes. Further, a longitudinal approach enabled us to understand how actors reacted to an uncertain future in real-time (e.g. Araujo & Harrison, 2002). Our approach is also considered appropriate for theoretical generalization (Eisenhardt, 1989; Flyvbjerg, 2006).

### 3.1. Sectoral context

The case firm operates within the horticultural level of UK food supply chains, also manufacturing a line of processed food products. Food and drink manufacturing in the EU accounts for nearly 14% of employment. In the UK, food and drink is the largest manufacturing sector in terms of economic contribution (Food and Drink Federation, 2019). Several studies have been conducted in the context of SMEs operating in the industry (Abu, Deros, Wahab, Rahman, & Mansor, 2012; Aylward, Glynn, & Gibson, 2006; Carraresi, Mamaqi, Albisu, & Banterle, 2016; Gardijan & Lukač, 2018; Harris & Deacon, 2011). However, at the time of this study, and after extensive relevant keyword-based analysis of the EBSCO database, no published studies focusing on the organisational resilience of food and drink SMEs (in the UK) were

identified from a title, text and abstract search.

At the start of the study, the firm employed a workforce of 52, supplying retailers and food service providers, operating market stalls and a small direct-to-consumer online business, and having a line of packaged foods in decline in recent years. The case firm was particularly vulnerable to Covid-19, as evidence will reveal, due to its reliance on the food service sector.

### 3.2. Data collection: Case study of UK tomato producer

Primary data was collected through weekly meetings with firm representatives, particularly the owner-manager (a long-standing focus for SME-based research) from March to September 2020. Online meetings were conducted with two firm representatives and commenced the week lockdown began, supplemented with additional interviews with management team members to further explore and elaborate on findings and provide additional insights. Table 2 summarises data collection, following guidelines by Yin (2012). First, we undertook observations at meetings and kept records. This was supported by a basic semi-structured guide designed to fully understand what took place, evolving over the time period studied, and exploring interrelationships between events, decisions, and actors (e.g. Aaboen, Dubois, & Lind, 2012). We used several informants, reflecting different actors/perspectives within the firm, to ensure the quality of our data (Lindgreen, Di Benedetto, & Beverland, 2021; Piekkart, Plakoyiannaki, & Welch, 2010). Our data collection topics were driven by concepts identified in our literature review, as well as exploring the facets of the case as they emerged. Broadly topics in meetings and interviews focused on: the disruption caused by Covid-19, actions and responses, reasoning behind the actions taken, availability and use of resources, changes in firm operations, and outcomes during the study period (also see Appendix A). Questions were adjusted for each meeting/interview and based on insights gathered in prior meetings in order to pursue interesting and particularly relevant new facets of the case as they emerged (e.g. Nag, Hambrick, & Chen, 2007). This enabled us to gather information on the development of events and impacts as they unfolded, actions undertaken in response, and outcomes. This allowed exploration of mechanisms through which the company responded, particularly how it learned and understood those approaches it chose to adopt, the organisation or reorganisation in response, resources required, and their origins. Interviews elaborated on findings, explored pertinent issues and built understanding of new facets of the emerging case (Nag et al., 2007). Notes and transcriptions were repeatedly reviewed to achieve familiarisation. Internal reports and documentation further assisted understanding and helped ensure validity through ‘triangulation’ (Denzin & Lincoln, 2000; Eisenhardt, 1989; Flick, 1998; Piekkart et al., 2010), enabling more complete understanding and the validity of our data. This was also ensured through clear presentation of our evidence (Section

**Table 2**  
Summary of Data Collection.

	Number	Time in Minutes
<b>Weekly meetings</b>		
Attendees: MD/owner-manager, NPD Manager, Researchers (one or two present; lead author present at each meeting).	16 (March–September)	60–90
<b>Interviews</b>		
Owner-Manager and Director	6 (2020- June, July, July, August, November 2021- February)	55, 60, 75, 40, 45, 30
Business Development Manager	1	60
Head of Sales and Marketing	1	50
New Product Development Manager	3 (June, September, November)	60, 60, 50 min

3.4), further aided by follow-up interviews and having interviewees review the findings to ensure accuracy (Dubois & Gibbert, 2010; Piekkart et al., 2010; Yin, 2012).

### 3.3. Data summary

Following the abductive approach (e.g. Dubois & Gadde, 2002), data analysis began with constructs in Table 1, namely environmental threats, resilience mechanisms (e.g. resources, learning, organisation), underlying entrepreneurial reasoning, and resilience outcomes captured, used as sensitising concepts to guide and focus analysis (e.g. Aaboen et al., 2012; Dubois & Gadde, 2002). Each construct provided suggested directions and formed a source of reference when looking for patterns (Blumer, 1954). This enabled enhancement and refinement of initial understanding through observations of empirical patterns (e.g. Dubois & Gadde, 2002; Dubois & Gibbert, 2010). This follows systematic combining, in which concepts are ‘matched’, going back and forth between the framework data sources and analysis (Dubois & Gadde, 2002, 2014), enabling better fit between theory and empirical observations (Dubois & Gadde, 2002, 2014). Hence our analysis critically evaluates emerging constructs against ongoing observations (Suddaby, 2006).

Data collection and analysis occurred simultaneously. Analysis followed Braun and Clarke (2006), the data structured into 1st Order Categories, 2nd Order Themes and Aggregate Dimensions following similar processes to Cinar, Simms, Trott, and Demircioglu (2022). Data were transcribed, transcripts read repeatedly, building familiarity. Subsequently, we utilised each sensitising concept to assist in the development of initial codes, revealing preliminary patterns. Each provisional code was used to organise data, whilst searching for new emerging codes. Following this process themes were developed from both theory and data. Next, we attempted to cluster initial codes into categories, developing drafts to explain how categories related to themes, creating a draft thematic map (Fig. 1), through elaborating meaning, differences and similarities of categories. Finally, we reviewed codes, categories and themes to ensure clear definitions and mapping. This involved eliminating ambiguous codes and ensuring overlaps were not evident between categories. Overall, coding was conducted both with the research team working together and independently to ensure consistency. To provide factual evidence we present representative quotes in the following analysis section, along with additional supporting evidence in the Appendix (e.g. Beverland & Lindgreen, 2010; Lindgreen et al., 2021), providing rich insights into this organisation’s experiences – a benefit of the single case approach (Dyer & Wilkins, 1991). The following sections describe the results of our analysis, expanding on Fig. 1. Aggregate Dimensions form headings within this part of the paper, themes then divide these main sections, and in the text (indicated in bold and italics) we report our categories. Our dimensions explore the disruption caused by Covid-19, responses of the firm and outcomes of those responses respectively.

The Research Questions asks, given the challenges and disruption presented by the pandemic, how, when and why do SMEs respond with resilience enhancing stages using effectual and causal logics, and how does this affect short term stability and longer-term benefits? The findings and analysis below explore this.

## 4. Findings and analysis

Following the approaches of Ivens, Pardo, Niersbach, and Leischnig (2016) and Lundgren-Henriksson and Kock, this section combines the theoretical concepts with empirical data. This is in order to ground the findings and analysis in theory.

