

DISRUPTIVE EVENTS AS CATALYSTS OR DISRUPTORS TO DEVELOPING SUSTAINABLE AND RESILIENT BUSINESS MODELS

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Abstract. Today's business environment is characterized by volatility and uncertainty, such as economic crises, technological evolutions, pandemics, wars, corporate scandals, etc. These disruptive events challenge conventional business paradigms, presenting both unabating threats and opportunities for business model obsolescence or transformation. Our study explores the paradoxical role of disruptive events as disruptors and catalysts for creating sustainable and resilient business models through a narrative scientific literature overview. The study analyses some critically relevant academic literature to identify the critical mechanisms through which businesses transform and adapt their functional frameworks during a crisis. The insightful findings indicate that disruption catalyses business model transformation via forced experimentation, market shifts, behaviours, and reactions to regulatory changes. Conversely, disruptions displace business models through disruptive technology, economic dilemmas, shifting marketing trends, regulatory changes, health crises, and environmental and social dynamics. The overview characterizes strategic agility in leadership and operations, resource-based view, business continuity planning, and circular economy principles supported by dynamic capabilities for resilience, sustainability for competitive advantage, customer-centric approach, collaborations, networks, and partnerships, as well as monitoring and managing risk as pillars of a sustainable and resilient business model framework.

Keywords: business model, disruptive events, resilient business model, sustainable business model, disruptions.

JEL Classification: M2, M21.

1. Introduction

More than ever before, the world has become increasingly interconnected, volatile, and eventful. Disquieting and unpredictable situations emerge in a flux with a growing frequency and increasing effects never seen before (Lu & Zhou, 2024). These effects pose significant challenges and unique opportunities for business models to transform into resilient and sustainable ones or to perish. Often, disruptive events emanate from the multi-layered dynamics within the business environment. Reference is often made to factors such as sociocultural dynamics, new technologies, climate change, regulatory changes, and, most recently, the COVID-19 pandemic, wars (such as Russia-Ukraine), and new services (such as ChatGPT) as enablers of new businesses. Paradoxically, while these factors can be powerful catalysts for transforming and innovating business models into sustainable

and resilient ones, they can also render them vulnerable and perishable.

Sustainability has become a strategic concern for businesses since consumer demands and regulatory conformity for socially responsible and environmentally friendly practices continue to rise (Carissimi et al., 2023). At the same time, resilience in business models has garnered immeasurable traction as firms strive to navigate the incidence of disruptions in the volatile and unpredictable environment (Xu et al., 2024). Resilience in business models ensures that a firm's created value can adapt to changing circumstances, absorb shocks and risks, and recover rapidly from disruptions (Lu & Zhou, 2024). Therefore, sustainability and resilience are becoming increasingly intertwined, for resilience in business models must adapt to environmental, economic, and social demands to sustain long-term value for future

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generations. Exploring the nexus and interplay of these dimensions can provide valuable insights into how firms create value and strengthen operational robustness over the long term.

However, despite the inherent promising potentials of the symbiotic relationship of the concepts of disruptive events, business sustainability, and business resilience in fostering longevity, value creation in perpetuity, and operational robustness of business for people and the planet (Weber, 2023; Balugani et al., 2020), contemporary research with this holistic approach and focus is still nascent and lack consensus (Lu & Zhou, 2024). Developing frameworks through which businesses maximise gains from disruptive scenarios are significant and relevant research areas where sustainability and resilience become a significant priority. With the increasing significance of sustainability in business as emboldened by the UN Sustainable Development Goals (SDGs) in an epoch that is eventful and aptly described “as the age of revolution, where change is no longer incremental but rather discontinuous, disrupt and sedition” (Mudaly, 2016, p. 1). The consensus is that disruptive events are disequilibrating forces that wield vital influence on businesses’ success or failures (Lu & Zhou, 2024).

