

Navigating Crisis: The Role of Intellectual Capital in Enhancing SME Resilience During the COVID-19 Pandemic – Operationalization of the Concepts

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Abstract

This paper aims to thoroughly analyze the literature that looks into how the COVID-19 crisis has affected small and medium-sized enterprises' (SMEs) intellectual capital and how that capital relates to their resilience. The COVID-19 pandemic generated unprecedented challenges for small and medium-sized enterprises (SMEs), underscoring the need for a greater understanding of how intellectual capital—including human, structural, and relational capital—has been affected and exploited during this challenging period. To investigate these dynamics, the study uses a methodical approach that operationalizes significant concepts associated with resilience and intellectual capital. To do this, the many components of intellectual capital must be identified, quantified, and their relationships must be examined, as well as how they support SMEs' resilience. SMEs have successfully passed through disruptions and adapted to new realities. This is explored through an analysis that relies on various case studies and literary sources. The results show that building resilience requires efficient intellectual capital management and development, enabling SMEs to grow and adapt, especially during challenging times. In an increasingly unstable business environment, intellectual capital plays a vital role in boosting the resilience and sustainability of small and medium-sized enterprises (SMEs). Thus, this literature review seeks to provide insightful information to scholars and practitioners alike.

Keywords

Human Capital; Structural Capital; Relational Capital; Business Resilience; COVID-19 Pandemic.

Introduction

The COVID-19 pandemic has significantly impacted businesses of all kinds. However, small and medium-sized enterprises (SMEs) have been most severely damaged by their unexpected difficulties (Vătănescu et al., 2022). These companies have had to overcome many challenges, including supply chain interruptions (Odunayo & Victor, 2020; Pujawan, 2021), changes in customer demand (Han, 2021), and the requirement for quick digital adaption. Even while intellectual capital is essential to long-term performance and organizational resilience, there isn't much research in the academic literature on how the pandemic has especially impacted SMEs' intellectual capital. Therefore, it is more crucial than ever to look into and comprehend the unique difficulties these organizations have faced, especially with regard to how they maintain and manage their intellectual resources in these continuously changing environments.

The growth of resilience capacities has been one of the most important effects of the pandemic on the intellectual capital of SMEs (Du et al., 2023). To survive and, in some cases, grow despite the global instability, SMEs have been required to reconsider their strategy and create new competencies due to the outstanding unpredictability and complexity brought about by the COVID-19 crisis (Mitan & Vătămănescu, 2019; Utomo et al., 2023). Resilience is an essential resource for small and medium-sized enterprises (SMEs) coping with the pandemic, as it pertains to an organization's capacity to adjust, recover, and carry on operations in the face of difficult circumstances (Rozak et al., 2020).

Considering this context, this paper aims to provide a thorough analysis of the literature that looks into how the COVID-19 crisis has affected small and medium-sized enterprises' (SMEs) intellectual capital and how that capital relates to their resilience.

Literature review

Entrepreneurial orientation is a significant aspect that contributes to resilience and is necessary for SMEs to deal with the current crisis's complexity (Čović et al., 2023). A person with an entrepreneurial attitude will exhibit various traits, such as creativity, initiative, and risk-taking. For small and medium-sized enterprises (SMEs) seeking to swiftly adjust to novel circumstances, including fluctuating market needs, evolving consumer patterns, and the fast advancement of digital transformation, these attributes are essential (Shah & Ahmad, 2019). Innovation enables SMEs to reconsider their company strategies, create brand-new goods and services, and develop inventive answers to the particular issues the pandemic has brought out (Eisele et al., 2022). Bezerra et al. (2021) underlined that being proactive gives these companies a competitive advantage in an unpredictable market by encouraging them to foresee future trends and take action rather than waiting for changes to happen. In contrast, taking risks empowers SMEs to seize fresh possibilities and make audacious choices—actions that can be critical to their expansion and long-term viability during challenging times.