### 4.1. Initial challenges presented by the pandemic

Our first dimension, Environmental Disruption, captures the initial

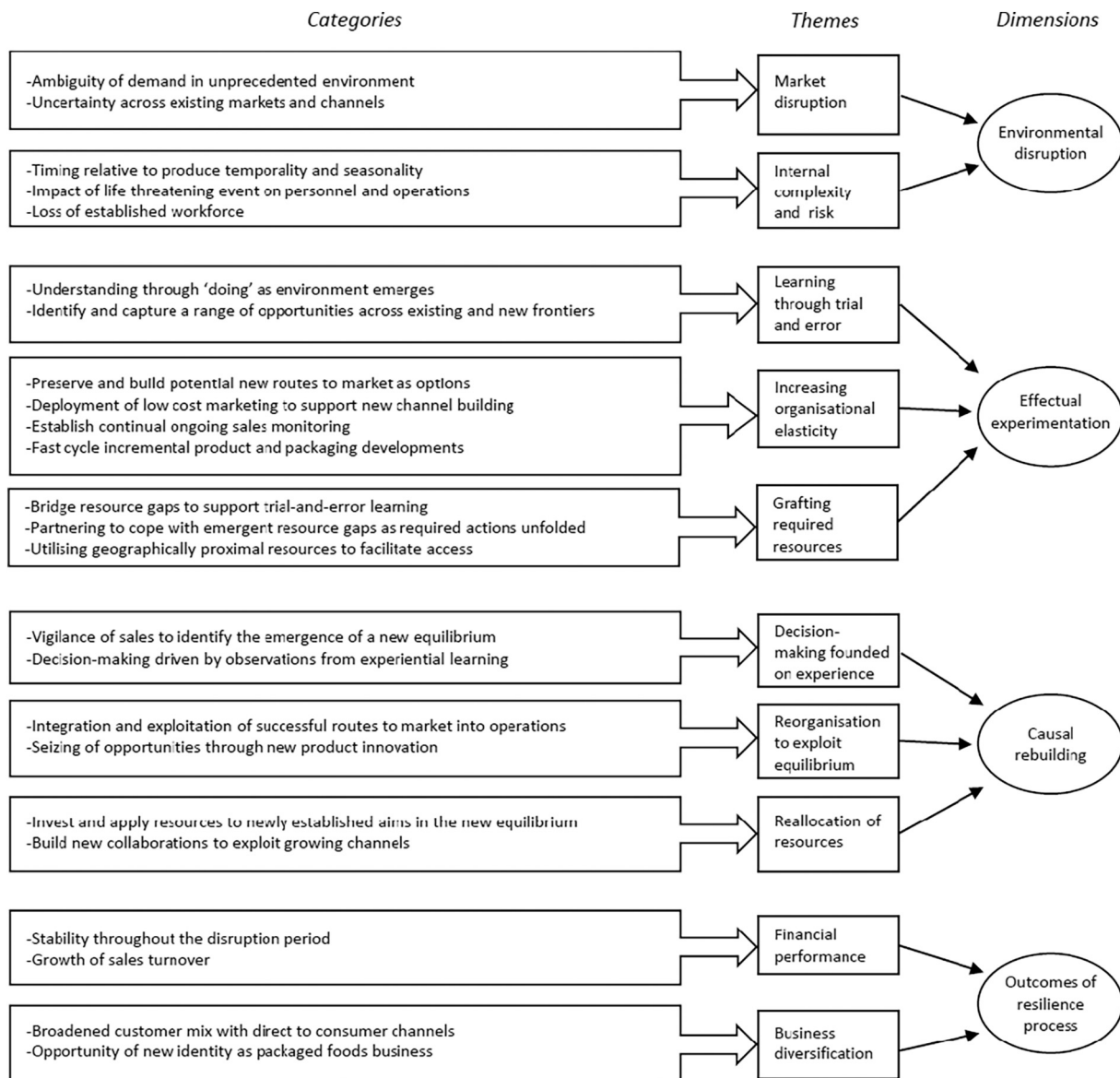


Fig. 1. Dimensions, Themes, and Categories.

challenges caused by Covid-19, consisting of two themes revealing market disruptions faced, and resulting complex internal effects, particularly relating to personnel and operations. The surprises presented by the pandemic (as discussed for pandemics more generally by Juergensen et al., 2020; Pereira et al., 2020), resulted in uncertainty, ambiguity and the need for complex change for Tomato Co. Not only did they lack information to predict (uncertainty), but also faced an unknown situation where they had inadequate knowledge to infer what was likely to happen as events unfolded (ambiguity). Findings highlight significant and simultaneous impacts on supply and demand, and influences of risks.

#### 4.1.1. Market disruption

Stephens et al. (2020) identified the challenge in creating stability when prior assumptions no longer apply. Reflecting this challenge, our data highlighted the disruption caused by Covid-19 resulted in significant **ambiguity of demand in an unprecedented environment**. Initially following the UK lockdown, changes in markets and channels were ambiguous. This meant the extent of disruption caused by Covid-19 resulted in events perceived as so new and unfamiliar that it was not possible to interpret or predict what may happen. The unprecedented

situation meant that, whilst managers were aware of significant challenges to current business, it was not possible to foresee their evolution. Prior to the pandemic, food service and hospitality formed core markets: “Our breakdown of sales was around 35% to food service, 10% to markets, 25% online retailers and 30% to recipe boxes...” (Interview: MD, July 2020). Whilst likely that all these sectors would experience significantly reduced demand, the impact was impossible to predict. Factors such as virus spread and government policies were constantly changing. Assessing and forecasting demand across markets, patterns of demand for individual retailers, and specific tomato varieties was challenged by unknown contexts. This hindered any ability to know which factors would impact demand, and take appropriate, informed actions.

The firm also faced ongoing **uncertainty across existing markets and channels**, with significant, continued, disruption across markets and distribution channels. Reflecting the significant uncertainty caused (Sharma et al., 2020), Tomato Co. experienced ongoing social disruption, with demand remaining volatile, uncertain, with unprecedented change evident. Initially this was most apparent with respect to food service; restaurants forced to close had clear implications for revenues and future liquidity. For example, one national restaurant chain, a key customer, entered administration in April, with outstanding invoices

exceeding £100,000 (NPD Manager see Appendix B). This negatively impacted the company's cash flow. Yet, customers in this market did not cease trading entirely: *"Some of our distributors and even restaurants started to move to selling direct to consumers, such as pre-packaged boxes of groceries to local residents"* (Meeting: MD, April 2020). Whilst restaurants later began reopening, demand patterns changed, remaining lower. With food markets, problems of social distancing and reduced footfall were faced. Losing these sales would harm liquidity, though: *"a few open markets were able to stay open with social distancing.."* (Meeting: MD, April 2020). Whilst demand was more stable for online and in-store retailers, they too faced supply chain disruptions and shifting changes in purchasing behaviour, such as initial shifts to *"..consumers purchasing long shelf-life food, low price products and there was an increase in online sales"* (Interview: Business Development Manager). This evolving and uncertain demand across each market and different channels challenged management's ability to respond.

#### 4.1.2. Internal complexity and risk

The timing of Covid-19's spread in early 2020, and subsequent UK lockdowns, given tomato crop cycles, presented supply-side problems of **timing relative to produce temporality and seasonality**, increasing the complexity of problems faced. Estimates suggested it would only be two to three weeks until large crop volumes would be ready to harvest. Rapid action was required to ensure the crop would be sold, or other measures taken, to avoid it perishing: *"our product has a short window in which it can be sold and significant volumes would be ripening shortly and would need to be sold"* (Interview: Head of Sales and Marketing). Whilst production patterns were relatively established, with growth planned around likely demand, it was now necessary to deal with continual streams of different varieties of tomatoes in the face of uncertain demand. Further, some produce, grown for specific customers, was no longer required.