Businesses come up against unexpected obstacles in modelling their enterprises because of disruptive events. For instance, with the outbreak of the COVID-19 crisis, 800,000 Chinese enterprises suffered closures by the fourth month of the outbreak (Zheng et al., 2022). A survey in the US by NBER involving over 5800 SMEs revealed that 43% of them were likely to face closures in the last month of 2020 (Bartik et al., 2020). Yet, businesses supported by 5G, cloud computing, and video conferencing technologies were resilient enough to make breakthroughs. The incessant discontinuities and premature collapse of business models resulting from disruptive events are serious concerns as they serve as precursors and catalysts to economic recessions and the collapse of businesses. However, to sustain their competitiveness and viability, firms must remain agile in adapting to external dynamics by creating strategic shifts to their existing models, structures, and procedures and building unique capabilities and competencies (Baublys, 2023).

Considering the insufficiency of research, integrating the sustainability and resilience of business models caused by disruptive events in the wake of disruptive events’ risks and havoc on businesses, we examine the following *research question*: *How do disruptive events play out as catalysts and disruptors in creating sustainable and resilient business models?*

This paper *aims* to provide a condensed overview and understanding of the dual effects of disruptive events as enablers or impediments to creating sustainable and resilient business models.

As businesses strive to build sustainability and resilience in their models, disruptive situations continue to play a significant role in driving transformation and innovation, prompting firms to adapt and rethink their

business approaches. Against this backdrop, this study *explores* how disruptive events either challenge and/or accelerate the creation of business models that are not only resilient but sustainable in the face of the ever-changing landscape through a sparse literature overview.

There is a heterogeneous conceptualisation of resilience and sustainability due to varied interpretations and definitions. Meanwhile, at the organisational level, there is a bleak conceptualisation of resilience when it is intertwined with sustainability (Xu et al., 2024; Roostaie et al., 2019). Considering this, our study *explains* the concepts and how businesses leverage disruptions as pillars for the positive influence that guarantees long-term sustainability and resilience.

Additionally, our overview *establishes* a simplified, resilient, and sustainable business model framework as a vital pillar in foreseeing, withstanding, and reacting well to disruptive events.

To answer our research question, we use a *narrative scientific literature overview* that offers contemporary perspectives on creating long-term value for transformation and innovation in organisations toward circular, resilient, and sustainable practices. Accordingly, we present and discuss varied insights about the compelling interaction between the independent disruptions and business model evolution that contribute to practical and theoretical aspects of sustainability, resilience, and strategic adaptation in crises.

2. Methodological approach for the narrative scientific literature overview

This study adopted the narrative scientific literature overview, a type of non-systematic literature review. The *narrative approach* seeks to identify some (few) relevant studies that explain a problem of interest.

This specific approach may not have predetermined set-out strategy, only a subject of interest and a purpose of study. Thus, there is neither systematic nor standard protocol to adhere to (Bui & Deakin, 2021; Snyder, 2019).

Bui and Deakin’s (2021) narrative review process, which includes identifying keywords, searching, reviewing the articles, and presenting the significant subject of interest, is applied. As a result, the following process guided the overview of the scientific literature:

1. The *search strategy* included searching Google Scholar and Web of Science databases using relevant search terms such as “disruptive events”, “disruptions”, “sustainability”, “sustainable business models”, “resilience”, and “resilient business models”. The keywords were used in varied combinations to develop the search strings for article titles and abstracts. Both conceptual and empirical studies related to this study were targeted.
2. *Scoping the scientific literature* was conducted to get a general overview of articles that integrated the keywords in a single study.

3. The *inclusion and exclusion criteria* were outlined to ensure a specific focus on the central theme of the study. Thus, articles that interplay the three main concepts, i.e., disruption, sustainability, and resilience, and business models were included, and those with disjointed analyses of the three concepts and business models were excluded.
4. The review process involved *screening the narrowed-down literature* to select articles addressing the subject matter's objectives. The qualifying articles went through careful reading of the abstract to retain the closest and most relevant ones to the agenda of this study.
5. The retained articles were critically *reviewed*, and the significant findings were integrated into the discussion.

