



Leveraging digital crowdfunding platforms for SME sustainability in emerging markets: The roles of entrepreneurial competency, social capital, and supply chain trust

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ABSTRACT

Digital crowdfunding platforms have become essential financing channels for small and medium-sized enterprises (SMEs), particularly in emerging markets where access to traditional funding is limited. This study examines how entrepreneurial competency, social capital, and supply chain trust shape the use of digital crowdfunding platforms and their impact on SMEs' sustainable performance. Drawing on resource-based theory and survey data from 170 SMEs across various industries in China, the study reveals that entrepreneurial competency facilitates platform adoption, which in turn fosters trust-based supply chain relationships. These trust relationships enhance supply chain collaboration and robustness, ultimately improving sustainable performance. By conceptualizing crowdfunding platforms as strategic resources, this study contributes to the digital entrepreneurship and SME financing literature. It also offers actionable insights for SME managers and policy-makers on leveraging platform-based ecosystems to enhance resilience and sustainability in digitally transforming markets.

1. Introduction

Digital transformation has fundamentally reshaped the business landscape, with digital platforms emerging as critical enablers of entrepreneurial innovation and growth. This study focuses on digital crowdfunding platforms, which facilitate entrepreneurial financing by connecting project creators with backers to mobilize resources. Crowdfunding platform adoption (CPA) refers to the extent to which SMEs utilize these platforms to access capital and engage stakeholders (Gómez-Olmedo et al., 2024). The advent and widespread adoption of digital technologies such as digital platforms have brought about significant attention to digital transformations in the business

environment, offering new opportunities for entrepreneurial activities and fostering changes and innovation (e.g., Ahsan and Musteen, 2021; Gupta and Bose, 2019; Zahra et al., 2023; Muhammad et al., 2025). Recent literature highlights the transformative potential of digital crowdfunding platforms in democratizing access to capital, particularly for SMEs in emerging markets (e.g., Gómez-Olmedo et al., 2024; Wang et al., 2023). These platforms facilitate direct connections between entrepreneurs and potential investors, enabling resource mobilization and value creation in ways previously impossible (e.g., Amit and Han, 2017; Anser et al., 2025; Kayikci et al., 2024; Liu et al., 2024).

While digital crowdfunding platforms have emerged as vital tools for entrepreneurial financing by democratizing access to capital, several

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challenges hinder their effective utilization in emerging markets. This study examines key constructs influencing platform success. Entrepreneurial competency (EC) encompasses the digital-age skills, such as campaign design and stakeholder engagement, that enable entrepreneurs to leverage platforms effectively (Gümüşay and Bohné, 2018). Social capital refers to the strategic network relationships that provide access to resources and support (García-Villaverde et al., 2020). Supply chain trust (SCT), a second-order construct comprising competence-based trust (reliance on partner capabilities) and institution-based trust (reliance on formal structures), facilitates reliable collaboration in supply chains (Capaldo and Giannoccaro, 2015). Supply chain collaboration (SCC) involves coordinated efforts among supply chain partners to achieve shared goals, while supply chain robustness (SCR) reflects the ability to withstand disruptions (Fawcett et al., 2017). Crowdfunding platform risk (CPR) captures perceived uncertainties, such as project failure or fraud, that affect adoption (Liu et al., 2020). Finally, sustainable performance (SP), a second-order construct, includes environmental, economic, and social dimensions of SME outcomes (Nambisan, 2017).

Entrepreneurs often face institutional voids, such as weak legal frameworks and inadequate regulatory mechanisms, which exacerbate uncertainties in crowdfunding transactions (Zahoor et al., 2023a). Additionally, limited access to traditional financing in emerging markets further complicates SME efforts to utilize crowdfunding as an alternative source of capital (Ahsan and Musteen, 2021). Cultural dynamics, such as low institutional trust and fragmented supply chains, create further barriers to building the robust relationships required for crowdfunding success (Ko et al., 2022). These challenges highlight the critical need for context-specific research that addresses the unique dynamics of emerging market entrepreneurs. However, there is a critical gap in the existing body of research regarding the specific challenges and dynamics faced by entrepreneurs in emerging markets who leverage digital crowdfunding platforms. This gap necessitates further investigation (Jones et al., 2023; Zahoor et al., 2023b).

The theoretical foundation for understanding crowdfunding platform utilization lies in resource-based theory (RBT). Utilizing crowdfunding platforms can be explained and analyzed through the theoretical lens of a resource-based view. The resource-based view (e.g., Barney et al., 2001) underscores the significance of resources such as social capital and entrepreneurial competency within an organization, viewing them as pivotal components of its competitive advantage and performance. RBT posits that sustainable competitive advantage stems from valuable, rare, inimitable, and non-substitutable resources, whether tangible or intangible (Barney et al., 2001). RBT posits that sustainable competitive advantage stems from valuable, rare, inimitable, and non-substitutable resources, whether tangible or intangible, making it a robust framework for exploring the dynamics of crowdfunding platform adoption in emerging markets. This is particularly relevant as digital platforms enhance resource mobilization through advanced IT infrastructure that facilitates efficient interactions between project creators and backers (Logue and Grimes, 2022; Veiga et al., 2024).

To address critical gaps in the literature, this study examines three key research questions based on RBT: (1) How do entrepreneurial competencies (EC) influence crowdfunding platform adoption in emerging markets? (2) What role does supply chain trust play in mediating platform adoption and sustainable performance? and (3) How does perceived platform risk moderate these relationships? Our study employs a quantitative research design using survey data from 170 SMEs in China, analyzed through PLS-SEM methodology. We develop and test an integrated theoretical framework examining how entrepreneurial competency, social capital, and supply chain trust influence sustainable performance on crowdfunding platforms.

Our framework conceptualizes these constructs as critical enablers that allow SMEs in emerging markets to navigate the challenges of digital crowdfunding and achieve sustainable performance. These

definitions, drawn from established literature, provide a strong theoretical foundation for understanding how these factors interact in our study. For emerging markets, we additionally examine the moderating role of institutional factors, particularly government intervention, which can significantly impact entrepreneurial behaviors and platform adoption (Adomako et al., 2020; Liu et al., 2020).

Our study makes three primary contributions to theory and practice. First, we contribute to the broader discourse on digital technology and transformation, particularly in the context of crowdfunding platforms and innovation in emerging markets (Nambisan, 2017; Zahoor et al., 2023a). Second, we extend RBT by demonstrating how digital platforms serve as strategic resources for sustainable competitive advantage in emerging markets. Third, we provide empirical evidence for the critical role of supply chain trust in facilitating successful platform adoption. These insights are anticipated to enhance entrepreneurial and business competence in SMEs, facilitating more effective use of crowdfunding platforms. Therefore, this study enriches the digital entrepreneurship literature and provides actionable strategies for SMEs striving to succeed on digital crowdfunding platforms in emerging markets.

The remaining sections of this paper are organized as follows: Section 2 reviews the relevant literature and develops the hypotheses. Section 3 outlines the methodology, including data collection and analysis methods. Section 4 presents the results of the study, followed by a discussion in Section 5. Finally, Section 6 provides conclusions, limitations, and suggestions for future research.

2. Literature review

2.1. Theoretical background

Understanding how SMEs leverage digital crowdfunding platforms requires consideration of multiple theoretical perspectives. While several theories offer valuable insights, this study primarily employs RBT as its theoretical foundation. The Theory of Planned Behavior (TPB) examines individual-level entrepreneurial intentions through attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). However, TPB's focus on individual decision-making limits its applicability to firm-level resource dynamics central to this study. Similarly, Institutional Theory explores how external forces shape organizational behavior through regulatory frameworks and cultural norms (DiMaggio and Powell, 1983). While relevant for understanding institutional voids in emerging markets, it inadequately addresses the internal resource configurations crucial for digital platform adoption. The challenges of platform adoption are particularly acute for SMEs in emerging markets, where weak institutional frameworks and limited access to resources create additional obstacles (Zahoor et al., 2023c).

RBT provides the most appropriate theoretical lens for this study as it specifically examines how firms leverage internal resources to achieve competitive advantage (Barney et al., 2001). The framework of RBT is particularly relevant for analyzing how entrepreneurial competencies and supply chain trust function as valuable, rare, inimitable, and non-substitutable resources in digital platform contexts. Compared to RBT, dynamic capabilities Theory (DCT) emphasizes a firm's ability to integrate, build, and reconfigure resources in dynamic environments (Teece et al., 1997). While DCT is valuable for understanding resource renewal and adaptation in rapidly changing markets, our study prioritizes RBT for three key criteria: First, RBT's focus on static resource deployment aligns with our examination of how existing internal resources, specifically entrepreneurial competency and supply chain trust, drive crowdfunding platform adoption and sustainable performance. Second, RBT better suits the study's context of emerging market SMEs, where resource constraints limit dynamic reconfiguration, and leveraging existing competencies and trust is more feasible (Zahoor et al., 2023b). Third, RBT directly supports our research questions by linking resource characteristics to competitive advantage in crowdfunding ecosystems, whereas DCT's emphasis on continuous change is

less relevant to the relatively stable resource configurations in our model.