Regarding SMEs, intellectual capital is even more crucial for fostering resilience in the face of disasters like the COVID-19 epidemic. An organization's ability to innovate, adapt, and sustain a competitive edge largely depends on its intellectual capital, including human, structural, and relational capital (Çakmak, 2022; Calli & Calli, 2021). In uncertain times, SMEs, whose resources are frequently more constrained than those of bigger organizations, may find that effectively using their intellectual capital makes the difference between survival and failure (Zainal et al., 2022).

Current studies (Drábek et al., 2017; Musthafa et al., 2024; Ngoc & Vy, 2022) highlight the critical role that human capital and associated elements play in enhancing the performance and resilience of SMEs, particularly in times of crisis like as the COVID-19 pandemic. The present literature indicates that integrating human capital, social capital, and proficient leadership contributes significantly to improving SME resilience. Zhou et al. (2022) underlined in one of their articles that together with high-performance work systems, intellectual capital—which includes human, structural, and relational components—boosts SME resilience by promoting readiness,

adaptability, and change as well as increasing the value and diversity of human capital, which is essential for both adaptive and transformative resilience.

The factors that have allowed some SMEs to withstand the COVID-19 storm more successfully have been revealed by the recent research of Chit et al. (2022). According to Zutshi et al. (2021), developing "resilience capabilities," which enable SMEs to adjust and respond to the challenges posed by the COVID-19 pandemic, appears to be a crucial component. For example, Klein and Todesco (2021) supported in their research that it could be the capacity to quickly change business strategies, use digital technology wisely, and maintain lasting relationships with suppliers and customers.

Methodology

This study uses a literature review methodology to fully investigate the effects of the COVID-19 crisis on small and medium-sized enterprises' (SMEs) intellectual capital and its crucial role in promoting resilience. Since SMEs face new challenges due to the global pandemic, it is essential to comprehend how intellectual capital—including human capital, structural capital, and relational capital—has been impacted and may be used to strengthen resilience. Due to the multifaceted character of these concepts, the research takes a methodical approach in order to operationalize and investigate the essential elements of resilience and intellectual capital.

The objective is to investigate how the COVID-19 pandemic has affected small and medium-sized enterprises' (SMEs) intellectual capital and how intellectual capital impacts SMEs' resilience. The study uses a methodical approach to operationalize important concepts like resilience and intellectual capital because of the multifaceted nature of the subject in question. To investigate the connections between the human, structural, and relational capital components of intellectual capital and organizational resilience in small and medium-sized enterprises (SMEs) during the COVID-19 pandemic, a comprehensive examination of previous academic and empirical research is conducted as part of the literature review.

The data collection for this study involved a comprehensive search of academic literature, focusing on the impact of the COVID-19 pandemic on the intellectual capital and resilience of small and medium-sized enterprises (SMEs). The search was conducted across the Google Scholar academic database, using the key terms "intellectual capital," "resilience," "SMEs," and "COVID-19 pandemic".

A selection procedure was carried out based on the knowledge and experience of the authors from the original pool of 3,400 articles that were retrieved using the already mentioned key phrases. These keywords were selected to ensure a targeted and relevant body of literature, reflecting the specific focus of this study on how the pandemic has influenced both intellectual capital and organizational resilience in SMEs. The time span for the search was restricted to publications between 2020 and 2024, ensuring that the literature reflects the most recent research and developments related to the COVID-19 crisis. This period captures the immediate and ongoing impacts of the pandemic, providing a rich data set for analysis. Because there aren't many filtering tools available in databases like Google Scholar, the authors used their expertise in the subject to evaluate each study's significance, concentrating on

theoretical and empirical contributions that matched the review's goals. The study's applicability to the relationship between resilience and intellectual capital, methodological rigor, and publishing quality were among the selected factors. This strategy ensured that the chosen studies provided insightful information about how SMEs used their intellectual capital to their advantage during the COVID-19 crisis.