The pandemic also created significant potential for **impact on personnel and operations**, creating internal risk, uncertainty and disruption. Needing continued operations to ensure maintenance of plants and greenhouses, without even temporary disturbance, had to be managed alongside health risks of Covid-19 (e.g. Sharma et al., 2020): *"safety is a concern in greenhouses and the packhouse.. we are worrying about staff getting sick"* (Meeting: MD, May 2020). This created a need for rapid internal changes to reduce risk, compounded by changes to both markets and operations because of widespread implications of the pandemic. Further, the firm faced **loss of established workforce**. Many workers originated from Eastern European countries, and were unable to return to the UK as lockdown came into force, resulting in insufficient personnel for operations, new staff being unfamiliar with working practices and procedures: *"So not having those returnee staff we lost a bit of that knowledge pool"* (Meeting: MD, April 2020).

#### 4.2. Initial responses to the disruption

Our second dimension, Effectual Experimentation, captures initial resilience responses following emergence of the pandemic, covering March to early June. In this initial response, the disruption created a need for rapid decision-making with limited reliable information to act upon (e.g. Burnard et al., 2018; Wilson et al., 2010). Due to the extreme nature of the disruption, rather than trying to continue operating using previous causal logic until it became apparent this was no longer viable, the firm adopted effectual logic immediately at the onset of the crisis. This dimension consists of three themes revealing how Tomato Co. learned about the new environment, underpinning adaptation of operations, and grafting on resources to enable this. Actions reflect the depth, breadth and speed of immediate modifications required.

##### 4.2.1. Learning through trial and error

The first theme underpinning effectual experimentation centres on how, facing uncertain and ambiguous demand, the producer learned through trial-and-error. Broadly, this reflected a practice-based effectual

learning approach (Deakins et al., 2012) using experimentation (Haneberg, 2019; Sarasvathy, 2009). Specifically, managers believed it would not be possible to accurately predict market change and thus responded to Covid-19 utilising an effectual approach enabling them to learn concurrently to taking actions.

Building on this, managers believed it was necessary to develop **understanding through 'doing' as the environment emerges**. Findings revealed that *due to the extent of disruption it was immediately apparent to decision-makers* that attempts to research and plan for demand in this volatile context would be difficult and used minimally. Instead, the team sought to act in this uncertain environment: *"We have never wanted to have all our business diversified. But I would never have really predicted how we would have reacted, we reacted almost instinctually"* (Interview: MD, November 2020). Understanding opportunities would occur concurrently with acting in an attempt to exploit them.

Reflecting the need to respond by learning experientially, actions were taken to **identify and capture a range of opportunities available across existing and new frontiers**. Building upon studies positing the use of effectuation to leverage contingencies (Sarasvathy, 2009), we found Tomato Co. sought to act by expanding the range of market opportunities available without the ability to foresee any likely success in the wake of the extreme disruption. Attempting to capitalise on different eventualities and opportunities as they emerged, across a broadened variety of markets and channels, might later demonstrate potential. This action would also mitigate potential tomato waste. Subsequently, management could establish viability and further responses required to capitalise on opportunities once established: *"We did not know what would be successful, so our aim was to identify opportunities we were not currently positioned to capitalise on and open them up as much as possible.... We needed to explore different opportunities"* (Interview: Business Development Manager). Notably, following a meeting where senior management discussed how to address the impacts of Covid-19, they recognised two currently underutilised channels that should now be explored in the new context, their own direct-to-consumer business and those of other firms: *"we have seen others be successful at direct-to-consumer online vegetable box sales, and to date we only have limited distribution..."* (Meeting: MD, May 2020). Hence the firm sought to drive online business. Whilst effectuation has been posited to support decision-making under uncertainty (Sarasvathy, 2009), our case shows how this logic was applied by managers learning how to sell successfully, in a situation caused by extreme disruption.

##### 4.2.2. Increasing organisational elasticity

The second theme captures rapid internal changes undertaken to support trial-and-error learning, through adaptations and new channel building. The action-orientated approach (e.g. Hauser et al., 2020; Yang et al., 2020), required significant changes to Tomato Co's activities in a short period of time. We identified four aspects to these changes underpinning this effectual period, prior to the causal rebuilding that followed.

Management discussed re-engineering the business on a day-to-day basis in an attempt to maintain sales. A key aim was to **preserve existing and build potential new markets as options**: *"In terms of markets, we split the business in two, historic business and new business"* (Interview: MD, June 2020). For example, whilst most street and farmers' markets shut, eight markets were maintained in an attempt to contribute to liquidity and generate cash flow. This was achieved through pre-bagging products prior to distribution for quicker and more hygienic purchasing, alongside the introduction of a click-and-collect system to enable online prepayment. Actions were taken to increase distribution through third party recipe and vegetable boxes, as these channels began growing prior to Covid-19 and access required little investment. Several new vegetable box distributors were contacted. This subsequently proved key as partners experienced: *"rapidly increasing sales in a very short time frame"* (Interview: Head of Sales and Marketing), within weeks of the initial pandemic. To support online operations, previously planned work to

improve online sales was accelerated. Tomato Co. worked with an external developer, identified through a contact at a local university, to improve their website, and undertook rapid changes to internal operations to access new channels. For example, “*This [online growth] bought quite a few operational challenges because the website was never designed to handle that kind of traffic.... So, we had to then code and develop a part that could take a download from the website and take it into the database... so we had a lot of tech things to do*” (Interview: MD, June 2020).

Concurrently, Tomato Co. recognised building direct-to-consumer business required increased awareness, but had few financial resources to support this. Thus, **deployment of low-cost marketing to support new channel building** was emphasised as central to this stage. It relied extensively on social media: “*to maintain cash-flow we needed to move directly to the consumer... we knew we would have to get volume out there, and felt the power of social media would enable this*” (Meeting: MD, April 2020). The salesforce worked alongside an existing public relations company to target new customers to exploit this media, focusing on identifying new relevant leads to act as influencers. Influencers and celebrities were sent sample boxes of produce. For example, an existing relationship with one celebrity chef was utilised: “*...we used to supply one of his restaurants for a television programme, so he knew us.... I got one of my drivers to drive to his house and he uploaded a video to Instagram*” (Interview: MD, July 2020). This approach reflects effectual means by leveraging personal relationships in order to create new market opportunities (Sarasvathy, 2009). Overall, these efforts underpinned online growth, with celebrity endorsements identified as contributing to two-fold growth in the firm's social media following.

To support future decision-making, the producer also recognised a need to **establish continual ongoing sales monitoring**. The data this would generate would be critical to understanding the new environment and assisting future planning and decision-making. Thus, rapid changes were made to internal activities, ensuring more data were collected and analysed daily, subsequently uncovering demand as it emerged. To increase flexibility the producer also utilised **fast cycle incremental product and packaging developments**. Whilst efforts to expand new channels would assist selling tomatoes and mitigating waste, considering uncertain and ambiguous demand, combined with imminent volumes of tomatoes ready for harvesting, processing produce would be critical to extending life and removing temporal constraints on selling perishable tomatoes. Several tons were immediately processed: “*this would enable us to ensure costs should at least be able to be covered and avoid fruit perishing*” (Interview: NPD Manager, June). To achieve this, several rapid and incremental adaptations to existing recipes were initiated. This builds upon the findings of Ortega et al. (2017) in which the use of effectual logic in product development was most effective in situations of higher uncertainty. The rapid developments achieved were critical as many varieties were unsuitable for existing processing methods. For example, unsold stocks of one large plum-shaped tomato grown for the restaurant chain that fell into administration in the initial weeks of lockdown, required development of a new method of cutting and drying to enable processing using existing equipment to create a new product marinated in oil. This benefitted the producer: “*we didn't really waste anything, we froze a few tons, we processed a few tons we wouldn't normally in that price range*” (Interview: MD, June 2020). Similarly, several new packaging formats were introduced, to integrate low selling varieties into new mixed produce boxes.