RBT's focus on internal resource configurations aligns with our research questions about how SMEs utilize these resources to enhance sustainable performance through crowdfunding platforms. By situating this study within the RBT framework, we build on existing literature to provide new insights into how SMEs in emerging markets can effectively leverage digital platforms as strategic resources for sustainable growth.

2.2. Resource-based theory and crowdfunding platforms

Resource-based Theory (RBT) sheds light on utilizing crowdfunding platforms as a resource for organizational performance within the context of the supply chain. The theory is foundational in understanding how firms achieve and sustain competitive advantage. RBT posits that the heterogeneity of resources among firms leads to differences in competitive performance. To offer a lasting competitive advantage, these resources need to be valuable, rare, difficult to imitate, and irreplaceable (Barney et al., 2001). Resources can be both tangible, such as equipment, and intangible, such as knowledge and capabilities (Ritter and Pedersen, 2020; Wernerfelt, 1984). For instance, Barratt and Oke (2007) identify supply chain visibility as a crucial capability enabled by IT resources, which enhances organizational performance and competitiveness through improved information sharing and coordination across the supply chain.

A critical aspect of RBT is the integration and alignment of IT resources within a firm's processes and with its partners. Wu et al. (2006) emphasize the importance of IT advancement and alignment in creating higher value by enhancing supply chain capabilities such as information exchange, coordination, and responsiveness. These capabilities are not only essential for operational efficiency but also contribute to strategic advantages by facilitating better decision-making and adaptive strategies in response to market changes.

Digital platforms, particularly crowdfunding platforms, have revolutionized how resources are mobilized and utilized. Crowdfunding, a digital fundraising mechanism, leverages the collective financial contributions of many individuals to support projects and ventures. Chandna (2022) explores how social entrepreneurship can benefit from crowdfunding by using digital platforms to mobilize financial and non-financial resources. These platforms enable resource sharing and collaboration, which are critical for social ventures facing legitimacy and funding challenges. The digitalization of crowdfunding platforms aligns well with RBT as these platforms embody unique IT capabilities that create a competitive edge. James et al. (2021) discuss how reward-based crowdfunding platforms like Kickstarter facilitate resource exchanges through defined reward portfolios. The careful design of these portfolios, offering concrete and universal resources such as goods and services, can significantly impact the success of crowdfunding campaigns. This highlights the role of digital capabilities in enhancing the value and effectiveness of resource exchanges on these platforms.

Integrating RBT with the digitalization of crowdfunding platforms provides a robust framework for understanding competitive advantage in the digital age. Digital platforms enhance resource mobilization by utilizing advanced IT infrastructure to facilitate efficient interactions between project creators and backers. This integration allows platforms to leverage their unique capabilities to offer benefits that are difficult for competitors to replicate, thus sustaining their competitive advantage (He et al., 2024; James et al., 2021).

Lee and Zhao (2022) demonstrate that the strategic use of social media and crowdfunding platforms can enhance start-up communication and fundraising success. By employing big-data analytics and leveraging social capital, start-ups can build stronger relationships with investors and increase their visibility and credibility. This strategic communication aligns with the resource-driven view of strategy, emphasizing the importance of intangible assets such as social capital in

supply chain collaboration and achieving sustainability outcomes (Alghababsheh and Gallear, 2021; Tipu and Fantazy, 2018).

As a result, the conceptualization of RBT and its application to digital crowdfunding platforms underscores the critical role of IT capabilities and strategic resource management in achieving and maintaining competitive advantage. Digital platforms that effectively integrate these elements can support entrepreneurial and social ventures while sustaining their own growth and success in the competitive digital landscape (Bani-Melhem et al., 2025). This integration not only facilitates resource mobilization and value co-creation but also aligns with the principles of RBT, enhancing the platform's ability to maintain a competitive edge.

2.3. Supply chain, crowdfunding platforms, and entrepreneurial competence

The integration of digital technologies, the rise of crowdfunding platforms, and the development of entrepreneurial competence are transforming the context of supply chain management (SCM). Digitalization in SCM involves adopting advanced technologies such as artificial intelligence (AI), blockchain, and the Internet of Things (IoT). These technologies enhance supply chain visibility, improve decision-making, and streamline operations (Aditya et al., 2024; Gupta and Jain, 2024). For instance, IoT enables real-time tracking of goods, blockchain ensures secure and transparent transactions, and AI aids in predictive analytics for demand forecasting (Lee and Zhao, 2022). Despite the apparent benefits, the implementation of digital technologies in supply chains presents several challenges. High costs, lack of technical expertise, and resistance to change are common barriers, particularly for SMEs in emerging markets (Bargoni et al., 2023). These implementation challenges are further complicated by institutional voids and resource constraints that characterize emerging market contexts (Liu et al., 2020).

However, overcoming these challenges is crucial as digital technologies significantly enhance supply chain agility and flexibility. Alshahrani and Salam (2024) highlight that these improvements in agility and flexibility can lead to better production and market performance, making the investment in digital technologies worthwhile. Additionally, digitalization contributes to resilience in supply chains, allowing businesses to better withstand disruptions. This point was dramatically illustrated during the COVID-19 pandemic, highlighting the significance of supply chain resilience. Firms with advanced digital infrastructures were better able to adapt to sudden changes in demand and supply (Bendig et al., 2023; Munir et al., 2024). Zhao et al. (2023) further emphasize the role of digitalization in enhancing supply chain resilience and robustness, which are critical for maintaining operational continuity during crises. By leveraging digital tools, businesses can quickly respond to disruptions and mitigate risks associated with supply chain volatility.

Parallel to the advancements in digitalization, crowdfunding platforms have emerged as vital tools for entrepreneurial financing, democratizing access to capital by enabling entrepreneurs to reach potential investors directly. This is especially advantageous for early-stage start-ups that frequently find it challenging to obtain financing from conventional sources. Medina-Molina et al. (2019) emphasize that successful crowdfunding campaigns not only provide necessary funds but also validate business ideas through market testing, attracting further investment and facilitating business growth. However, the effectiveness of crowdfunding depends on several factors, including the ability to engage and build trust with potential backers (Lui et al., 2023). Strategies such as early bird discounts can significantly enhance the success of crowdfunding campaigns by creating urgency and incentivizing early investment (Wessel et al., 2019). Moreover, the integration of digital marketing tools and data analytics can enhance campaign visibility and effectiveness, although this requires specific competence that may not be innate to all entrepreneurs (Hagen et al., 2019). Roma et al. (2021) explore how reward-based crowdfunding can further enhance

crowdfunding performance when combined with environmental sustainability orientations. They found that ventures with strong sustainability messages tend to attract more backers, highlighting the importance of aligning crowdfunding campaigns with broader societal values.

Entrepreneurial competence is essential to leverage these digital tools and crowdfunding platforms. [García-Cabrera and García-Soto \(2008\)](#) highlight that individual entrepreneurial competence significantly influences business success, particularly in international contexts where cross-cultural competence is crucial. Developing these competencies is essential but challenging, especially for SMEs that often lack access to training and development resources. [Ibidunni et al. \(2022\)](#) argue that entrepreneurial competence must be continually developed to adapt to dynamic business environments, which is crucial for maintaining competitiveness and achieving long-term success. These competencies, such as managerial competencies and dynamic capabilities, can be critical to digitally transforming SMEs ([Christofi et al., 2023](#); [Zahoor et al., 2023b](#)).

The intersection of digitalization, crowdfunding platforms, and entrepreneurial competence creates significant synergies that can enhance overall business performance. Digital tools enhance supply chain efficiency, crowdfunding platforms provide essential funding and market validation, and strong entrepreneurial competence enables effective utilization of these resources. However, realizing these synergies requires overcoming several challenges. For instance, digital platforms can support crowdfunding campaigns by providing data analytics and marketing tools, but entrepreneurs must possess the competence to leverage these tools effectively. Digitalized supply chains can enhance transparency and trust, which are crucial for successful crowdfunding campaigns. Nonetheless, integrating these elements often requires overcoming technical challenges, cultural resistance, and resource constraints ([Vidgen et al., 2017](#)).

Furthermore, [Nespoli et al. \(2022\)](#) discuss how digital entrepreneurship and crowdfunding can drive innovation during times of crisis. They argue that the flexibility and reach of digital platforms can help entrepreneurs pivot quickly and adapt to new market conditions, thereby fostering resilience and long-term growth. [Fig. 1](#) illustrates the conceptual model that analyzes how digitalization, crowdfunding platforms, and entrepreneurial competence influence supply chain resilience and further firms' sustainable performance.