Results and discussion – Operationalization of key concepts

The following key concepts are operationalized for systematic analysis to achieve the research objectives. The process of giving a theoretical concept a tangible shape so that it can be observed empirically and studied is known as operationalization, according to Haucke et al. (2021). In this sense, even if statistical processes successfully remove false positives, one may still come across inaccurate conclusions by misprojecting empirical data onto conceptions. That is to say, even if the results appear reliable, they might not be able to bolster the conclusions drawn about a specific concept or idea (Carrasco-Campos & Saperas, 2015). The present study employed the principles of intellectual capital (including human capital, structural capital, and relational capital) and resilience of SMEs, as shown in the table below (Table 1).

Table 1. Operationalization of the Concepts

Variable		Operationalization	Indicators
Intellectual capital	Human capital	the traits, skills, and knowledge that an individual possesses, and all these traits can be developed into a form that can help an organization grow (Amayew et al., 2019)	The willingness of employees to develop additional skills (Krstić & Bonić, 2016). Proportion of staff with a university degree (Relich, 2014). Interested in social relations in different company departments (Kanski et al., 2021).
	Structural capital	culture, databases, systems, innovation, product development, quality management, information technology, and explicit knowledge (Demuner-Flores et al., 2016; Truong & Nguyen, 2023)	Having values, faith, and behavior criteria, which are approved and shared by all the staff, is of considerable importance for a company (Relich, 2014). Technological support (Kok, 2007). Proper management of work organization, taking into account defined project constraints, such as project scope, time, costs, and quality (Kanski et al., 2021)
	Relational capital	Includes client relationships, alliances, corporate reputation, and supplier relationships. Shortly, relationships inside and outside the organizations (Szudrowics, 2020)	Customer satisfaction index; customer profitability (Krstić & Bonić, 2016). The company takes the complaints of its customers very seriously (Relich, 2014). The organization collaborates with external stakeholders to solve its problems frequently (Andreeva et al., 2021).

Resilience		a firm's capacity to anticipate, plan, respond, and adapt to change to survive (Akib et al., 2022)	The organization can quickly react to an erratic change in supply and demand (Singh et al., 2019). The organization limits expenses and can choose priority scales during a crisis (Hidayat et al., 2021).
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The table clearly operationalizes the main constructs: human capital, structural capital, relational capital, and resilience, offering a comprehensive view of how these elements contribute to the overall resilience of small and medium-sized enterprises (SMEs). As observed, within the intellectual capital framework, human capital emphasizes the significance of individual traits, skills, and knowledge in driving the growth of organizations. The chosen indicators support this operationalization by highlighting important elements related to organizational resilience, like workers' readiness to learn new skills (Krstić & Bonić, 2016), reflecting the agility SMEs need in crises like the COVID-19 epidemic. Furthermore, the percentage of employees with a university degree is a significant indicator of knowledge (Relich, 2014), and the interest in interdepartmental social interactions (Kanski et al., 2021) emphasizes the importance of unofficial networks and teamwork.

As pointed out in the table, structural capital is defined as being the culture, databases, systems, product development, innovation, quality management, information technology, and explicit knowledge of an organization (Demuner-Flores et al., 2016; Truong & Nguyen, 2023). The operationalization process identifies crucial elements that promote the efficacy and efficiency of an organization. The chosen metrics, which include a spotlight on common values (Relich, 2014), technology assistance (Kok, 2007), and effective work organization management (Kanski et al., 2021), provide a comprehensive approach to assessing structural capital. These metrics emphasize the value of synchronized company culture and effective processes in building resilience, which enables SMEs to flourish in dynamic circumstances.