Whereas effectual selling suggests that customer needs are responded to (McGowan et al., 2020), Tomato Co. did not know what customer needs might be due to the extreme disruption. Accordingly, the above actions were taken to experiment, by launching multiple initiatives simultaneously, without the ability to foresee potential returns or success.

#### 4.2.3. Grafting required resources

Changes to activities resulted in resource gaps. This theme uncovers the approach adopted by Tomato Co. to pursue new opportunities whilst

mitigating expenditure, ensuring any loss would be affordable (Dew, Sarasvathy, Read, & Wiltbank, 2009), in the initial response to Covid-19 in which the environment remained uncertain and ambiguous. Management highlighted large investments could not be justified, due to resource constraints and uncertainty over outcomes, until the relative success of each required action became apparent.

The team needed to temporarily **bridge resource gaps to support the trial-and-error learning** period. Building on studies identifying the constraint of resource availability (An et al., 2019; Berends et al., 2014), in the short term, changes would need to be underpinned by utilising existing resources and gaining access to affordable new resources. Attempts to further exploit resources already present were identified. For example, with respect to product development, this was underpinned by utilising existing internal production capabilities to mitigate costs and facilitate rapid deployment. Likewise, an abandoned decommissioned refrigeration facility was cleared out to act as backup in case of a Covid-19 outbreak in the main facility.

Alongside the use of internal resources, the firm utilised **partnering to cope with emergent resource gaps as required actions unfolded**, drawing on existing networks of contacts and partners. For example, a contract with a European pepper supplier had previously also involved discussions to provide both tomatoes and peppers to one recipe box scheme requiring both. This idea had not gone beyond initial discussion, but the extreme disruption led to both parties re-evaluating the idea, determining this was a good time to experiment. Likewise, to address personnel shortages, the owner-manager contacted a local recruitment agency that specialised in hospitality, with whom he had a personal relationship, to assist in addressing personnel shortages. Furthermore, to expand the window in which produce could be processed prior to perishing, refrigeration equipment was rented from a local firm. Utilisation of the firm's network was also underpinned by benefits of **utilising geographically proximal resources**. This facilitated access within lockdown, whilst many businesses, distributors and haulage firms were closed or providing limited services. For example, marquees and haulage containers were hired from local firms to provide additional storage, creating further space to support social distancing. Thus, resources utilised were both affordable and accessible. These findings reveal Tomato Co partnerships founded both on selection of actors who would appear to be considering their problems as opportunities that could be leveraged to mutual advantage (Sarasvathy, 2009), as well as accessing local resources considering the challenges presented by Covid-19.

#### 4.3. Initial stabilisation

Our third-dimension, Causal Rebuilding, captures Tomato Co's subsequent resilience response in the period following initial emergence of the pandemic, covering June to September, in which a shift occurred in emphasis of actions and reasoning underpinning them. Having overcome their constrained cash flows in the first phase through effectual learning, while learning about the environment, subsequently Tomato Co. began to implement long-term strategies to promote resilience through causal rebuilding (Ates & Bititci, 2011; Pal et al., 2014). This dimension consists of three themes revealing how learning from the initial period was utilised as a foundation for planning and decision-making. Prior learning underpinned management's ability to undertake more permanent adaptations, and resource investments would enable it to emerge into a new normal founded upon a substantially changed business.

##### 4.3.1. Planning founded on experience

The first theme underpinning causal rebuilding highlights how Tomato Co. utilised learning and understanding developed through initial effectual experimentation responses, to establish a more controllable situation where it was more able to define viable opportunities for decision-making and investments. Prior studies show how firms adopt a configuration of effectual and causal logics, often in response to



government institutions and their actions (e.g. Harms et al., 2021; Laine & Galkina, 2017). In contrast, in our study, management made the decision on when to apply the appropriate logic. Through initial experimentation, several different products and channels were deployed and the relative opportunities they presented better understood. This was supported by close **vigilance of sales to identify emergence of the new equilibrium**. The senior team now constantly monitored sales to understand and evaluate emerging patterns, critical to underpinning this change in logic. Further, whilst sales forecasting initially played a lesser role in the uncertain environment, increased vigilance allowed observation to identify how sales across channels were becoming more stable and predictable. Tomato Co. was better able to plan and predict (e.g. Sarasvathy, 2001b), underpinning this change in logic. Founded upon prior actions and resulting information, it was now possible for **decision-making driven by observations from experiential learning**. Sales to retailers and food service, whilst maintained to an extent, saw notable reductions, particularly with respect to food service. With this decline evident and concerns over liquidity, the producer took the decision to shorten payment terms for customers to seven days, excluding those that had continued ordering throughout winter and pandemic periods, with less emphasis placed on this market.

In contrast, by June online sales had increased by more than 2000% compared to original estimates at the beginning of the year. New budget and sales estimates were created each week; subsequently, sales exceeded targets each consecutive week and calculations had to be updated continually as a result of the fast-changing environment. Moving into July online sales were largely maintained, whilst other direct-to-consumer schemes saw falls in sales. Only small reductions were evident since the June peak, which was positive as larger reductions were often evident at this time of year across channels, as consumers went on holidays or changed routines over summer. Hence management established: “Consumers have come to like purchasing direct from producers... that has been key to our growth and recipe box growth... we didn't know that at start of lockdown” (Interview: MD, November 2020). This knowledge provided foundations for more permanent business re-engineering, which could now be supported by investments to move towards a future in consumer online sales and marketing.

#### 4.3.2. Reorganisation to exploit equilibrium

Whilst Tomato Co.'s initial response enabled it to open new channels, subsequent growth now provided foundations for action to change operations to achieve more permanent alignment. We identified two themes, which broadly reflect a change to a plan-oriented strategy (e.g. Hauser et al., 2020; Yang et al., 2020). First it aimed to achieve **integration and exploitation of successful routes to market into operations**. Management intended to optimise online channels and ensure further expansion. For example, a phone application intended for independent retailers to enable simpler ordering was under redevelopment to enable it to be expanded to consumer markets with increased functionality. Plans were also put in place to develop a new subscription service facilitating ongoing purchasing and provide additional revenues, whilst deploying direct-to-consumer marketing campaigns. These actions reflected a shift in emphasis to re-engineer around the now growing business: “what we did originally was all organic [discussing initial growth of online in Covid-19] in terms of getting consumers to buy from us online, but now I am looking at how we define an online marketing strategy, how you start tapping into this Facebook, Google and email marketing” (Meeting: MD, August 2020).

Tomato Co. undertook a shift in activities, moving from minor adaptations, to **seizing opportunities through new product innovation**. Alongside growth of its direct-to-consumer channel, growth in sales of packaged products had begun to emerge. Further, with opportunities to promote such products directly to consumers through online channels now available, development of innovative packaged foods was a key opportunity. Formalised projects were initiated to create new ranges of products over the following 18 months (e.g. Cooper, 2018), including a

line of sauces, a novel pickled tomato and a dried tomato snack. Moreover, working with a new packaging supplier it developed an improved format for direct-to-consumer sales, to introduce: “new packaging for the online business to make sure the product arrives looking good and in the right condition” (Interview: NPD Manager, September).