In summary, the integration of digitalization, crowdfunding platforms, and entrepreneurial competence offers substantial benefits but also presents significant challenges. Overcoming these challenges requires a strategic approach that combines technical solutions with ongoing competency development. By addressing these issues, businesses can enhance their resilience, innovation, and market responsiveness, providing a solid foundation for sustainable growth in a rapidly evolving business context.

2.4. Hypothesis development

Entrepreneurial competence encompasses a blend of knowledge, skills, and attitudes essential for navigating and succeeding in the business landscape. This competence enables entrepreneurs to effectively leverage digital tools and platforms, such as crowdfunding, which are critical for early-stage ventures seeking capital and market validation ([Cavallo et al., 2019](#)). [Medina-Molina et al. \(2019\)](#) highlight that crowdfunding platforms democratize access to funding by allowing entrepreneurs to connect directly with potential investors. However, the successful utilization of these platforms requires specific competence, including digital marketing skills and data analytics capabilities, to enhance campaign visibility and engagement ([Drummond et al., 2020](#)). Thus, entrepreneurs with higher competence are better equipped to adopt and utilize crowdfunding platforms effectively. Consequently, we formulate the hypothesis as follows.

H1. *Entrepreneurial competence is positively related to the level of crowdfunding platform adoption.*

Crowdfunding platforms serve as strategic resources that facilitate trust-building through transparent interactions and information sharing between creators (supply side) and backers (demand side). The adoption of crowdfunding platforms aligns with resource-based theory, as these platforms embody unique IT capabilities that create a competitive edge by enhancing trust and collaboration ([Barney et al., 2001](#)). Stakeholders are likely to perceive projects on crowdfunding platforms as more credible and transparent, leading to increased trust. This is due to the platforms' mechanisms for feedback, updates, and community engagement, which demonstrate the progress of projects and the responsible handling of funds ([James et al., 2021](#)). This transparency is critical in building trust within the supply chain, as it provides stakeholders with clearer insights into project progress and resource utilization, which are key aspects of competitive advantage in the digital age ([Kache and Seuring, 2017](#)).

Trust in the supply chain is further reinforced by the platform's ability to provide real-time data and secure transactions, features that are integral to digital crowdfunding and align with the resource-based view of IT capabilities ([Wu et al., 2006](#)). Thus, the H2 was formulated as follows.

H2. *Crowdfunding platform adoption is positively related to supply chain trust.*

Supply chain literature often discusses supply chain resilience as a concept that integrates aspects of both supply chain robustness and collaboration, which are critical for maintaining competitive advantage. This encompasses vulnerabilities, capabilities, strategies, and performance metrics within supply chains ([Shishodia et al., 2023](#)). Trust within the supply chain, enhanced by crowdfunding platform adoption, contributes to its robustness by facilitating better coordination, information sharing, and collaboration among stakeholders.

A robust supply chain, viewed through the lens of resource-based theory, can be considered a valuable and difficult-to-imitate resource that enables firms to better withstand disruptions and adapt to changes ([Barney et al., 2001](#)). This necessity was highlighted during the COVID-19 pandemic ([Khan et al., 2022](#)). Digital platforms, including crowdfunding, contribute to this robustness by providing reliable and transparent communication channels, which can be seen as unique organizational capabilities. [Akhtar et al. \(2024\)](#) emphasize that digitalization enhances supply chain resilience and robustness, enabling businesses to respond quickly to disruptions and maintain operational continuity. Thus, H3 is formulated as follows.

H3. *Supply chain trust is positively related to supply chain robustness.*

Supply chain trust serves as a fundamental enabler of supply chain collaboration through three key mechanisms. From an RBT perspective, trust is a valuable and inimitable resource that fosters competitive advantage by facilitating collaborative relationships in crowdfunding ecosystems ([Barney et al., 2001](#)). Trust reduces transaction costs and risks associated with information sharing, enabling partners to engage in deeper collaborative activities ([Kayikci et al., 2022](#)). Trust can also facilitate the development of joint problem-solving routines that enhance operational efficiency and innovation capacity. Third, trust-based relationships enable the creation of shared value through resource optimization and coordinated decision-making.

High levels of trust within the supply chain encourage greater collaboration among stakeholders. Trust reduces the perceived risks associated with sharing information and resources, fostering joint problem-solving and enabling resource optimization. In the context of crowdfunding platforms, trust as a rare relational resource strengthens supply chain collaboration by ensuring transparency and accountability, which are critical for aligning stakeholder efforts in emerging markets ([Capaldo and Giannoccaro, 2015](#)). This aligns with RBT's premise that

resources like trust create a competitive advantage by enabling SMEs to leverage platform adoption for enhanced collaboration, supporting sustainability goals. Collaborative supply chains enhance operational efficiencies and support the achievement of shared sustainability goals (Kayikci et al., 2022). For instance, trust-driven collaboration has been shown to improve environmental outcomes, such as waste reduction, while simultaneously enhancing economic performance through shared cost efficiencies (Hammoud et al., 2022). Enhanced collaboration, driven by trust, allows for better coordination and alignment of activities across the supply chain, improving overall performance and competitiveness (Barratt and Oke, 2007). Thus, H4 was formulated as follows.

H4. *Supply chain trust is positively related to supply chain collaboration.*

Supply chain robustness contributes to sustainable performance through multiple pathways, functioning as a strategic resource within the RBT framework (Barney et al., 2001). Robustness is a valuable and rare capability that enables SMEs to maintain operational continuity, thereby creating a competitive advantage in crowdfunding ecosystems. Robust supply chains enhance economic sustainability by minimizing disruptions and reducing costs associated with supply chain failures (Pettit et al., 2013). Meantime, robustness enables environmental sustainability by ensuring consistent implementation of eco-efficient practices across the supply network. Third, social sustainability is enhanced through stable employment and reliable stakeholder relationships.

Sustainable performance in the supply chain is closely linked to trust, as it promotes long-term relationships and commitment to shared goals, including sustainability. Robust supply chains, which ensure stability and adaptability in the face of disruptions, further enhance sustainable performance by maintaining operational continuity. RBT posits that resources like robustness when leveraged effectively, lead to sustainable competitive advantage by enabling SMEs to achieve environmental, economic, and social performance (Nambisan, 2017). In emerging markets, trust-based relationships facilitated by digital platforms strengthen supply chain robustness by promoting transparency, which is critical for navigating uncertainties (Zahra et al., 2023). This aligns with RBT's focus on leveraging internal capabilities to achieve performance outcomes in resource-constrained settings.

Robustness improves economic resilience by minimizing downtime, while promoting environmental sustainability through consistent and efficient supply chain practices (Pettit et al., 2013). In addition, trust-based relationships, facilitated by digital platforms, strengthen supply chain robustness by promoting transparency and accountability, which are critical for navigating uncertainties in emerging markets (Zahoor et al., 2023a,b). Trustworthy relationships facilitate the adoption of sustainable practices and innovations, as stakeholders are more willing to invest in and support initiatives that benefit the entire supply chain (Roma et al., 2021). Thus, H5 was formulated as follows.

H5. *Supply chain robustness is positively related to sustainable performance.*

Supply chain collaboration, which encompasses the coordination and integration of processes and activities among supply chain partners, is a critical determinant of sustainable performance. Through strategic partnerships and shared goals, collaborative supply chains transform challenges into opportunities and maintain competitive positioning, which is essential for sustainability (Kumar et al., 2018). The relationship between collaboration and sustainability is highlighted by the concept of Sustainable Enterprise Excellence, Resilience, and Robustness, which integrates supply chain proficiency to achieve superior economic, environmental, and social value (Huo et al., 2016). Collaborative supply chains enhance sustainable performance by ensuring continuous operations and optimizing resource use, thereby supporting economic stability and environmental stewardship (Allaoui et al., 2019). Additionally, empirical studies have demonstrated that supply chain

collaboration positively impacts enterprise performance, suggesting that collaboration indirectly contributes to financial stability by improving operational efficiency (Álvarez et al., 2014). Furthermore, collaborative supply chains, characterized by their ability to manage and minimize risks collectively, are essential for achieving sustainability goals. This involves strategic and tactical integration of governance, innovation, and human ecology to address and mitigate disruptions effectively, thus enhancing overall supply chain performance (Zhu and Wu, 2022). Enhanced supply chain collaboration also fosters sustainable practices, as collaborative supply chains are better equipped to implement and maintain eco-efficient processes that contribute to long-term sustainability (Youn et al., 2012). For this reason, H6 was formulated as follows.