The third construct, the relation capital, described by Szudrowics (2020), includes alliances, supplier partnerships, corporate reputation, and client connections, all essential for an organization's outside interactions. The same author also supports that strong relationships are important, both inside and outside the company, and the operationalization of this concept effectively emphasizes this. The selected metrics highlight the importance of relational capital in fostering loyalty and trust, two things that are necessary for resilience in times of crisis. These metrics include customer satisfaction indexes (Krstić & Bonić, 2016) and the organization's reaction to customer complaints (Relich, 2014). Furthermore, the problem-solving engagement with external stakeholders highlights the significance of networks and partnerships in augmenting the organization's ability to tackle obstacles (Andreeva et al., 2021).

Finally, according to Akib et al. (2022), resilience is the ability of a company to anticipate, plan, respond, and adapt to changes to survive. The resilience indicators emphasize the organization's power to control costs and scale up operations in times of crisis (Hidayat et al., 2021), as well as its ability to respond quickly to unpredictable shifts in supply and demand (Singh et al., 2019). These metrics demonstrate the value of adaptability and financial prudence in assuring survival and long-term sustainability, which aligns with the larger theme of resilience in SMEs.

All things considered, the operationalization of these three concepts provides a strong foundation for comprehending how human, structural, and relational capital support SMEs' resilience, especially in light of the challenges presented by crises like as the COVID-19 pandemic. The table strengthens the rigorous methodology of the study. It emphasizes intellectual capital's crucial role in promoting resilience within organizations by skillfully connecting these concepts through well-defined metrics.

Furthermore, it can be underlined that the pandemic of COVID-19 highlighted the interdependence of resilience and intellectual capital for small and medium-sized enterprises (SMEs) (Hidayat et al., 2021). Organizations need intellectual capital, which includes human, structural, and relational capital, to adapt and survive the crisis (Agostini & Nosella, 2022). While structural capital moved toward more flexible and technologically advanced processes (Sichinava & Dubiei, 2024), human capital changed as workers acquired new abilities for remote work and digital adaptation (Iordan, Pelinescu & Chilian, 2022). The importance of relational capital increased as companies fortified their networks to handle shocks (Cegarra-Navarro et al., 2021). In the end, SMEs that made good use of their intellectual capital were better able to develop resilience, which helped them not only overcome the current obstacles but also set themselves up for recovery after the epidemic (Rosiana et al., 2024).

Conclusions

In conclusion, this paper emphasizes how crucial intellectual capital management is to strengthening an organization's resilience, especially in times of crisis. The analysis emphasizes how intellectual capital, including human, structural, and relational capital, is a vital resource that promotes sustainability and adaptability in companies (Slimene, 2022; Munawar, 2023), particularly in small and medium-sized businesses (SMEs). In today's knowledge-based economy, firms must recognize, manage, and develop their intangible assets in a systematic and planned manner due to the significant importance of intellectual capital (Asutay, 2024).

The efficient handling of intellectual capital substantially influences an organization's capacity to cope with disturbances and bounce back from obstacles, such as the COVID-19 pandemic (Brătianu, 2020; Zulganef et al., 2022). This requires a methodical approach to comprehending the constructs of intellectual capital and developing strategies to maximize them (Samar et al., 2022). According to the research conducted by Hamzah and Ismail (2008), companies that want to maximize the value of their intellectual capital must implement specialized management strategies. By doing this, businesses can improve their long-term resilience and competitive advantage (Arshad et al., 2023), making them more capable of navigating the uncertainties present in the business environment.

In light of the research's limitations, it should be noted that although this literature review aims to offer a comprehensive examination of the connection between intellectual capital and SME resilience during the COVID-19 crisis, certain limitations must be taken into account. Thus, findings may be less specific to certain businesses or geographical areas if they rely too heavily on secondary data from published research.

Furthermore, some ideas or statistics may continue to change due to the pandemic's rapid and continuing nature.

In the end, the research concludes that intellectual capital is essential to organizational success, especially for SMEs, and that managing it carefully is essential to building resilience (Benabed, 2023) and maintaining performance in a world that is becoming more and more unstable (Ramadan et al., 2023; Trzeciak & Banasik, 2022).

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