#### 4.3.3. Reallocation of resources

Supporting adaptation to a new normal, the management team felt sufficiently informed on the future potential of its new businesses. It was now able to **invest and apply resources to newly established aims in the new normal**. Investments focused on achieving defined goals (e.g. Ivens & Pardo, 2007; Yang et al., 2020), of growing online consumer business and associated packaged goods business (such as a new drying facility for food processing). Entering summer, work was undertaken to redevelop the website for improved usability and further grow online purchasing. A research project was established to evaluate potential investments in establishing their own delivery service across London, analysis revealing it to be one of the firm's largest markets. New staff were recruited to support new businesses. Investments were also made in operational and management team training to provide improved capabilities to support new operations, which began in summer: “...upskilling the business and investing to set up for our online business and provide skills needed, with a wider range of products including peppers to meet demand” (Interview: MD, February 2021). For example, establishing a sales team dedicated to third party recipe box schemes. Training investments also supported ongoing recruitment and provided all staff with training on a wider number of tasks, to ensure, should staff need to self-isolate, other team members would be more able to undertake required tasks. The decision was also taken to reallocate space in greenhouse facilities to grow a broader variety of tomatoes, founded upon insights gleaned in prior months which revealed that appearance of new varieties online stimulated demand.

To further support adaptation, the producer worked externally to **build new collaborations to exploit growing channels**, driven by needing to reinforce online sales growth. First, to ensure reliable deliveries and lower risk, Tomato Co. worked to move away from its reliance on a single delivery firm and integrate a new partner that demonstrated a greater interest in holding a long-term relationship designed to meet their ongoing needs (e.g. Hakansson et al., 2009). A new partnership was also developed with a data analytics company, enabling it to develop more targeted and content-rich emails to support this channel going forward. This would help maintain and build the buying direct model, which was working well, putting them in greater control of future success, whilst assisting in diversification of customers and distribution.

#### 4.4. Embedding the benefits

Our final dimension, Establishment of a New Normal Establishment of a New Normal, captures the pattern of outcomes achieved through the resilience process (e.g. Battisti et al., 2019; Sutcliffe & Vogus, 2003) in response to Covid-19. It captures how Tomato Co. benefitted from adaptation and learning to foster its resilience (e.g. Altinay et al., 2016; Battisti et al., 2019; Weick & Sutcliffe, 2011), ensuring both survival and growth. This dimension consists of two themes, capturing benefits of diversifying the business, and financial outcomes, which resulted from effectual learning and causal rebuilding responses.

##### 4.4.1. Financial performance

Responses to the pandemic ensured **stability throughout the disruption period**. As previously mentioned, critically, this mitigated production waste. In contrast to other firms in the food sector (e.g. Harms et al., 2021), it avoided a negative impact on liquidity, which subsequently underpinned its ability to invest in causal rebuilding in the later period. Whilst reduction in sales was experienced across most of the food service sector, impacting many competitors, the producer

maintained relatively stable volumes overall as a result of the variety of channels it established. These findings reflect the benefits to the firm's survival and stability (e.g. Battisti et al., 2019). In addition to stability, the SME also experienced **growth of sales turnover** by summer, due to the flourishing of the recipe and vegetable box schemes it was now working with, its efforts in farmers' and street markets, and, as a result of efforts building its own online direct-to-consumer channel. This improvement in turnover was notable considering the firm had lost the majority of business it was traditionally reliant on. Hence, had it not adapted, the producer would have been left with dramatically depleted sales. The combination of these themes identifies how Tomato Co. was able to overcome the risk of weak cash-flows (e.g. Ates & Bititci, 2011; Pal et al., 2014) which would have reduced its capacity to implement the long-term strategies required to promote its resilience.

4.4.2. Business diversification

Resulting from adaptations and learning (e.g. Battisti et al., 2019), the firm was able to identify and exploit new channels and business opportunities. As opposed to bouncing back (e.g. Bonanno, 2004; Sutcliffe & Vogus, 2003) to prior normalcy, Tomato Co. created an expanded new normal as a more diversified firm. Having moved away from heavy reliance on food service and online food retailers, it now foresaw diversified business opportunities, and possessed access to broader varieties of routes to market. Hence it had a **broadened customer mix with direct-to-consumer channels**. This provided greater stability and resilience going forwards. Management felt it was: *“in greater control of our own destiny... less reliant on retailers and with a route straight to market”* (Interview: Business Development Manager). Beyond channels and the packaged foods already created and launched, it was now presented with increased diversity of opportunities beyond its pre-pandemic fresh produce focus, with the **opportunity of a new identity as a packaged foods business**. The company was now analysing: *“growing more varieties and specific varieties for development of packaged products”* (Meeting: MD, August 2020), producing tomatoes that would be optimal for purpose, alongside using those previously grown. Thus Tomato Co. now believed it possessed a viable business opportunity to sell

packaged foods direct to consumers, and through online retailers, independent retailers and markets it served.

5. Discussion and contributions

While there may be alternative explanations and we cannot be sure the firm has not previously, in non-disrupted times, also taken an effectual learning approach, this study is looking specifically at how a firm deals with a major disruption. Our findings, captured in the themes and dimensions described within the preceding section, enabled the generation of a framework (Fig. 2). This captures the firm's movement into an effectual learning approach in the initial response to the disruption caused by the pandemic (left of Figure), followed by a causal rebuilding process as decisions were able to be made founded on experience (right of Figure). The point at which the firm transitioned between these two approaches is represented by Point A. This is further captured in the following discussion.

Whilst resilience is traditionally associated with uncertainty (difficulty in predicting or inferring), the disruption of the pandemic also presented high levels of ambiguity (unknown unknowns) and risk (Ali et al., 2021; Amankwah-Amoah et al., 2020; Donthu & Gustafsson, 2020). Combined, they caused great disruption. This impacted supply and demand sides simultaneously in an unprecedented manner, Covid-19 and associated social disruptions underpinning this impact (captured in the upward arrow to the left of the figure). Response to this disruption was associated with high depth and breadth of change achieved rapidly. In response, initially the firm adopted an effectual learning approach (e.g. Deakins et al., 2012) (captured in the bottom left of the figure). This was necessary, due to the firm's scarce resources, significant changes required, and need to learn and act concurrently to develop understanding, maintain sales, and reduce produce loss. Hence, we propose:

**Proposition 1.** Utilising effectual learning in immediate response to environmental disruption enables an organisation to develop resilience by experimenting and learning through trial-and-error with its network and reconfiguring existing internal resources.