H6. *Supply chain collaboration is positively related to sustainable performance.*

The perceived risk associated with crowdfunding platforms can influence the relationship between their adoption and the resulting trust within the supply chain. High perceived risks, such as concerns about data security or project failure, can hinder the development of trust despite platform adoption. Conversely, if the perceived risks are low, the positive impact of crowdfunding platform adoption on supply chain trust is likely to be more pronounced (Chandna, 2022). Addressing these risks through robust IT infrastructure and transparent communication is crucial for maximizing the trust benefits of crowdfunding platforms (Nguyen et al., 2021). Therefore, H7 was formulated as follows.

H7. *Perceived crowdfunding platform risk moderates the relationship between crowdfunding platform adoption and supply chain trust.*

3. Methodology

3.1. Research design

We employed a quantitative research design using a cross-sectional survey methodology to test our theoretical framework. This approach allows for the examination of complex relationships between multiple constructs at a single point in time, providing robust insights into the interplay between entrepreneurial competency, social capital, supply chain trust, and sustainable performance. This design is well-suited for investigating emerging phenomena in digital entrepreneurship and has been widely adopted in similar studies (Hair et al., 2017).

China was selected as the research context due to its advanced digital infrastructure and the significant economic contribution of SMMEs to its economy. First, China has developed its economy rapidly in recent decades, is viewed as a larger emerging economy, and is characterized by significant environmental turbulence. As the Global Entrepreneurship Monitor (Kelley et al., 2012) indicates, the established business ownership rate has reached almost 10 % in China. Chinese SMMEs are dynamic and innovative and represent an ideal population for studying digital platform adoption and its implications for sustainable growth. The widespread adoption of mobile payments and digital platforms in China has created fertile ground for crowdfunding initiatives, enabling SMEs to leverage digital technologies in a technologically sophisticated emerging market environment.

Second, SMMEs play a crucial role in China's economy, contributing significantly to innovation, employment, and economic growth. According to the Ministry of Industry and Information Technology of China, SMMEs account for over 60 % of the country's GDP and provide more than 80 % of urban employment. This economic significance, combined with their dynamic and competitive nature, makes Chinese SMMEs ideal subjects for studying digital platform adoption and innovation (Zahoor and Lew, 2023).

Third, China's advanced digital infrastructure presents unique characteristics for studying crowdfunding platforms. The widespread adoption of digital technologies and mobile payments has created fertile

ground for crowdfunding initiatives. This digital maturity enables us to examine how SMMEs leverage crowdfunding for growth and development in a technologically sophisticated emerging market context (Adam et al., 2018a,b).

Furthermore, China is experiencing significant economic and social transitions, which impact the business environment. The government's emphasis on innovation-driven development and the increasing importance of social capital in business operations underscore the relevance of studying SMMEs in this context. The intricate relationships between firms and government officials, as well as the influence of social capital, provide a rich backdrop for examining how entrepreneurial competency, social capital, and supply chain trust influence a business's sustainable performance when utilizing crowdfunding digital platforms.

The methodology flowchart in Fig. 3 outlines the research process, from identifying the research problem to conducting data analysis, emphasizing the steps involved in theoretical framework development, survey design, and statistical validation.

3.2. Data collection and sample

Given the study's focus on SMME decision-makers with crowdfunding experience, we employed a purposive sampling method to target relevant respondents, ensuring alignment with our research objectives (e.g., Mubarak and Petraite, 2020). Initially, we distributed 700 questionnaires targeting SMME decision-makers in 2023, from which we received 182 initial responses, representing a 26 % response rate. The sample selection criteria were designed to ensure relevance to our study's focus on crowdfunding platform adoption in emerging markets. Respondents were required to meet the following inclusion criteria: hold managerial roles in SMEs, ensuring decision-making authority; have direct involvement in the use or evaluation of digital crowdfunding platforms within the past two years, guaranteeing relevant experience; and operate within manufacturing sectors in China, aligning with the study's focus on supply chain dynamics. We excluded firms with less than two years of operational history or no prior crowdfunding engagement to ensure data relevance and reliability for analyzing sustainable performance outcomes.

To ensure data quality, we implemented rigorous quality control measures, including response time analysis and consistency checks. The sample consisted of 170 SME managers in China who met the inclusion criteria: (1) active involvement in crowdfunding platforms within the past two years, (2) holding a managerial position in an SMME, and (3) a minimum of two years of operational experience. The response rate was 26 %, with 700 distributed questionnaires yielding 170 valid responses.

Through this screening process, we excluded 12 surveys due to irregular patterns or incomplete responses, resulting in a final sample of 170 valid responses. The descriptive analysis and sample characteristics are summarized in Table 1 below. The sample consisted of 170 SME managers in China. These firms represented various stages of growth, with 42 % aged 5–10 years and 35 % over 10 years old. Employee size varied, with 68 % of firms employing fewer than 100 people. Respondents were predominantly general managers (57 %), with 40 % having more than 10 years of work experience. Educational qualifications included 48 % holding bachelor's degrees and 36 % holding master's degrees (Table 1).

3.3. Measures and data analysis

Validated measurement scales were adapted from prior research to ensure the reliability and validity of the constructs. We employed validated scales from previous research to measure our constructs. Sustainable performance was operationalized as a second-order construct encompassing environmental, economic, and social dimensions (Xu et al., 2023). Entrepreneurial competence has been identified as a distal factor for SMMEs (Khalid and Bhatti, 2015). Crowdfunding platform adoption is adapted from previous studies (Soluk et al., 2021). Supply

chain trust is a second-order factor, including competence-based trust and institution-based trust, as shown in the literature (McAllister, 1995). Supply chain collaboration and supply chain robustness are suggested from the literature (El Baz and Ruel, 2021; Liao et al., 2017). The moderator-crowdfunding platform risk is adapted from the literature (Lee et al., 2022). All items were measured using seven-point Likert scales. Control variables included firm age and size, consistent with previous studies (e.g., Liu et al., 2024; Zahoor and Lew, 2023). were selected because prior literature indicates they significantly influence technology adoption and performance outcomes in SMEs. Firm size and firm age can affect resource availability and experience with digital platforms and SMEs (e.g., Liu et al., 2024; Zahoor and Lew, 2023).

To minimize potential biases, we implemented several strategies. First, a pilot test with 30 participants validated survey clarity and instrument reliability, reducing measurement bias. Second, responses were screened for irregular patterns and completion times, excluding 12 low-quality responses to address response bias. Third, we conducted Harman's single-factor test to check for common method bias (CMB), with results showing the first factor explained only 37.7 % of the variance, well below the 50 % threshold, indicating CMB is not a concern. Fourth, anonymity and confidentiality assurances were provided to respondents, minimizing social desirability bias.

Given the theoretical exploration focus of this research on the use of crowdfunding digital platforms in emerging markets (Dash and Paul, 2021), we employed the SmartPLS v.4.1.0.2 software package to evaluate the research models and test the proposed hypotheses using partial least squares structural equation modeling (PLS-SEM) (Ringle et al., 2014). This analytical approach was chosen for its ability to handle complex theoretical models and its robustness with smaller sample sizes (Kumar, 2019).

The questionnaire underwent pilot testing with a sample of 30 participants to refine item wording and ensure clarity. Reliability and validity tests illustrated in Table 2 confirmed strong psychometric properties, with all constructs exceeding thresholds for AVE (>0.50) and CR (>0.70) and external loadings above 0.70. Discriminant validity was established using the Fornell-Larcker criterion (1981). In addition, the external loadings of the indicators, which are all over 0.70, provide confirmation of the reliability of the individual measurements (Hair et al., 2014). The Cronbach's alpha values, all surpassing 0.5, further indicate the strong reliability of the structures.

Table 3 shows that discriminant validity is established using the Fornell-Larcker criterion, where the square root of the AVE for each construct exceeds its highest correlation with any other construct, which is consistent with suggestions from Fornell-Larcker criterion (1981). Thus, this study demonstrates effective discriminant validity.

To address potential Common Method Bias (CMB), we implemented both ex-ante and ex-post procedures. Ex-ante measures included ensuring respondent anonymity, using established measurement scales, incorporating reverse-coded items, and separating predictor and criterion variables in the survey design. For ex-post verification, we conducted Harman's single-factor test, which showed the first factor explained only 37.7 % of the variance, well below the threshold of 50 % or more in Harman's single-factor test, indicating CMB is not a concern in this study.

We employed SmartPLS 4.1.0.2 for data analysis and hypothesis testing, selecting this analytical approach due to three key methodological advantages. First, PLS-SEM is particularly well-suited for analyzing complex theoretical frameworks with multiple interdependent relationships, such as our model, which links entrepreneurial competency, platform adoption, supply chain trust, and sustainable performance. Second, unlike covariance-based SEM, PLS-SEM does not require strict multivariate normality assumptions, offering greater flexibility in handling non-normal distributions that are common in datasets from emerging markets (Hair et al., 2020). Third, PLS-SEM is capable of delivering robust estimations even with smaller sample sizes while also accommodating both reflective and formative measurement

models. These attributes make PLS-SEM an ideal choice for testing our theoretical framework.