3. Explication of the conceptual framework

3.1. Disruptive events

According to Tomicic-Pupek et al. (2023), disruptions are events or situations that precipitate an interruption to the normal flow of processes with the ability to enforce change and transformation with unpredictable repercussions. These researchers alluded to COVID-19 as a demonstrable scenario and how it has brought about significant changes in the world. This view about disruptive events emphasizes the consequential overarching change and innovation that disruptive events occasion. Other scholars conceived disruptive events as multiple risks and challenges that businesses confront during their life cycles, which invariably prey on their vulnerabilities and negatively affect their economic performance (Villasana-Arreguin & Pastor Perez, 2023).

Interestingly, disruption as an all-encompassing term was in use many decades ago. For instance, Christensen (1997) considers the event disruption as a break or a diversion from continuity, where conventional patterns, order, or systems are traditionally changed or provisionally incapacitated. Christensen's (1997) seminal work on disruption referred to innovation, where he asserts that disruptive events usually stem from emerging technologies and processes. They will initially target niche markets, thereby displacing and overriding existing business models or processes. Christensen (1997) demonstrated the creation of a new paradigm shift in the entirety of the photography industry with the mere advent of digital cameras, and now, mobile phones are displacing digital cameras.

It is essential to note that disruptive events can also originate from external shocks, either from the environment or from the socio-political and economic milieu. These situations can bring unpredictable and transformative circumstances, forcing people and organizations to adapt rapidly. As such, disruptive events, as a concept, go beyond technological shifts to embrace extended societal and environmental situations such as economic recessions, pandemics, wars, regulatory changes, etc.

Conceptually, disruptive events can be characterized by at least five common features: uncertainty, scalability, emergence, innovativeness, and opportunities (Table 1).

Table 1. Key characteristics of disruptive events (source: compiled by the authors)

Key characteristics	Explanation
Uncertainty/Unpredictability	Disruptive events usually emerge suddenly, surprising people, organizations, and governments. This brings about uncertainty, compelling stakeholders to rethink their operations and strategies. It is often difficult to foresee/forecast (Vasseur & Backhaus, 2024).
Scale and scope	The enormity of disruptions differs, but their effects are always at multiple levels of industry or society, resulting in far-reaching consequences. For instance, the 2008 global financial crisis displaced financial markets and global trade. COVID-19 disrupted global public health, businesses, and everything (Chiu et al., 2020).
Emergent/temporal nature	Even though the impact of disruptive events may differ in duration, they bring about long-term transformation. Even with the short-lived disruptions, the scars they leave are enduring with sustained changes like the emergence of renewable energy (Deshmukh et al., 2023).
Innovative potential	Disruptive events are catalysts for innovation despite the initial havoc they bring. The turmoil and crisis it creates compel people and organizations to re-strategize and find sophisticated ways of doing things against the status quo (Lu & Zhou, 2024).
Opportunistic in nature	Disruptive events are often inherent with opportunities in disguise, and through the rethinking and challenging of conventional methods, new ideas emerge and serve as new means to an end (Li et al., 2020).

3.2. Sustainable and resilient business models

Sustainable business models describe business models that incorporate social, economic, and environmental considerations into how their operations are done, to create long-term value not only for organizations but for society as well. In developing such a model, a comprehensive framework is required to align the business strategies with the tenets of sustainability. According to Comin et al. (2020), the approach of sustainable business models is underpinned by the outright participation of stakeholders, particularly the end user, within the sustainable value creation process. Apart from the environmental, economic, and social aspects that distinguish sustainable business models from other business models, they are also differentiated by the value they create for multiple stakeholders (Neesham et al., 2023). Thus, the fusion of sustainability innovation into business models calls for integrated thinking, where reconfiguring multiple aspects of business, including capabilities,

stakeholder relationships, leadership, culture, and knowledge management, is crucial (Weber, 2023). Reflecting on sustainability innovation in business models involves envisaging the creation of real, sustainable enhancements in developing superior production processes, products, and services with a strong influence at the social and political levels. The creation of such business models is complex and multidimensional in that the logic of value creation by a firm will holistically integrate economic, social, and environmental goals (Evans et al., 2017).