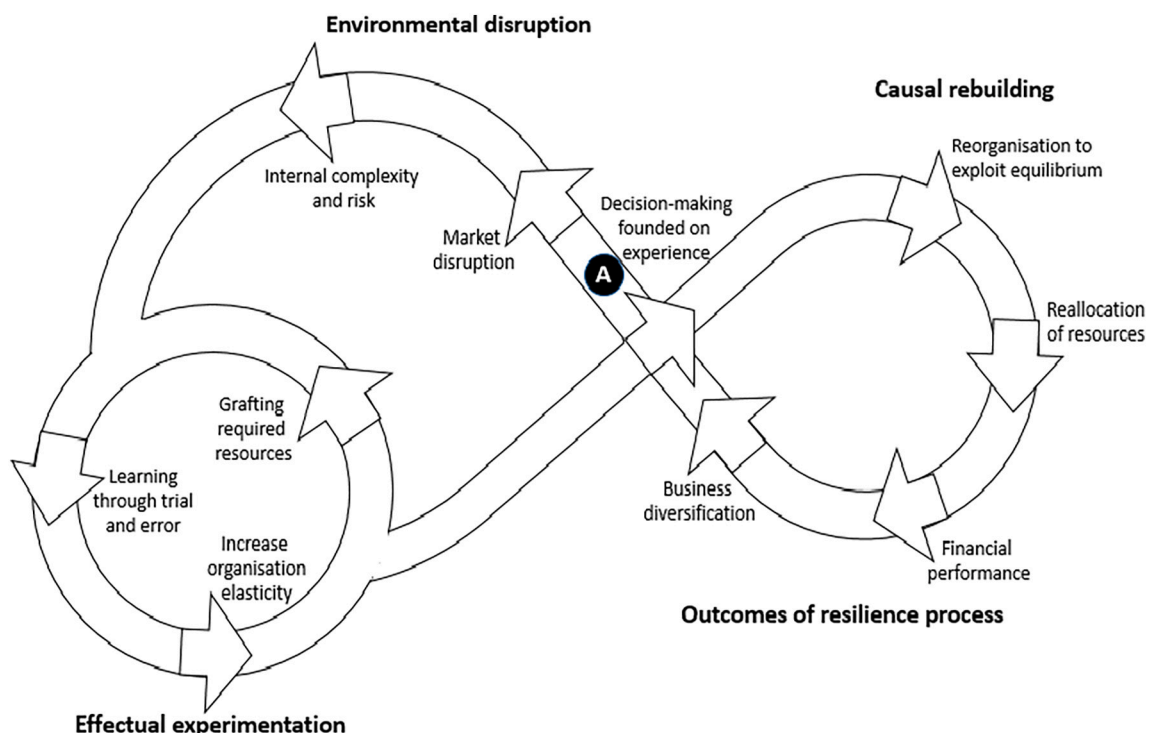


Fig. 2. Effectual-Causal Learning-Resilience Processes Identified.

Through the effectual learning period, the SME gained understanding of opportunities in the new normal. Monitoring and evaluating sales against forecasts allowed management to uncover when it became possible to predict sales and undertake future planning (e.g. Ates & Bititci, 2011; Pal et al., 2014). At this point, decision-making across the firm's activities transitioned to causal rebuilding. Thus, with the increasing reliability of sales data against forecasts a second trigger was created, to cement a new normal in place through investments and more permanent reconfiguring of operations. This formed the nexus point, at which decision-makers utilised the growing extent to which they were able to plan and predict, and could make decisions based on the success of their prior actions in order to begin causal rebuilding. Thus, benefits were embedded to generate resilient outcomes.

Our findings capture temporal flows of resilience. The initial, effectual, period allows immediate response and sales bounce back, whilst also providing a critical learning period in which knowledge can be built up prior to investment. This mitigated delay between emergence of a new environment and ability to respond to it. Hence, effectual experimentation forms a foundation for more permanent re-engineering of the business, founded upon improved understanding of the environment. By exploiting the nexus between effectual and causal reasoning, it was possible for Tomato Co. to initially undertake a learning resilience mode in a dynamic manner, whilst avoiding the response delay and recovery this mode is associated with, delaying investments until after the response had proven viable. Hence:

**Proposition 2.** Switching to causal rebuilding once there is an ability to plan and predict a new equilibrium enables an organisation to develop resilience by reconfiguring its resources and networks to serve existing markets and build viable new markets in a new normal.

Stephens et al. (2020) acknowledged the problem of establishing stability as a foundation to bounce back when prior assumptions no longer apply. Our results identify how the firm moved from effectual to causal decision-making logic as a result of their ability, or lack thereof, to plan and predict. This helps to explain how it responded to the widespread disruption caused by Covid-19 in a short time period and ultimately evolved with new business opportunities (e.g. Mithani, 2020). Again, the initial effectual response limited the time delay to understand the environment and implement this mode. In terms of environmental disruption, for market disruption the research provides support for the view that implications of change are uncertain and effectiveness of responses unclear until post-deployment (Denrell, 2003; Walrave et al., 2011). Further, in terms of causal rebuilding, challenges with regard to dynamic resilience of identifying if the new equilibrium is as viable as the original or previous equilibrium (Mithani, 2020), is indeed found to be met through decision-making founded on experience. Specifically, use of effectuation in initial responses to disruption enabled practice-based learning to occur, decision-making founded on experience determining the point at which learning subsequently enables investment in recognised viable opportunities for growth and stability in the new normal.

Finally, in terms of outcomes of resilience, there is support for the firm being able to capitalise on its established nexus of supply and demand (Linnenluecke & Griffiths, 2010), in this case via business diversification. The effect of this on financial outcomes is to establish a new normal, persisting over time which recognises “*previous equilibrium may be impossible in complex ecosystems because they can shift between multiple stable states*” (Meerow & Newell, 2015, p. 237). The research identifies this was achieved through combining effectual and causal reasoning in a sequential manner within each of its activities through learning and understanding, organising response and accessing resources to enable this. This enabled response to the risks of the pandemic, and the resulting disruption it caused. Building on prior studies identifying firms' use of effectual and causal logics in an uncertain situation (Welter & Kim, 2018), our research therefore proposes resilience sits at the nexus between effectual and causal logic, (Point A Fig. 2). Hence we propose:

**Proposition 3.** The ability of an organisation to recognise the nexus point between effectual and causal stages of responding to environmental disruption is associated with increased resilience.

The above findings highlight how the firm was able to achieve dynamic resilience, with the opportunity to build a new identity in packaged foods, improvising and thus recovering from the shock (Goll & Rasheed, 2011; Ortiz-de-Mandojana & Bansal, 2015; Sullivan-Taylor & Wilson, 2009; Taşan-Kok et al., 2013). Through use of effectual learning and causal rebuilding, normalisation became an opportunity to create a new identity. The initial effectual experimentation provided an opportunity to improve and respond to the disruption as it evolved, subsequently enabling causal rebuilding as normalisation emerged.

Our study provides three main contributions to the literature. Our first contribution is to the extant literature on the interplay between effectuation and causation and their application by firms in the face of disruption. Here, whilst it has been acknowledged that both logics are used (e.g. Harms et al., 2021; Laine & Galkina, 2017), how firms transition between them, and the underlying rationale for doing so has remained unexamined. Our findings contribute by uncovering the pattern of effectual and causal logics in the face of the extreme disruption caused by Covid-19. We suggest that resilience lies at the nexus between these two logics. Applying effectuation in the initial response supports the firm's ability to rapidly acquire resources, adapt and learn, which is necessary for resilience (e.g. Altinay et al., 2016; Battisti et al., 2019; Weick & Sutcliffe, 2011), and through these actions it was possible to subsequently transition to causal rebuilding. Only when the firm was able to establish that sales could be predicted was it able to move to a causal logic. Fig. 2 conceptualises the relationships between the effectual and causal responses of the firm and identifies the mechanisms that were employed within each of these two types of responses to the disruption.

Our framework also contributes to studies of effectual and causal logics. Previous work has shown effectuation may impact resilience in several contexts (Chadwick & Raver, 2020; Chrisman et al., 2011). We provide a more nuanced understanding of interrelationships between decision-making logics and reveal the use of effectual logic to initially test ideas, and where these are successful/gain traction, a subsequent move to causal approaches can facilitate further exploitation. In doing so, we respond to both the calls of Eggers' (2020) for research applying effectuation concepts to understand how SMEs cope with disasters and Baraldi, La Rocca, Perna, and Snehota's (2020) to further understand how using an entrepreneurial lens could further extend theory. Our framework also contributes to Chandra and Paras (2020), Nelson and Lima (2020) and Akinboye and Morrish (2022), providing the first longitudinal analysis of effectuation in a Covid-19 life-threatening situation within a business context. In doing so, we also identify links between effectuation and causation in the SME context.

Our second contribution is, building upon McGowan et al. (2020) we reveal how a small, resource-constrained firm, initially applied an effectual logic to acquire the necessary resources and reconfigure and subsequently through casual rebuilding it reconfigured its resources and reorganised, once the new normal had emerged. Hence this reveals how the firm was able to respond through this transition, despite a lack of resources.