4. Findings

Table 4 depicts the results of the path model and shows the proposed hypotheses. The path coefficients of each path are significant. The value of 0.07 of the Standardized Root Mean Squared Residual (SRMR) shows a good fit of the structural equation model. The results indicate that crowdfunding platform adaptation plays a significant role in the relationship between entrepreneurial competence and supply chain trust, positively impacting supply chain collaboration and robustness, reflecting key aspects of supply chain resilience. Consequently, these two key aspects of supply chain resilience enhance SMMEs' sustainable performance (Alshahrani and Salam, 2024; Shishodia et al., 2023).

The structural model results revealed that entrepreneurial competence positively supports the adoption of crowdfunding platforms, thus supporting H1. This aligns with prior research indicating the importance of entrepreneurial competence in leveraging digital platforms for business growth (Gümüşay and Bohné, 2018; Zahra et al., 2023). Additionally, the results demonstrated significant positive effects of the level of crowdfunding platform adoption on supply chain trust, supporting H2, with path coefficients of 0.274 ($p < 0.01$). This finding corroborates the literature highlighting the role of digital platforms in enhancing trust and collaboration in supply chains (Fawcett et al., 2017).

The results also revealed that supply chain trust positively supports both supply chain collaboration and robustness, thereby supporting H3 and H4. This is consistent with previous studies that emphasize the importance of trust in achieving effective supply chain collaboration and resilience (Capaldo and Giannoccaro, 2015; García-Villaverde et al., 2020). Furthermore, the findings show that supply chain collaboration and robustness positively impact sustainable performance, thus supporting H5 and H7 (Alshahrani and Salam, 2024; Zahra et al., 2023). Notably, two control variables, firm age and size, were not statistically significant, indicating that these factors did not influence the primary relationships being studied.

The finding related to hypothesis seven (H7) on the moderating role of perceived crowdfunding platform risk in the relationship between crowdfunding platform adoption and supply chain trust is statistically significant ($\beta = 0.185$, $p < 0.01$), which might seem counterintuitive at first (see Fig. 2). Although higher risk is generally associated with lower trust, when the level of crowdfunding platform adoption is high, stakeholders, including SMMEs, are likely already familiar with the platform's dynamics, including its risks. This familiarity can lead to better risk management strategies and a more realistic set of expectations among all parties involved. Consequently, the high perceived risk might also lead to increased efforts from both the platform and the project creators to mitigate these risks through more rigorous project vetting, transparent communication, and stronger fulfillment guarantees. These efforts can increase trust among supply chain members (Adam et al., 2018a,b; James et al., 2021).

SMMEs that continue to engage with the platform despite recognizing its risks may do so because they trust the underlying mechanism, the community, and the creators to deliver value despite potential hurdles. For instance, consider a crowdfunding campaign for a new tech gadget. The platform allows the creators to post detailed updates, engage with backers (SMMEs) directly, and transparently show funding milestones and production stages. As more SMMEs use the platform and engage with various projects, trust in the platform and the creators increases. The community sees real projects come to life, enhancing overall trust in the supply chain from concept to delivery (Bechtsis et al., 2022). Even when SMMEs are aware of the risks (e.g., project delays, quality issues), the high level of engagement and transparency from the creators makes them more forgiving and trusting. For instance, if the creators are upfront about a delay due to quality control, SMMEs may view this as a commitment to delivering a high-quality product, thus

maintaining or even increasing their trust in the creators and the platform.

Our results illustrate how high perceived risk, when managed effectively through transparent communication and proactive engagement, can lead to higher supply chain trust. This underscores the importance of transparency, communication, and risk management in enhancing trust within the crowdfunding ecosystem (Zahra et al., 2023).

5. Discussion

This study investigates the critical role of digital crowdfunding platforms in enhancing the sustainable performance of SMEs in emerging markets, focusing on entrepreneurial competency, social capital, and supply chain trust. By integrating empirical findings and theoretical insights, the study contributes to a deeper understanding of how these key resources interact to drive performance outcomes. The findings confirm that digital crowdfunding platforms provide SMEs with strategic opportunities for achieving sustainability through resource optimization, trust-building, and improved collaboration.

Our findings confirm that entrepreneurial competency significantly influences the adoption of digital crowdfunding platforms, aligning with research question one. These competencies enable SMEs to navigate complex platform technologies, establish credibility among stakeholders, and adapt to dynamic crowdfunding environments. Our results resonate with Ahsan and Musteen (2021), who highlight digital competencies as critical for SME competitiveness in global markets. However, we extend their work by demonstrating how specific skills, such as crafting compelling crowdfunding narratives and leveraging platform analytics, enable SMEs in emerging markets to overcome institutional voids and trust deficits, a contextless exploration in prior research. This aligns with Zahoor et al. (2023c), who emphasize digital transformation in volatile environments, but our focus on crowdfunding platforms as a mechanism for financial inclusion offers a novel perspective. Our results demonstrate that entrepreneurial competency serves as both a driver of platform adoption and a foundational resource for building trust within supply chains, a dimension previously underexplored in the literature. This dual role emphasizes the strategic importance of entrepreneurial skills in fostering digital transformation within resource-constrained environments.

The mediating role of supply chain trust is particularly noteworthy. As confirmed in research question two, trust acts as a mechanism through which platform adoption fosters collaboration and robustness in supply chains, leading to enhanced sustainable performance. This finding aligns with McAllister's (1995) seminal work on relational trust, which underscores trust as a governance mechanism, and Kayikci et al. (2022), who explore digital integration in supply chains. Our study extends these insights by applying trust-building practices, such as blockchain-based transparency and real-time project dashboards, to crowdfunding ecosystems, a novel context that enhances supply chain resilience in emerging markets. Unlike Kayikci et al.'s focus on established supply chains, our results highlight how trust mitigates the unique uncertainties of crowdfunding, such as backer skepticism, thereby filling a gap in the literature. This finding underscores the importance of trust-building practices for SMEs, particularly in contexts where formal governance mechanisms are underdeveloped. The ability to cultivate trust through transparency, accountability, and consistent performance represents a significant competitive advantage for SMEs operating in uncertain and turbulent environments.

Additionally, the moderating role of perceived platform risk highlights the challenges SMEs face in balancing innovation with uncertainty. While prior research has primarily focused on developed markets, our study extends this understanding to emerging markets, demonstrating how trust mitigates risk perception and facilitates broader platform adoption. This insight aligns with recent studies emphasizing the role of trust-based mechanisms in overcoming institutional voids and resource constraints.

The results are consistent with prior studies, such as [Ahsan and Musteen \(2021\)](#), which highlight the strategic role of entrepreneurial competency in platform adoption, and [McAllister \(1995\)](#) and [Kayikci et al. \(2022\)](#), which emphasize trust's centrality in fostering resilience and collaboration in supply chains. However, our study makes distinct contributions by integrating these factors within the specific context of digital crowdfunding platforms in emerging markets, where institutional structures and formal support systems are less robust. By drawing on [Zahoor et al. \(2023a,b,c\)](#) and [Christofi et al. \(2023\)](#), we further position our findings within contemporary discussions on SME digital transformation and platform entrepreneurship. For instance, unlike [Zahoor et al.](#)'s broader focus on digital adoption, our study highlights crowdfunding as a mechanism for financial inclusion and sustainability, addressing a gap in understanding how SMEs navigate resource constraints in volatile settings. Similarly, our application of trust to crowdfunding extends [Christofi et al.](#)'s insights by linking platform-based entrepreneurship to supply chain dynamics, offering a novel perspective on sustainable performance. These comparisons underscore our study's role in bridging theoretical advancements and practical applications, as detailed in Section 6.2, where we propose actionable strategies like blockchain transparency and crowdfunding hubs to translate these insights into practice.

6. Research implications

6.1. Theoretical implications

This study delves into the interactions between digital crowdfunding platforms and the sustainable performance of small and medium-sized manufacturing enterprises (SMMEs) in emerging markets, highlighting the critical roles of entrepreneurial competency, social capital, and supply chain trust. These findings contribute significantly to the literature by offering a comprehensive understanding of how the identified factors collectively enhance business outcomes and highlight the importance of an integrated approach to leveraging digital platforms.