On the other hand, resilient business models are understood to mean business models capable of foreseeing, adapting, and transforming in reaction to disruptions or crises often emanating from the external business context while empowering the firm with a competitive edge (Xu et al., 2024). Thus, resilient business models are characterized by their ability to withstand and rapidly recover from multiple disruptions or challenges, including economic downturns and technological evolutions. The act of flexibility, adaptability, and leveraging opportunities, even if they are adversarial, makes business models resilient. Recent literature has identified multiple hallmarks of resilient business models to include some of the following:

Adaptability is one of the critical attributes of resilient business models. The ability to adjust strategies and operational processes to rapidly changing market conditions, challenges, and unforeseen disruptions (Xiao et al., 2021). Xu et al. (2024), however, caution that this should not be confused with resistance to change since resilience gets its capacity from the intrinsic features of the system with embedded opportunities to combat critical events. Another significant hallmark is *diversification*. Varying supply chains, revenue streams, and operational markets (customers) will reduce dependence on single failure points. In the case of the COVID-19 pandemic, firms with multiple supply chains were better placed to mitigate the disruptions (Ivanov, 2021). Also, *digital integration* is essential. Incorporating digital technology to enhance operational efficiency and customer interactions is vital (KPMG, 2023). Digital technologies such as AI and cloud computing enhance real-time analysis of data and facilitate swift decision-making (Schiavi & Behr, 2018). Many studies highlight the changes brought by emerging technologies, which have favourable reflections on the improved performance of firms and provide a competitive advantage via innovation. The innovation results in distinctiveness in creating new value and market creation and extension of organizational boundaries, where the generation of new business models is enhanced (Schiavi et al., 2019). According to Chalooob and Saeed (2024), *agile leadership* is instrumental in developing a resilient business model. Having flexible leadership that can make quick but prudent decisions and guide the organization through uncertainty is necessary. Agile leadership is a flexible behavioral approach to assessing uncertainty and complexity from the environment and swiftly reacting efficiently while maintaining a competitive edge (Chalooob

& Saeed, 2024). Another striking characteristic of resilient business models is elaborate *stakeholder collaboration*. Collaborating with stakeholders, such as suppliers, customers, and governments, can foster collective resilience. During the COVID-19 pandemic, firms collaborating well with local authorities navigated regulatory changes (Gölgeci & Kuivalainen, 2020). Ramezani and Camarinha-Matos (2019) posit that an increasing interest in unique business models leveraging the opportunities embedded in collaboration with stakeholders is key. Collaborative business ecosystems create a pool of joint assets and competencies for organizations to be agile and share risks, contributing to better coping with unexpected disruptions. *Integration of sustainability* is necessary for resilient mechanisms. Certain practices engender sustainability, which includes the principles of the circular economy. These sustainable practices contribute to resilience by reducing resource dissipation and environmental degradation (Geissdoerfer et al., 2017). With this practice, supply chain disruptions will pose less risk as recycling and/or circular economic activities will fill the void of sole dependency on new raw materials.

3.3. The integration of sustainability and resilience in business models

A growing general trend in joint study of the independent concepts of sustainability and resilience in business indicates a similarity in goals and approaches. The convergence and effective interplay of sustainability and resilience in business models is pivotal for the long-term success of any business. This represents continuity in value creation, balancing social equity, economic prosperity, and environmental quality, which is known as the Triple Bottom Line (TBL) (Weber, 2023). Sustainability and resilience are growing significant concepts in the modern business context, particularly in an epoch where climate change issues, degradation of the environment, and socio-economic upheavals pose global challenges. Sustainability reduces harmful environmental and social impacts to ensure the judicious use of resources, while resilience focuses on a firm's capacity to withstand, adapt, and recover from multiple disruptions (Xu et al., 2024). The intersection of these concepts presents a formidable framework for firms aspiring to navigate uncertain, complex, and ever-changing global markets. The interplay between sustainability and resilience lies in their emphasis on enduring strategic foresight and managing risks and adaptive frameworks. Even though sustainability conventionally stresses reducing degradation and ensuring equilibrium in environmental and social settings, resilience emphasizes the capability of bouncing back and resetting the disequilibrium in business from shocks, qualifying their complementarity as risk-alleviating models in contemporary business (Weber, 2023).

