

# Owner-managers failure experience and business model innovations in B2B firms: The roles of coopetition, managerial persistence, and financial resource slack



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## ABSTRACT

This study proposes and tests a model of how and when previous failure experience can impact on subsequent business model innovation of business-to-business (B2B) SMEs. Analysis of survey data from a sample of 182 B2B SMEs in Ghana indicates that failure experience is positively related to business model innovation – and that coopetition capability mediates this failure experience. Further analysis of boundary condition effects reveals that high levels of financial resource slack strengthen the positive relationship between coopetition and business model innovation, while the level of managerial persistence has no effect on failure experience and coopetition relationship. We discuss the theoretical and managerial implications of these findings.

## 1. Introduction

Uncertainty is a key part of business activities and, as such, the entrepreneurship literature has suggested that failure experience is a key part of entrepreneurial processes (e.g., see Lee, Wiklund, Amezcua, Bae, & Palubinskas, 2021; Stroe, Sirén, Shepherd, & Wincent, 2020). Business failure, often referred to as the cessation of a venture due to its inability to meet a minimum performance and economic viability threshold, involves a mixed entrepreneurial process of cost and benefits (Shepherd & Haynie, 2011; Ucbasaran, Westhead, Wright, & Flores, 2010; Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Accordingly, both tangible and intangible resource constraints such as limited finances and profitable social connections are some of the triggers of business failure (Sarpong, Maclean, Oruh, & Botchie, 2021). For a number of scholars, actual entrepreneurial or business failure experience can have both positive and negative outcomes for entrepreneurs (Amankwah-Amoah, Khan, Ifere, Nyuur, & Khan, 2021; Boso, Adeleye, Donbesuur, & Gynsare, 2019; Lee et al., 2021). At the individual level, business failure can have a positive effect through an initiation and nurturing of a learning

opportunity as well as diffusing positive knowledge which then becomes the basis for future business success (Lee, Wiklund, Amezcua, Bae and Palubinskas, 2021; Shepherd, 2003). Moreover, failure experience could foster entrepreneurs' ability to facilitate innovativeness and creativity, as well as in effectively spotting and exploiting market opportunities (Weinberger, Wach, Stephan, & Wegge, 2018; Voss & Voss, 2013). Similarly, within the broader context, entrepreneurs' experience and skills learned from business failure can be used to move economies forward (Hoetker & Agarwal, 2007). However, although recognised as useful, business failure presents unique challenges for entrepreneurs, particularly through the financial loss, and social and psychological burden that are intimately linked with failure (Boso et al., 2019; Ucbasaran et al., 2013). Indeed, business failure experience could severely discredit entrepreneurs' reputation and constrain their ability to re-engage in the entrepreneurial process (Amankwah-Amoah et al., 2021).

While these prior works have provided important insights as well as the paradoxical effect of business failure experience on various performance outcomes, there is limited evidence in the extant literature on

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how business failure experience can shape innovation activities, such as how firms in a B2B relationship innovate their business models. Thus, recent research suggests that failure experiences and traits such as physiological and mental recovery may impact on subsequent business innovation, creativity and re-entry activities (e.g., Weinberger et al., 2018; Lafuente, Vaillant, Vendrell-Herrero, & Gomes, 2019). In the specific context of business-to-business (B2B) small and medium enterprises (SMEs), failure can directly affect business partners as well as indirectly affect consumers (Zahoor, Golgeci, Haapanen, Ali, & Arslan, 2022). Accordingly, B2B SMEs engage in complex coopetitive relationships as their daily routines (Chai, Li, Tangpong, & Clauss, 2020). By coopetition, we refer to the process of simultaneous cooperation and competition between two or more B2B SMEs (Chai et al., 2020). Nevertheless, researchers have bemoaned the lack of research on the role of coopetitive relationships in process innovation performance (Chai et al., 2020). Moreover, little is known about the mechanisms through which business failure experience can impact B2B SMEs' business model innovation – a process that describes how B2B SMEs capture, create and deliver customer and/or firm value. In addressing these knowledge gap, we argue that the coopetition capability of B2B SMEs can be a useful path through which failure experience can be channelled into business model innovation (Velu, 2016; Corbo et al., 2022).