Our third contribution is to broader studies of resilience and disruptive events (e.g. Mithani, 2020). We contribute to the limited literature on resilience as a process (e.g. McLarnon & Rothstein, 2013), highlighted as insufficient (see Duchek et al., 2019), and specifically the lack of studies in an SME context (e.g. Demmer et al., 2011). Our findings show the importance of temporality in knowing when to move between effectual learning and causal allocation of resources to improve firm resilience, effectual experimentation enabling fast response, mitigating both delay and resource limitations within the initial period. These results help explain how the case firm was able to respond effectively and rapidly to the pandemic (e.g. Gerald et al., 2020;

Kuckertz et al., 2020). This is of relevance to SMEs, given the resource constraints they often face, the research supporting the crucial importance of adapting and learning (Battisti et al., 2019), continuously improving, and adopting more flexible, adaptable ways of doing things (Altinay et al., 2016). It also shows, however, the importance of sequencing the stages (e.g. Fisher et al., 2019) and that, crucially, this must be allied to an understanding of when to apply resources causally to achieve more long-term resilient outcomes. Specifically, by identifying a new equilibrium, and only investing new resources to rejuvenate the firm once a viable path was uncovered, reorganisation could then be undertaken to solidify the firm's position in the new normal.

## 6. Conclusions, limitations and future research

The risks, combined with simultaneous impacts on both demand and supply sides, created by Covid-19 are relatively rare, creating greater environmental disruption than would normally be faced. For Tomato Co., the effectual experimentation consequently undertaken therefore required greater breadth, depth and speed of change than would previously have been undertaken. Causal rebuilding was subsequently undertaken when there was understanding a new normal existed and causal investment of scarce resources was required to embed benefits of identified resilient processes (including from experiential learning) into the organisation to generate resilient outcomes. The case therefore revealed, in a dynamic, high risk uncertain environment, there is little to no existing frame of reference for causal thinking to occur against, with effectuation underpinning an effective, appropriate response to minimise investments and respond rapidly as situations evolve. Only when the organisation learnt, through effectual behaviour, was it able to gather information for causally driven decision-making and investments to rejuvenate its business.

## Appendix A. Topics Addressed in Interview Guide

Overview of broad areas explored in the interviews:

Update from firm/managers. Current Covid-19 events and their impact on the producer.

Follow-up questions relating to prior events or actions detailed in earlier data collection.

Update on any other key related internal or external changes or events pertinent to the study. How the environment is currently being monitored.

Overview of current performance and understanding of key challenges faced.

New understanding being acquired of the external environment and sources of that understanding. How management are learning, preparing and developing understanding.

Overview of planning in response to events, including challenges in planning.

Actions in sales and marketing in response to Covid-19 or its wider implications.

Actions in supply or distribution in response to Covid-19 or its wider implications.

Logic and rationale for actions in sales/marketing and supply/distribution. Overview of decision-making.

Actions currently being undertaken by the firm in response to the environment.

Overall and current resource constraints, requirements and gaps.

Investment or sourcing of resources, reconfiguration or changes in resourcing in response to needs.

Logic and rationale for actions in resourcing. Overview of decision-making.

Current changes to internal operations and management in response to the impacts of Covid-19.

Changes to external partnerships, networks or collaborations in response to the impacts of Covid-19. Selection of partners or collaborators.

Logic and rationale for changes to operations, management and partnerships/networks. Overview of decision-making.

Outcomes of actions undertaken and their implications on future plans and responses. Assessment of, or data on, financial and business outcomes.

## Appendix B. Aggregate Dimensions, 2nd Order Themes, 1st Order Categories and Supporting Evidence

Dimensions	Themes	Categories	Supporting evidence
Environ-mental disruption	Market disrup-tion	Ambiguity of demand in unprecedented environment	<p>“Things are changing so quickly and it's hard to see how it's going to develop... and if the markets shut that's another source of cash revenue lost” (Meeting: MD, April 2020)</p> <p>“Food service was shutting down, people were switching to buying long shelf life products. We don't know what is going to happen next”... I realised we had served one business over the winter and we had a 45 day payment period... and we</p>

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Dimensions	Themes	Categories	Supporting evidence
Effectual improvisation / experimentation	Internal complexity and risk	Uncertainty across existing markets and channels	realised we were probably never going to get that money back" (Interview: MD, June 2020) "We were experiencing significant disruption across each market... At the beginning we also saw a switch to long-life shelf products at the expense of fresh produce and a reduction in open markets." (Interview: MD, June 2020) "Food service for us was about 35%, I worked it out that between April and May and the end of June it would have cost us in the region of three quarters of a million... some customers have not been able to pay us from over the winter" (Meeting: MD, July 2020)
		Timing relative to produce temporality and seasonality	"One variety was grown for a restaurant chain that went into administration... more of this variety had actually grown than expected due to above average weather conditions and in experience in growing the variety, creating a need to respond with weeks until it would be ready to pick." (Meeting: NPD Manager, July 2020) "...I have got all this product in the ground just coming at me and I can only stave it off for a couple of weeks and then we are stuffed... we would have all this product to sell.. and at the start people were largely stocking up on tinned foods from supermarkets" (Meeting: MD, May 2020)
		Impact of life-threatening event on personnel and operations	"So, if someone in the packhouse got Covid-19 that could wipe out the workforce... and it can take a long time for tests to come back" (Meeting: MD, April 2020) "The other challenge was product mix, so when we were supplying food service we would just put all the tomatoes into a big box... so we had a greater number of punnets to pack into, so that put more pressure on the business as the product mix was different and the packaging was different... this impacted on operations" (Interview: MD, July 2020)
		Loss of established workforce	"I think personnel was the biggest challenge... We had capacity issues, you can get the orders in but you cannot pack them.... by the time we reacted a lot of the borders had closed down, so we had a lot of staff in Latvia and Romania who couldn't come back". (Meeting: MD, May 2020) "We had to staff the packhouse with new starters... this drove inefficiencies. It has created quite a lot of stress and it is tough to find the numbers" (Interview: MD, June 2020)
		Learning through trial and error	Understanding through 'doing' as the environment emerges "We have learned as we have gone through the year, developing an understanding of what works in this new situation" (Interview: Business Development Manager). "How do we get an online business going?... we adapted, we had a page built into our website for consumer sales, we did that at lightning speed" (Interview: MD, July 2020)
		Identify and capture a range of opportunities across existing and new frontiers	"In terms of markets, we split the business in two, historic business and new business... [discussing markets] we know they are a good cash generator, so we were keen to maintain them.. This would enable us to exploit potential opportunities...We then took our sales team and half of our sales time focused on our historic business, second half of the sales team looking at new business onboarding" (Interview: MD, June 2020) "What are the opportunities out there, who's doing something different, who was in food service and is now doing delivery boxes or this or that.. and then what other wholesalers are out there, so we come up with a list of opportunities, and then bought someone in to try to turn those opportunities into reality... we got quite a lot of businesses onboarded" (Interview: MD, June 2020)
		Preserve and build potential new routes to market as options	"We had previously had a discussion with [names direct-to-consumer recipe box scheme], but their business grew almost overnight... we already supplied [names two other online direct-to-consumer recipe box schemes] their business just rocketed." (Meeting: MD, June 2020) "[discussing existing and new leads] especially in London, some of our food service customers started doing direct delivery service to customers, we started supplying new wholesalers we had not come across before, other people doing big recipe box schemes we hadn't supplied before." (Meeting: MD, July 2020)
		Deployment of low-cost marketing to support new channel building	"Most of the learning was experiential... We just came up with a list of leads from social media, from online, or whatever, so we just bombarded people and say go through them and then we systematically go through them." (Interview: MD, July 2020) "We have a PR company... so they identified a few targets and our business development manager contacted people... such as food photographers, food writers for magazines, newspaper, it all spiralled from there.. " (Interview: Head of Sales and Marketing)
		Establish continual ongoing sales monitoring	"We increased the frequency of our sales monitoring and forecasting in the initial weeks of the pandemic to ensure that we could keep track of the fast-changing situation." (Meeting: MD, June 2020) Budgeting and forecasting being implemented on a weekly basis from April, with forecasts being broken each consecutive week. This required the recruitment of new staff to manage online sales. (Extract from Meeting notes in June 2020)
		Fast cycle incremental product and packaging developments	"...one variety that grew well above estimates in a three-week period, and the main customer had gone into administration... so to utilise the product [the firm] had to process a lot of fruit ... this required us to develop new ways of utilising it fast, adapting recipes..." (Interview: NPD Manager) "We modified several products to utilise different varieties... we also processed a