Specifically, we further discuss how the two concepts intersect in business model configuration.

3.4. Adaptation and innovation towards environmental changes and resilience management

On the one hand, environmental sustainability requires minimizing a firm's environmental footprint by efficiently utilizing resources, minimizing waste, and recycling. This will preserve resources and reduce future vulnerability to environmental shocks, including climate change, disasters, regulatory changes, etc. (Groot et al., 2020). On the other hand, resilience necessitates that businesses create strategies capable of withstanding shocks and recovering rapidly from disruptions. A firm incorporating renewable energy sources, designing sustainable supply chains, and making eco-friendly products will ensure its resilience against energy price volatilities and supply chain disruptions (Chowdhury & Quaddus, 2021).

3.5. Social sustainability and community resilience

The long-term goal of sustainability is to ensure improvement in societal well-being, community development, and equity, which enhances resilience via fostering trust and social order (Porter & Kramer, 2011). For instance, business investments in local societies using sustainable and fair labour practices, corporate social responsibility (CSR), and ethical sourcing will make social capital formidable, which is central to resilience. For instance, firms with strong ties to local networks are well-positioned to recover from societal upheavals, such as customer boycotts and labour market strikes, thanks to their existing goodwill and legitimacy.

3.6. Economic resilience via sustainable business practices

Sustainability is critical in ensuring economic resilience by leveraging enduring thinking against short-term profit motives. Firms cultivating sustainable principles and practices involving waste mitigation, energy efficiency, and green technology usually save costs with financial robustness that gives a positive outlook (Linnenluecke & Girfiths, 2010). This positive outlook, diversified revenue streams, and strategic foresight allow firms to absorb economic shocks and market uncertainty, which are pivotal for building organizational resilience (Teece, 2014).

3.7. Criticality of sustainability and resilience for enduring business models

When sustainability and resilience are integrated, the criticality of enduring business models cannot be over-emphasized. First, it offers a suitable mechanism for mitigating risks while preparing for uncertainty in the business context. The implication is that economic, social, and environmental risks are increasingly intertwined with unpredictable complexities. Firms majoring in sustainability and resilience are best placed to resolve the risks. Thus, the compelling interplay between the concepts presents a comprehensive approach to managing risk where sustainability deals with mitigating environmental risks

and social harm, and resilience ensures the effectiveness of response and recovery systems to unpredictable disruptions (Roostaie et al., 2019). Also, the intersection enhances the competitive edge through differentiation and innovation for firms, regulatory compliance with local and global standards, crisis management and adaptability, and establishing holistic stakeholder trust and reputation management. Therefore, it suffices to reason that sustainability, and resilience cannot be mutually exclusive but complementary and mutually reinforcing in creating robust and long-lasting business models (Weber, 2023). As the business environment continues to witness multifaceted and interconnected disruptions, the significance of these intertwined concepts can only increase in their indispensability to the strategic management of every forward-looking firm.

4. Ways through which disruptive events catalyse business model creation

Disruptive events play several catalytic roles in developing business models in contemporary business contexts. To begin with, one catalytic role of disruptive events in creating business models may come from forced experimentation. Often, disruptions overwhelm and compel firms to rethink new ways to survive the waves of crisis. For instance, during the COVID-19 pandemic, some firms accelerated the adoption and deployment of digital tools to implement virtual/remote work, which led to the implementation of hybrid business models in organisations (Lund et al., 2021). Also, shifts in consumer taste, preference, and behaviour can catalyse business model creation because disruptive events can create opportunities for new business models to emerge and proliferate (Grewal et al., 2021). Another mechanism through which disruptive events play catalytic roles in creating business models is through responding to regulatory and policy changes. Governments and other regulatory authorities often react to disruptive events with relevant new regulations to mitigate the risks embedded in the crisis. Businesses will, in turn, get stimulus and incentives or be necessitated to embark on business model innovation in response to new regulatory requirements. For instance, the EU Green Deal compels firms to implement more sustainable practices and principles to meet their requirements (Fetting, 2020). Additionally, firms can innovate their business models through systematic and collaborative network ecosystems. Disruptive situations stimulate strong collaborations involving firms, governments, and non-governmental organizations to develop innovative and transformative solutions to hydra-headed global challenges. These collaborations promoted the essence of Public-Private Partnerships (PPP) in finding solutions to global problems such as health crises and climate change. The creation of mRNA vaccines by Pfizer-BioNTech during the pandemic period serves as a good reference point for collaborative innovation (World Economic Forum, 2024).