First, our finding extends resource-based theory by demonstrating how entrepreneurial competencies serve as valuable, rare, and inimitable resources that enable effective platform utilization ([Barney et al., 2001](#)). Our empirical evidence ($\beta = 0.388$, $p < 0.001$) provides strong validation that these competencies significantly enhance platform adoption and sustainable performance in emerging markets. This contribution is particularly significant as it reveals how digital competencies in emerging markets function as strategic resources that create competitive advantages in crowdfunding contexts. Our research questions one investigates how entrepreneurial competency influences crowdfunding platform adoption. The results show that entrepreneurial competencies provide SMEs with the skills necessary to navigate platform technologies, establish credibility among stakeholders, and adapt to dynamic crowdfunding environments. These insights emphasize that entrepreneurial competencies are critical for overcoming barriers related to trust and uncertainty, particularly in emerging market contexts, which lack established institutional structures.

Secondly, we advance the theoretical understanding of supply chain trust by revealing its critical mediating role between platform adoption and sustainable performance, which is related to research question two. Our finding ($\beta = 0.274$, $p < 0.01$), which in turn strongly influences both collaboration ($\beta = 0.458$, $p < 0.001$) and robustness ($\beta = 0.605$, $p < 0.001$), extends previous theoretical understanding by demonstrating how digital platforms serve as trust-building mechanisms. It focuses on the mediating role of supply chain trust, and the findings confirm that trust is a key mechanism through which platform adoption translates into enhanced sustainable performance. Supply chain trust fosters better collaboration among partners, ensuring reliable communication and reduced transaction costs. This aligns with prior studies emphasizing the role of trust in mitigating risks and creating stable partnerships ([Kayikci et al., 2022](#)).

Our findings extend previous research by demonstrating how digital platforms serve as strategic resources that enhance supply chain visibility and trust ([Ivanov, 2021](#)). Crowdfunding platforms inherently promote transparency by requiring detailed project descriptions, regular updates, and active community engagement, fostering a culture of openness and accountability. This transparency is crucial for building and maintaining trust among supply chain partners ([James et al., 2021](#)). However, it is essential to critically examine the sustainability of this trust. Initial trust can be quickly established through transparent practices, but maintaining it requires consistent and ongoing efforts to ensure reliable communication and accountability. This calls for a continuous commitment to transparency and the development of robust mechanisms for feedback and engagement.

Thirdly, we enrich the theoretical understanding of platform risk-related factors. Our findings reveal that SMMEs with higher levels of entrepreneurial competency are better positioned to manage these risks, leveraging platform features like transparency and feedback systems to build trust and improve outcomes. To address research question three, the moderating effect of perceived platform risk ($\beta = 0.185$, $p < 0.01$) highlights the challenges SMMEs face when adopting crowdfunding platforms in less-regulated environments and reveals how effective risk management strategies can transform perceived risks into opportunities for enhanced trust-building. This finding extends current theoretical frameworks by demonstrating the complex interplay between risk perception, trust development, and sustainable performance in digital platform contexts.

Fourth, we develop an integrated theoretical framework that explains how digital platforms enhance sustainable performance through three mechanisms: competency development, trust-building, and risk management. This framework uniquely demonstrates how resource-constrained firms can leverage digital platforms to achieve sustainable growth despite institutional voids and market uncertainties. Our empirical results validate the theoretical framework linking platform adoption to sustainable performance through the mediating mechanisms of supply chain trust, collaboration, and robustness. This contribution not only extends RBT but also establishes a novel, comprehensive framework that integrates multiple dimensions, including resources, trust, and risk, to address the unique challenges of emerging markets. This integration serves as a foundation for future research and opens new pathways for examining digital platform adoption in resource-constrained environments.

6.2. Practical implications

This study provides actionable guidance for SME managers, supply chain stakeholders, and policymakers in emerging markets, offering a roadmap to leverage digital crowdfunding platforms for sustainable performance. The findings highlight the critical roles of entrepreneurial competency, supply chain trust, and collaboration in overcoming institutional voids, trust deficits, and resource constraints prevalent in contexts like China. By translating these insights into practical strategies, practitioners can navigate the complexities of crowdfunding ecosystems to achieve economic, environmental, and social sustainability.

SME managers should prioritize developing EC, which, from an RBT perspective, serves as valuable, rare, and inimitable resources that drive business success ([Barney et al., 2001](#)). EC encompassing digital literacy, strategic planning, and stakeholder engagement enables SMEs to innovate by identifying new market opportunities, build resilience by adapting to disruptions, and enhance competitiveness by achieving sustainable performance ([Gümüşay and Bohné, 2018](#)). For example, digital marketing skills allow SMEs to craft compelling crowdfunding campaigns that attract diverse backers, while strategic planning ensures efficient resource allocation for long-term growth. Targeted training programs, delivered through partnerships with local universities, industry associations, or platforms like Coursera or Alibaba Cloud Academy, can develop these competencies cost-effectively. In emerging

markets, EC not only facilitates crowdfunding adoption but also drives economic development by enabling job creation through innovation and fostering financial inclusion for underserved communities (Zahoor and Lew, 2023). Socially, EC promotes a sustainability orientation by encouraging SMEs to adopt eco-efficient practices and engage stakeholders in community-driven projects, aligning with global sustainability goals.

Transparency mechanisms are essential for building and sustaining trust within supply chains. Managers should leverage tools such as blockchain-based transaction records, detailed project dashboards, and regular progress reports to provide stakeholders with real-time visibility into resource utilization and project milestones. These measures mitigate information asymmetry in low-trust environments and strengthen collaborative relationships. Fostering collaborative supply chain networks through joint problem-solving forums, shared reward systems, and aligned sustainability goals with suppliers and backers can enhance operational efficiency. SMEs can, for instance, coordinate with suppliers to reduce waste or adopt eco-efficient practices, supporting environmental stewardship. Certifications in supply chain management (e.g., APICS, SCOR) or sustainability (e.g., ISO 14001) can further equip managers to build resilient supply chains capable of withstanding disruptions, as demonstrated during the COVID-19 pandemic.

Proactive risk management is also critical to address uncertainties inherent in crowdfunding ecosystems. Managers should implement robust governance structures, such as escrow services to secure funds, cybersecurity protocols to protect data, and platform analytics to monitor backer sentiment and address concerns promptly. In emerging markets with weak regulatory frameworks, SMEs can collaborate with industry consortia to advocate for standardized platform protocols, enhancing stakeholder confidence. Engaging with platforms like Jingdong Crowdfunding or Kickstarter to develop transparent project vetting processes can further reduce project failure risks and strengthen supply chain resilience.

To amplify crowdfunding's impact, SMEs should actively participate in ecosystem-level collaborations with platforms, governments, and industry stakeholders. Establishing regional crowdfunding hubs that offer mentorship, networking, and access to digital tools such as marketing templates and analytics can help SMEs overcome legal, financial, and cultural barriers. Partnerships with local platforms in China (e.g., Jingdong, Modian) can provide tailored support, enhancing SME visibility and credibility. Additionally, joining industry alliances allows SMEs to share best practices and advocate for platform improvements, fostering a supportive ecosystem that drives sustainable growth and innovation.

Policymakers in emerging markets can also leverage these findings to design interventions that enhance SME adoption of crowdfunding platforms and promote sustainable development. Building on EC's role, policymakers should invest in capacity-building initiatives, such as digital literacy workshops and leadership training programs tailored to crowdfunding contexts, to develop EC across SME ecosystems. These initiatives can drive economic development by empowering SMEs to create jobs and foster financial inclusion, while socially, they support sustainable practices that benefit communities.

Regulatory frameworks should balance innovation with risk mitigation, providing clear guidelines for platform operations and consumer protection. Subsidies or tax incentives can lower entry barriers for resource-constrained SMEs, while investments in digital infrastructure, such as high-speed internet and mobile payment systems, can broaden access, building on China's advanced digital ecosystem. Public-private partnerships can support capacity-building programs such as digital literacy workshops and supply chain resilience training tailored to SMEs. Initiatives like China's "Internet Plus" strategy could be adapted to include crowdfunding-focused mentorship and funding schemes. These policies can enhance financial inclusion, empower underserved communities, and align with global sustainability goals.

By integrating entrepreneurial competency development,

transparency and trust-building mechanisms, proactive risk management, ecosystem-level collaborations, and supportive public policies, SMEs can fully harness the transformative potential of digital crowdfunding platforms to achieve resilient and sustainable growth in emerging markets.

6.3. Social and community implications

The societal impacts of this research are significant. By enabling SMEs to access crowdfunding platforms, this study contributes to financial inclusion and economic empowerment in underserved communities. Entrepreneurial competence amplifies these impacts by equipping SMEs to create jobs and adopt sustainable practices, fostering community development and aligning with global sustainability goals. Additionally, the emphasis on sustainable performance aligns with global efforts to achieve environmental, economic, and social sustainability, fostering broader societal benefits. This research demonstrates how digital entrepreneurship can drive social change by democratizing access to capital and fostering collaborative networks.