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Dimensions	Themes	Categories	Supporting evidence
Causal rebuilding	Grafting required resources	Bridging resource gaps to support trial-and-error learning	<p>lot of class one fruit into bottles, which we wouldn't normally do, but to my mind if we could get back the cost of production it's better than nothing so at least when it's in a bottle it has a physical stock value to it and at least we can recover our costs or make a margin." (Interview: MD, July 2020)</p> <p>".. [Tomato Co.] ended up with a lot of one variety that was unsold... [the firm] just turned it into a different product, creating a mixed product, repacking it into a variety pack so that it could be sold to another retailer." (Interview: NPD Manager)</p> <p>"We started buying up packaging in a big way, but then we had no space. So, we had to hire some articulated lorry trailers to use as packaging storage space... these were acquired from a firm that we know, which had lower business [volumes] in the pandemic." (Interview: Business Development Manager)</p> <p>"On the satellite site we used to have a drive-in fridge that hadn't been used in years... so we stripped that out completely.. cleaned it and then put a door on it and put a table in it and then marked it up for 2 m distancing and then set it up as a secondary packhouse with a different team of people.. so, if someone in the packhouse got Covid-1919 we would have a temporary backup facility... this would help avoid losing half the workforce." (Interview: MD, July 2020)</p>
		Partnering to cope with emergent resource gaps as required actions unfolded	<p>"We established a partnership with a pepper supplier in the Netherlands to gain access to a new recipe box scheme as a client.. accelerating the development of a contract." (Interview: Business Development Manager)</p> <p>"We did a lot of organic [social media] stuff that was not paid for, a lot of goodwill.. we realised that we had no food service business and a lot of crop and we thought the only thing we can do is to try to develop an online business..." (Interview: Head of Sales and Marketing)</p>
		Utilising geographically proximal resources to facilitate access	<p>"When Covid-19 kicked in our regular staff were not able to return, so we were solely reliant on trying to recruit local people.... we put an advert out in a local paper and one girl I knew from school owned a local recruitment company" (Meeting: MD, April 2020)</p> <p>"We rented freezers from a local firm to get them in quickly and respond.. some of the tomatoes we had grown for food service, because of the good weather we had so much volume ...and then we could use that frozen product and make it into product at a later date" (Interview: MD, July 2020)</p> <p>"We needed to change things quickly for social distancing.. but we had to go further, you know our canteens were not big enough, so we had to hire marquees from a local company" (Meeting: MD, May 2020)</p>
	Planning founded on experience	Vigilance of sales to identify emergence of a new equilibrium	<p>"We have found a degree of reliability in the last few weeks (stated in mid-June), so we can now start building towards the future. So, we can now start working on new projects to move this forward". (Meeting: MD, June 2020)</p> <p>"Sales monitoring highlighted growing online sales throughout spring into June, with an increase in excess of 2000% compared to original estimates at the start of the year... this presents opportunities to us for developing [more] processed products" (Interview: MD, July 2020)</p>
		Decision-making driven by observations from experiential learning	<p>"What we did originally was all organic... but now I am looking at how we define an online marketing strategy" (Interview: Head of Sales and Marketing)</p> <p>"We have found that within the online website when we launch new varieties this drives demand and creates new interest.... We are now looking to grow more varieties in 2021 and invest in new types of tomatoes to capitalise on this" (Interview: MD, November 2020)</p>
	Reorgan-isation to exploit equilibrium	Integration and exploitation of successful routes to market into operations	<p>"We [now] supply about 200–300 independent retailers... we were at the point of launching a new app for B2B, but we are now going to take it one step forward and develop and launch it for consumers" (Interview: MD, July 2020)</p> <p>"[discussing July onward] we are developing the website to develop its functionality.. we are building a subscription service... working with an analytics company to develop a targeted mailshot marketing... can now run targeted adverts, which could not be done in the early months." (Interview: November 2020)</p>
Seizing of opportunities through new product innovation			<p>"Freezing produce provided us with time to develop new recipes to supply to our growing direct-to-consumer market.. we now have five new recipes developed and one innovative new product that is like a pickled tomato we have created" (Meeting: MD, July 2020)</p> <p>"We have developed a new dried tomato product using a variety that is like a bell pepper shape, which we couldn't have previously used to for creating a dried product" (Interview: NPD Manager)</p>
Realloca-tion of resources	Invest and apply resources to newly established aims in the new equilibrium	<p>"A new product development project investment [over two years] is now core to the company's diversification, to create new products for these markets" (Interview: NPD Manager)</p> <p>"We now train staff to complete a wider number of tasks, which increases flexibility... we have developed new management capabilities in training new staff and are in a stronger position now" (Interview: MD, February 2021)</p>	
		Build new collaborations to exploit growing channels	<p>"Bringing onboard a second delivery firm aimed to expand capacity on basis of growth in direct sales and decrease reliance on existing delivery company." (Meeting: August 2020)</p> <p>"We are now developing a partnership with a data analytics company, this will help further grow our online sales and use of data" (Interview: Head of Sales and Marketing)</p>

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Dimensions	Themes	Categories	Supporting evidence
Outcomes of resilience process	Financial performance	Stability throughout the disruption period	“Coming out of the winter cash is always a concern... the direct-to-consumer business and the markets are more immediately cash generative” (Interview: MD, November 2020) “With the whole online business, not only could we shift product that maybe a retailer wouldn't take, it's also cash generative” (Meeting: MD, August 2020) “The business is now in a good place. We are now £100,000 ahead of where we thought we would be before Covid-19, however this has bought a number of challenges”. (Meeting: MD, July 2020) “We have grown turnover despite the challenges... we are turning over nearly quarter of a million in January which is unheard of... Our sales to [names two direct-to-consumer vegetable box companies now supplying] have grown far beyond what was budgeted” (Interview: MD, Feb, 2021)
		Growth of sales turnover	“we have a completely different customer mix now... I think things have just changed.. we have now seen a growth in online recipe boxes and buying direct from producers. We have found a new audience” (Interview: Head of Sales and Marketing) “Other tomato producers have faced significant price pressure from retailers which we have been able to largely avoid by changing our markets away from this... Pressure to drive cost out, most driving cost decreases”. (Interview: MD, November 2020)
	Business diversification	Broadened customer mix	“...now developing six sauce style products and a dried plum tomato product.. also developing a range of snack foods and vegan foods to build upon direct-to-consumer sales and establish the firm across a broader variety of channels”. (Interview: NPD Manager) “This is now a key opportunity for us going forwards [referring to packaged foods], and we are keen to bring new products to the market through this new channel.” (Interview: Business Development Manager)
		Opportunity of new identity as packaged foods business	

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