5. The role of disruptive events as disruptors of existing business models

Disruptive events – whether technological, environmental, economic, or social – profoundly impact in making or unmaking established business models. These events test the status quo, compelling organizations to transform or face obsolescence. Firstly, disruptive technologies come in the form of advanced technology, driving displacement and changes to the status quo. Christensen (1997), in his seminal work, refers to this as disruptive innovation, where emerging technologies develop markets that consequently eliminate competitors who are not swift in reacting to the wave of change. A point of reference is the emergence of streaming services such as Spotify and Netflix that have transformed the entertainment industry and displaced conventional cable TV and Physical Media (Ghezzi et al., 2017). Such platforms leverage digital discoveries to give customized, on-demand content that radically changes industry dynamics and consumer expectations. Similarly, the emergence of AI and machine learning equally disrupted the finance and healthcare industry (Topol, 2019).

Secondly, through economic uncertainty and shifts in markets, disruptive events dismantle established business models. For instance, the COVID-19 pandemic and the 2008 economic meltdown resulted in consumer spending, disruption of supply chains, and operational cost increases, which compelled firms to reconsider their models (Baldwin & Di Mauro, 2020). The pandemic also fast-tracked the switch to e-commerce, facilitating Shopify and Amazon's unparalleled growth (Lund et al., 2021).

Thirdly, regulatory changes can also disrupt established business models by imposing new compliance criteria and changes in the market dynamics. For example, the EU's General Data Protection Regulation (GDPR) compelled firms to revise how their data is being managed, which affected their models of operations (Voigt & van dem Bussche, 2017). Similarly, regulations bordering on the environment focusing on decreasing carbon emissions are forcing companies to resort to sustainable practices, redirecting investment into new processes and technologies (Bocken et al., 2014; George et al., 2023). Admittedly, the shift in regulations comes with burdensome compliance costs. Still, they stimulate innovation, creating new markets as the demand for renewable energy has enhanced the increase in wind and solar industries, disorganizing conventional energy models (IRENA, 2020).

Fourthly, health crises such as pandemics, with COVID-19 being a typical example, also disrupt established business models. The abrupt introduction of new health protocols like social distancing and virtual work compelled firms to utilize digital platforms and devices, which digitally transform many sectors (Dwivedi et al., 2020). Also, the health delivery sector witnessed the quick introduction of telemedicine to increase the efficiency and accessibility of healthcare (Hollander & Carr, 2020).

Fifthly, the environmental and social dynamics greatly influence business models. For instance, social movements such as #MeToo and Black Lives Matter have impacted diversity and inclusion in the operational models of businesses (Gopaldas, 2014).

Additionally, climate change is causing the transition to low-carbon practices, which is affecting conventional fossil fuel and automobile industries (Stern, 2007). For this reason, firms are investing in renewable energy and other sustainable practices, such as electric vehicles, to align with acceptable sustainable global goals (Geels et al., 2016).

6. Remediating disruptive events via the integrated sustainable and resilient business models framework

The intersection of sustainability and resilience in re-configuring business models is indeed a remedying intervention against the risks of disruptive events. According to Teece (2014), integrating sustainability and resilience into a business model will develop a holistic framework for business adaptation and help firms thrive during a crisis. The four essential underpinnings of such a business model are as follows: Strategic Agility in Operations and Leadership (SAOL), the Resource-Based View (RBV) approach, Business Continuity Planning (BCP) agenda, and Circular Economy Principles (CEP).