6.4. Limitations and directions for future research

Despite the valuable insights provided, this study has several limitations that should be acknowledged. First, the sample size, while sufficient for analysis, remains relatively small and focused, which may limit the generalizability of the findings across diverse SME contexts in emerging markets. Future research should consider larger and more diverse samples to validate and extend these findings. The geographical focus on Chinese SMEs introduces contextual boundaries that affect external validity. China's advanced digital infrastructure, government-driven innovation policies (e.g., "Internet Plus" strategy), and the unique institutional environment marked by significant regulatory voids and cultural emphasis on trust-based relationships provide a rich but specific context for studying crowdfunding adoption. These factors may enhance the role of digital platforms and entrepreneurial competence in ways that differ from other emerging markets with less-developed digital ecosystems or developed markets with stronger institutional frameworks, limiting the direct transferability of our findings.

Second, the cross-sectional design limits our ability to capture dynamic changes over time, constraining our understanding of how relationships evolve. Third, while the study focuses on specific aspects of entrepreneurial competency, social capital, and supply chain trust, it does not examine other potentially influential factors, such as market conditions, regulatory frameworks, and cultural contexts. Exploring these dimensions in future research could provide a more comprehensive understanding of how SMEs navigate crowdfunding ecosystems.

These limitations suggest multiple avenues for future research. First, longitudinal studies could provide deeper insights into the evolving nature of relationships between digital crowdfunding platforms, entrepreneurial competencies, and sustainable performance over time. Such studies would capture the dynamic and iterative aspects of platform usage and trust-building. Second, cross-country comparative studies, including both emerging markets (e.g., India, Brazil) and developed markets (e.g., USA, Germany), could uncover how institutional, cultural, and infrastructural differences influence crowdfunding adoption and sustainable performance, enhancing generalizability. Cross-cultural studies examining trust dynamics in diverse cultural contexts could further improve external validity.

Third, examining the role of technological advancements, such as blockchain and artificial intelligence, in enhancing platform efficiency, transparency, and trust could contribute to the literature by identifying innovative solutions to mitigate risks and build trust within crowdfunding ecosystems. Finally, future research could investigate the impact of government policies and support mechanisms on the success of crowdfunding initiatives, identifying ways to foster a more enabling environment for SMEs in emerging markets.

7. Conclusion

This study contributes to understanding how digital crowdfunding platforms can enhance the sustainable performance of SMMEs in emerging markets. By integrating entrepreneurial competency, social capital, supply chain trust, and risk management, this study highlights how SMEs can leverage these platforms to drive innovation, resilience, and sustainability. These findings underscore the strategic importance of fostering trust and collaboration within crowdfunding ecosystems to address challenges related to transparency and perceived platform risk. Addressing these challenges is essential for optimizing the benefits of digital crowdfunding and ensuring long-term success in resource-constrained environments. Addressing the challenges related to trust and risk management is essential for optimizing the benefits of digital crowdfunding and ensuring long-term success.

Appendix

CRediT authorship contribution statement

Yulong Liu: Writing – original draft, Methodology, Conceptualization. **Muhammad Mustafa Kamal:** Writing – review & editing. **Justin Zuopeng Zhang:** Writing – original draft, Methodology, Formal analysis, Conceptualization. **Mushfiqur Rahman:** Writing – original draft, Conceptualization. **Erhan Aydin:** Writing – original draft, Conceptualization.

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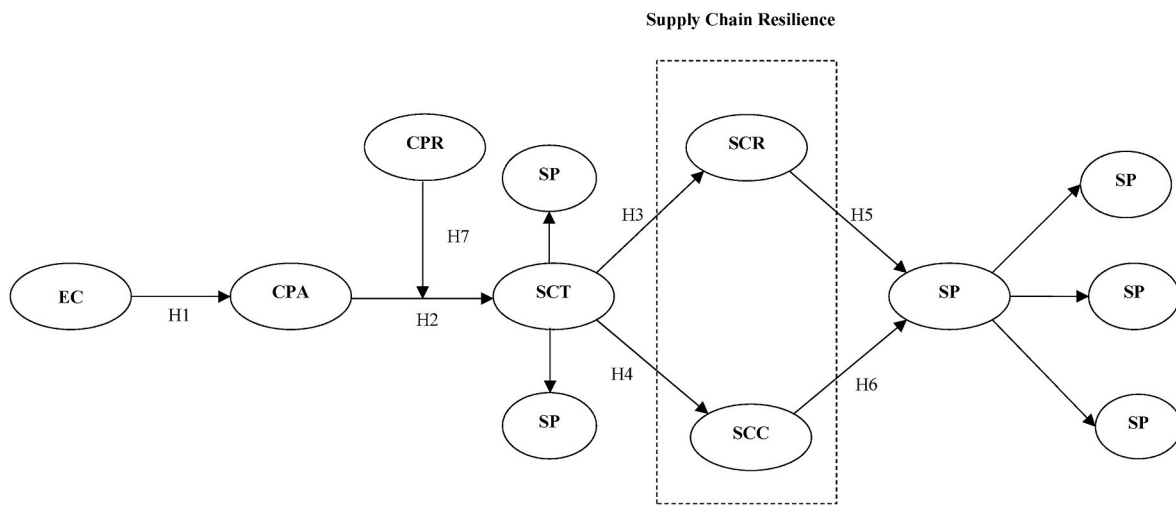


Fig. 1. The Research Model

Note: EC is entrepreneurial competence; CPA is crowdfunding platform adoption; CPR is crowdfunding platform risk; SCT is supply chain trust as a second-order factor, including competence-based trust and institution-based trust; SCR is supply chain robustness; SCC is supply chain collaboration. SP is sustainable performance as a second-order factor, including environmental, economic, and social performance)

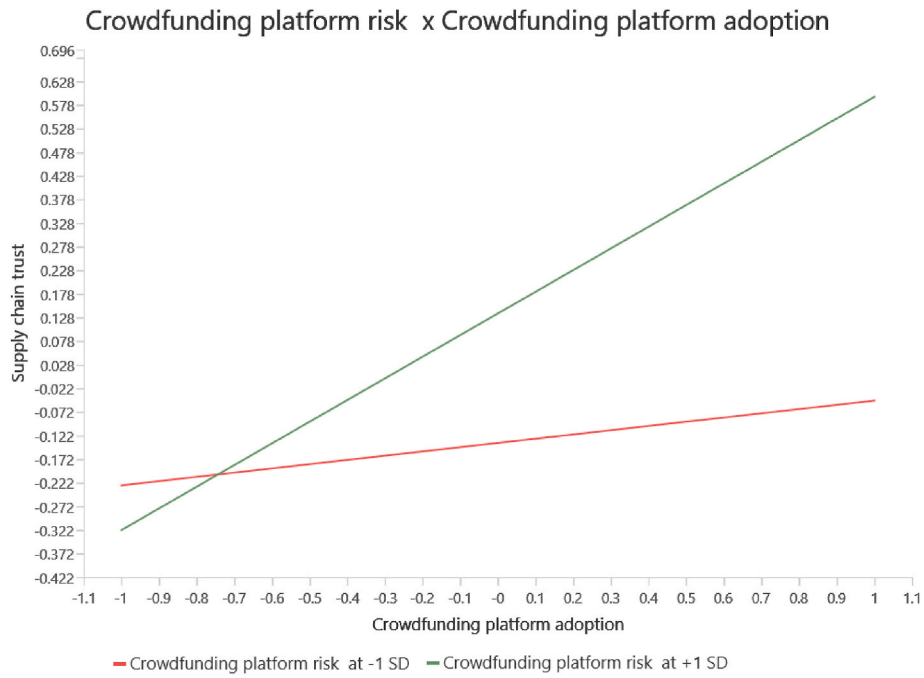


Fig. 2. Crowdfunding platform risk x supply chain trust.