The strategic agility in operations and leadership ensures that the business is anchored on a strong, swift, and flexible reactive structure to change. The strategic direction of the business, its operational processes, and its style of leadership should be characterized by flexibility and malleability, particularly in decision-making. By so doing, firms are best positioned to deal with crises or disruptions (Chaloob & Saeed, 2024). The next essential pillar is the resource-based view approach, as Barney (1991) contended. The resource-based view posits that firms must use unique capabilities and resources to develop a competitive advantage that can endure disruptions. These inimitable resources could be brand reputation, trade secrets, intellectual property, organizational tacit knowledge, and other tangible resources. Also, business continuity planning should guide the way. This approach will outline the identification of future risks and threats and the creation of recovery strategies. Here, the process will be fused with proactive and reactive measures to engender operational continuity where crises or disruptions can only bring minimal or no effects to the firm (Hiles, 2014). More so, the principles and practices of the circular economy must be enforced vigorously. The circular economic approach minimizes the sole dependency on limited resources and enhances the product life cycle, the reuse of materials, and waste reduction. This approach invariably ensures that firms can effectively operate when supply chains are disrupted (Geissduerfer et al., 2017).

Aside from these four essential pillars, firms aiming to create sustainable and resilient business models must cultivate Dynamic Capabilities for Resilience (DCR). Dynamic capabilities are critical for firms to foresee brewing environmental risks, create defensive mechanisms, turn risks into opportunities, and reconfigure resources to take advantage of any impending disruption (Teece, 2007). Teece also contends that dynamic capabilities lay the foundation for firms to build resilience in unpredictable contexts. For instance, a firm can leverage AI and big data analytics to predict and react to likely market shifts ahead of the disruption. Additionally, the firm must leverage Sustainability as a Competitive Advantage (SCA). Principles and practices of sustainability include using ethical supply chains, reducing emissions, and more considerable stakeholder participation and benefits, among others. This contributes to long-term business resilience because the sustainability approach helps firms align well with the shifts in customers' preferences and regulatory trends. Firms can secure their positions in unpredictable market shifts (Porter & Kramer, 2006). Moreover, firms must also make customers central during disruptions. The Customer-Centric Approach (CCA) during disruptions ensures market relevance for firms. Customer-focused feedback loops and innovation are pivotal in meeting customer needs during a crisis (Tronvoll & Edvardsson, 2022). Tronvoll and Edvardsson (2022) argue that radical environmental and contextual changes impact customer experience; therefore, it is highly imperative to comprehend the complex array of interactions among the varied players and the modalities and structures that guide and inform customer experience and decisions. Furthermore, industry Collaboration, Networking, and Partnerships (CNP) are essential during a crisis. Industry-level collaborations with other firms, governments, and non-profit organizations, and partnerships with relevant external interest groups such as universities, solidify firms' resilience. Through all these, firms can exchange requisite knowledge, pool resources, and venture into new markets, strengthening firms' capacity to withstand disruptions (Ramezani & Camarinha-Matos, 2019).

Continuous Monitoring and Managing Risk (MMR) are essential to a sustainable and resilient business model. Putting early warning system detectors of risks and agile decision-making mechanisms in place is necessary to curb the full impact of disruptive situations. Risk management includes identifying, evaluating, and alleviating risks that could pose havoc to business models (Kaplan & Mikes, 2012). This holistic, sustainable, and resilient business model framework is illustrated in Figure 1.

Figure 1 indicates that sustainable and resilient business models are created effectively when the four key pillars of Strategic Agility in Operations (SAOL), the Resource-Based View (RBV), Business Continuity Planning (BCP), and Circular Economy Principle (CEP) are established. These essential pillars must be anchored on the creation of Dynamic Capabilities for Resilience (DCR), the strategic use of Sustainability for Competitive