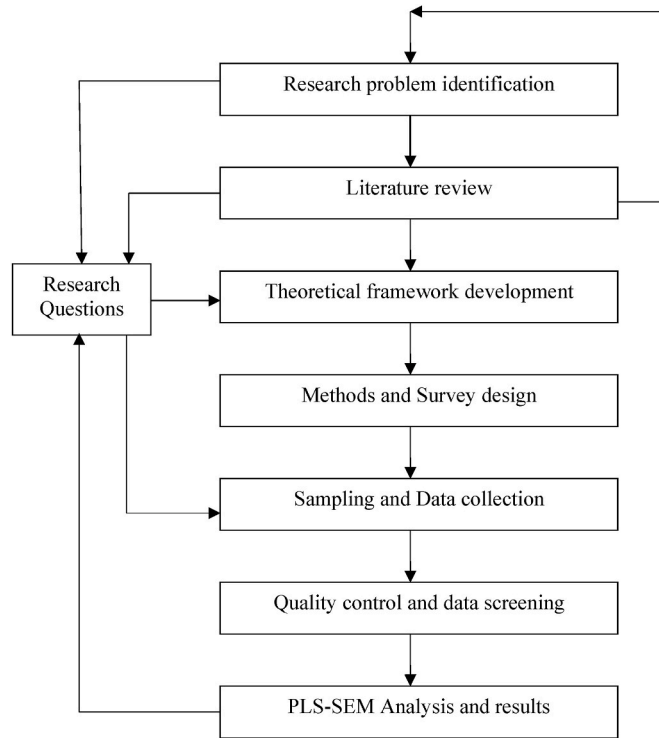


Fig. 3. The methodology flowchart

Table 1
Descriptive statistics and sample characteristics

	Numbers	Percentage (%)
<i>Firm Age</i>		
5 years or less than	21	12.4
6–9 years	48	28.2
10–20 years	65	38.2
21 years or above	36	21.2

(continued on next page)

Table 1 (continued)

	Numbers	Percentage (%)
<i>Employee Numbers</i>		
<50	52	30.6
50–99	38	22.4
100–149	44	25.9
150–249	36	21.1
<i>Respondent roles</i>		
Senior manager	139	81.8
Business owners	31	18.2
<i>Respondent Ages</i>		
18–25 years old	76	44.7
26–35 years old	60	35.3
36–45 years old	17	10.0
46–55 years old	8	4.7
56 year and above	9	5.3
<i>Respondents' Working Experience</i>		
Up to 10 years	74	43.5
11–20 years	69	40.6
Over 20 years	27	15.9
<i>Respondents' Education Background</i>		
Below High school	2	1.2
High school	42	24.7
University	93	54.7
Master degree or superior	33	19.4

Table 2
Confirmatory Factor Analysis on Measures

	Factor Loadings	Cronbach's Alpha	Composite Reliability	AVE
Entrepreneurial Competence		0.807	0.831	0.632
The marketing personnel in our firm interact frequently with others such as distribution, finance, and manufacturing, discussing customers' future needs.	0.855			
We periodically organize inter-function meetings to analyse all important market information.	0.818			
The sense around here is that employee learning is an investment, not an expense.	0.766			
The collective wisdom in our firm is that, if we quit learning, we endanger our future.	0.734			
Crowdfunding Platform Adoption		0.944	0.954	0.855
We have utilized digital tools such as crowdfunding platforms in our business processes.	0.929			
Digital tools such as crowdfunding platforms have had a huge impact on our business operations.	0.928			
If there is great potential for digital tools such as crowdfunding platforms in the business, we implement them a lot.	0.918			
Digital tools such as crowdfunding platforms have substantially changed our business processes.	0.923			
Crowdfunding Platform Risk		0.932	0.939	0.747
There is considerable risk involved in participating in this digital tool of crowdfunding platform.	0.865			
There is high potential for loss involved in participating in this digital tool of crowdfunding platform.	0.845			
Our decision to participate in this digital crowdfunding platform is risky.	0.877			
Our marketing operations may be risky in participating in this digital tool of crowdfunding platform.	0.893			
Business relationships with our customers may be risky in participating in this digital tool of crowdfunding platform.	0.871			
Competitors may exploit our private information in participating in this digital tool of crowdfunding platform.	0.833			
Supply Chain Trust (Second Order Factor)		0.920	0.920	0.610
Competence Based Trust		0.879	0.880	0.623
Our supply chain partners approach their jobs with professionalism and dedication.	0.802			
Our track record of supply chain partners gives no reason to doubt their competence and preparation for the job.	0.823			
Our supply chain partners feel that they can rely on this group not to make their job more difficult by careless work.	0.769			
Our supply chain partners, even those who are not close friends, have trust and respect for each other.	0.776			
Our supply chain partners interacting with others consider them to be trustworthy.	0.792			
Our supply chain partners can be counted on to fulfill their responsibilities in a reliable manner.	0.774			
Institution Based Trust		0.865	0.869	0.712
Based on past experience, we believe that supply chain partners are reliable.	0.853			
We believe that supply chain partners are dependable.	0.882			
We believe that supply chain partners are honest.	0.833			
We believe that supply chain partners are trustworthy.	0.805			
Supply chain robustness		0.868	0.872	0.655
Our firm is capable of meeting customer demand.	0.782			
The performance will not deviate significantly from the targets.	0.779			
Our firms have ample time to consider a reasonable reaction.	0.788			
Business transactions can continue.	0.823			
Our supply chain can perform its regular functions.	0.871			
Supply chain collaboration		0.892	0.898	0.699
Our firm aggressively shares resources to help suppliers improve their capabilities.	0.878			
Strategic objectives are jointly developed by supply chain partners.	0.804			

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Table 2 (continued)

	Factor Loadings	Cronbach's Alpha	Composite Reliability	AVE
Supplier performance is closely monitored and is the basis for future business.	0.832			
The principle of shared rewards and risks governs supply chain relationships.	0.836			
Value-added resources are shared among supply chain members.	0.827			
<i>Sustainable Performance (Second Order Factor)</i>		0.867	0.882	0.789
<i>Environmental Performance</i>		0.864	0.867	0.649
Reduction in air emission.	0.773			
Reduction in waste.	0.771			
Decrease in consumption of hazardous/harmful/toxic materials.	0.854			
Decrease in frequency for environmental accidents.	0.833			
Increase in energy saved due to conservation and efficiency improvements.	0.794			
<i>Economic Performance</i>		0.895	0.895	0.704
Decrease in cost of materials purchased.	0.795			
Decrease in cost of energy consumption.	0.853			
Decrease in fee for waste discharge.	0.861			
Improvement in return on investment.	0.851			
Improvement in earnings per share.	0.832			
<i>Social Performance</i>		0.867	0.882	0.789
Improvement in community health and safety.	0.917			
Reduction in environmental impacts and risks to general public.	0.915			
Improvement in occupational health and safety of employees.	0.831			

Note: AVE stands for average variance extracted. CBT stands for competence based trust; EnvP stands for environmental performance. EcoP stands for economic performance. SocP stands for social performance.

Table 3

Construct correlations and Discriminant validity – Fornell-Larcker criterion

Variables	1	2	3	4	5	6	7	8	9
1. CPA	0.925								
2. CPR	0.416	0.864							
3. EC	0.388	0.338	0.795						
4. FA	-0.039	0.106	-0.006	1					
5. FS	0.055	0.11	0.108	0.471	1				
6. SCC	0.517	0.431	0.581	0.072	0.24	0.836			
7. SCR	0.422	0.398	0.578	0.033	0.079	0.755	0.809		
8. SCT	0.327	0.286	0.601	0.083	-0.003	0.458	0.605	0.781	
9. SP	0.436	0.288	0.623	-0.016	0.076	0.622	0.577	0.369	0.732

Note: EC is entrepreneurial competence; CPA is crowdfunding platform adoption; CPR is crowdfunding platform risk; SCT is supply chain trust as a second-order factor including competence-based trust and institution-based trust; FA is firm age; FS is firm size; SCR is supply chain robustness; SCC is supply chain collaboration. SP is sustainable performance as a second-order factor, including environmental, economic and social performance).

Table 4

Path results.

Path	Path Coefficient	S.D.	T Statistics	Results
Crowdfunding platform adoption → Supply chain trust	0.274	0.090	3.037	Supported
Crowdfunding platform risk → Supply chain trust	0.137	0.082	1.667	Supported
Entrepreneurial competence → Crowdfunding platform adoption	0.388	0.061	6.330	Supported
Supply chain collaboration → Sustainable performance	0.452	0.099	4.585	Supported
Supply chain robustness → Sustainable performance	0.240	0.114	2.105	Supported
Supply chain trust → Supply chain collaboration	0.458	0.068	6.776	Supported
Supply chain trust → Supply chain robustness	0.605	0.059	10.29	Supported
Crowdfunding platform risk x Crowdfunding platform adoption → Supply chain trust	0.185	0.068	2.702	Supported
Control variables				
Firm age → Sustainable performance	-0.041	0.068	0.601	Not significant
Firm size → Sustainable performance	-0.032	0.078	0.408	Not significant
Model fit				
R ² for CPA				0.150
R ² for SCC				0.210
R ² for SCR				0.366
R ² for SCT				0.174
R ² for SP				0.418
SRMR				0.077

Note: SRMR is Standardized Root Mean Square Residual. CPA is crowdfunding platform adoption; CPR is crowdfunding platform risk; SCT is supply chain trust; SCR is supply chain robustness; SCC is supply chain collaboration. SP is sustainable performance.

Data availability

Data will be made available on request.

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