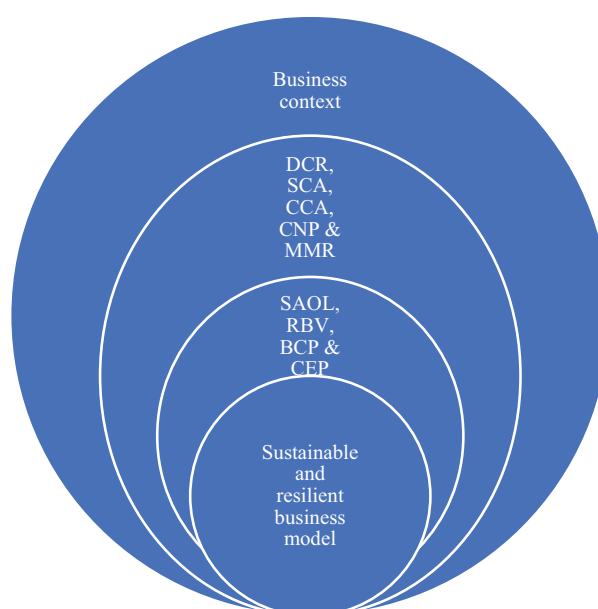


Figure 1. Sustainable and resilient business model framework (source: created by the authors)

Advantage (SCA), using a Customer-Centric Approach (CCA), engaging in relevant Collaborations, Networks, and Partnerships (CNP) as highlighted in Figure 1. Suppose a firm builds such a framework within its business model. In that case, a sustainable and resilient business model is successfully created, which will be proactive, reactive, and adaptive in times of disruptions while minimising negative environmental footprint.

7. Conclusions

The study explored how disruptive events either challenge or accelerate the viability of established business models in a condensed scientific literature overview. We systematized the insights of the existing research into a holistic business model framework that encompasses sustainability and resilience in the rapidly changing business ecosystem. The study outlined the key essential pillars underpinning such a comprehensive business model. As disruptive events never abate in displacing and rendering obsolete established business models, the study considered disruptive events as factors that cause the interruption in the normal flow of processes with risks and opportunities that can change, transform, or be fatal to organizations. We noted that disruptive events are patterned by uncertainty, unpredictability, emergence, embedded opportunities, and transformation.

The study also characterised the intersection of sustainability and resilience in business models, i.e., they are fused with environmental, social, and economic considerations and capable of foreseeing, adapting, and recovering rapidly from disruption. Moreover, it also noted that sustainability and resilience are not mutually exclusive but complementary concepts in modelling business operations that can mitigate risk and prolong the existence of firms. Thus, integrating the two concepts into business

model design presents a unique mechanism for mitigating risks while preparing for uncertainty. The study also confirmed that disruptive events could either catalyse or disrupt established business models.

Sustainable and resilient business models are becoming a holistic framework for firms to counter the risks, seize the inherent opportunities, and provide eco-friendly products/services for the ever-changing markets in disruption-embedded business environments. As the study depicts, a sustainable and resilient business model framework will position firms to traverse disruptions and prepare them to achieve long-term success. By integrating the tenets of sustainability and resilience, firms stand to cultivate strong risk control systems, long-term robustness, competitive edge, financial viability, favourable social and environmental impact, and be readily adaptable to change and transformation.

Disruptive events, dually, can either drive the effective transformation and innovation of business models into sustainable and resilient ones or render them vulnerable, and displace them from effective value creation. These critical events drive business model innovation by compelling firms to experiment, respond to market shifts and behaviours, and conform to regulatory dynamics. Similarly, these critical events collapse and displace business models through technological evolution, economic dilemmas, shifting marketing trends, regulatory changes, transformations, health crises, and environmental and social dynamics.

It is sufficient to view disruptive events as neutral forces in the external environments of organisations. However, the ultimate impact, whether it leads to chaos or fosters innovation, depends on the organisation's established structures, strategies, and reactive mechanisms. Therefore, *future research* should empirically test the proposed framework and explore how contextual and cultural differences among organisations and leaders shape responses to disruptive events. Additionally, studies could examine how individual and organisational perceptions and behaviours influence strategy adoption towards envisaging critical events.

Authors contribution

Conceptual idea, review, revision, and supervision – Ulbinaitė, A. Drafting and revising of the paper – Ibrahim, H.

Disclosure statement

The authors have no competing interests to declare.

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