Accordingly, our study first investigates the direct effect of owner-managers' failure experience on their B2B SMEs' business model innovation. Secondly, we explore the extent to which owner-managers' prior failure experience affects B2B SMEs' coopetition, on the one hand, and the effects of coopetition on their business model innovation on the other hand. We propose that owner-managers' business failure experience may facilitate coopetition – simultaneous cooperation and competition between rival B2B SMEs for mutual gain (Chai et al., 2020; Luo, 2007) – among B2B firms and that will in turn drive their business model innovation (i.e., ways of creating and capturing value for stakeholders, Casadesus-Masanell & Zhu, 2013). Next, we extend our business failure experience – coopetition – business model innovation model by exploring the moderating roles of (1) managerial persistence on the relationship between owner-managers' failure experience and coopetition and (2) financial resource slack on the relationship between coopetition and BMI. Both managerial persistence and financial resource slack are significant resources that B2B SMEs can deploy to enhance their competitiveness and survival after failure experience. Specifically, managerial persistence involves the tenacity and commitment in pursuit of entrepreneurial goals (Adomako, Danso, Uddin, & Damoah, 2016; Caliendo, Goethner, & Weißenberger, 2020) and this is important, particularly in the face of uncertainties (Gimeno, Folta, Cooper, & Woo, 1997; Shane, Locke, & Collins, 2003a, 2003b) and after a failure experience when entrepreneurs seek to engage in further opportunity-seeking behaviours such as collaborations. To this end, we argue that managerial persistence could be an important factor in strengthening the failure experience–coopetition relationship. Financial resource slack, on the other hand, refers to the available financial resources that can be utilised by managers of B2B SMEs to achieve their performance goals and objectives (Nwoba, Boso, & Robson, 2021). Thus, financial resource slack may cause B2B SMEs to commit greater financial capital to investment decisions (Lee, 2015; Voss, Sirdeshmukh, & Voss, 2008); spend on R&D activities; and explore new markets and opportunities in order to survive. Accordingly, we posit that the presence of a significant amount of financial resource slack should strengthen the B2B SMEs coopetition–business model innovation relationship.

We test our argument by using primary data obtained from 182 owner-managers of B2B SMEs from Ghana. Indeed, business conditions in Ghana are noted to be highly turbulent, therefore providing a breeding ground for many businesses to fail (Amankwah-Amoah, Boso, & Antwi-Agyei, 2018; Boso et al., 2019). Accordingly, this makes Ghana an appropriate and interesting context to investigate these ideas. In developing our arguments, we draw on resource-based view (RBV) theory, which proposes that owning essential resources facilitates a firm

to establish competitive advantage and improve performance (Barney, 1991; Chahal, Gupta, Bhan, & Cheng, 2020). Thus, we conceptualise business failure experience as a resource (Boso et al., 2019) that aids owner-managers' ability to collaborate with competing firms in order to innovate their (owner-managers') business models.

By way of a preview, the results obtained from our analysis indicate that failure experience is positively related to B2B SMEs' business model innovation. Next, we find that failure experience is positively related to B2B SMEs' coopetition, and coopetition, on the other hand, is positively related to B2B SMEs' business model innovation – providing a partial support for a mediation effect of failure experience on B2B SMEs' business model innovation via coopetition. Further analysis shows that high levels of financial resource slack strengthen the positive relationship between failure experience and B2B SMEs' business model innovation. However, we found no evidence to suggest that managerial persistence moderates the failure experience–B2B SMEs coopetition relationship. Our study contributes to the existing literature in the following ways. First, we identify business failure experience as an important driver of B2B SMEs' coopetition, which ultimately drives business model innovation. Specifically, we show that, through failure experience, rival firms work together by taking collective actions for common goals (Luo, 2007). By so doing, this study informs the research on determinants of business innovation by uncovering the role of coopetition in this setting (Bacon, Williams, & Davies, 2020; Ritala, 2012). Our second contribution stems from the moderating role of financial resource slack. Here, we draw on the resource-based view and demonstrate financial resource slack as a firm-level resource that enhances the coopetition–business model innovation relationship. While the relationship between financial resource slack and various corporate outcomes is well documented in the exiting literature (Boso et al., 2017; Lee, 2015; Voss et al., 2008; Wang, Choi, Wan, & Dong, 2016), we are the first – to the best of our knowledge – to test the moderating role of the financial resource slack, coopetition–business model innovation relationship. Third, our focus on a developing country's setting (Ghana) offers a contextual understanding of business failure and business model innovation relationship from the perspective of a unique empirical setting which has largely been ignored in prior studies. Indeed, prior works have largely focused on a developed countries' context where market conditions are less turbulent (e.g., see Eling & Jia, 2018; Kollmann, Stöckmann, & Kensbok, 2017; Mayr, Mitter, Kücher, & Duller, 2021), and less attention has been placed on firms operating in a developing countries' context – particularly those within sub-Saharan Africa. Therefore, by focusing on a developing country's context, we add to the limited prior works on business failure and its related outcomes (Amankwah-Amoah et al., 2018; Boso et al., 2019).

The rest of the paper proceeds as follows. In the next section we present the theoretical background and the discussion around the relationship between business failure experience, coopetition, managerial persistence, and resource slack on the one hand, and business model innovation on the other. These discussions lead to the development of the hypotheses. This is followed by a description of the research approaches adopted in sampling as well as in collecting and analysing the data. The results are subsequently presented and discussed in the context of the literature and the context of the study. In the final section, significant contributions of the study in terms of the implications for both research and practice are presented, leading to the conclusion of the paper.

## 2. Theory and hypotheses development

Studies have highlighted that new business ventures experience immense pressure, numerous missteps, high uncertainty and reduced opportunity exploitation (Stroe et al., 2020), due to their liabilities of newness and smallness which contribute to the failure of a significant proportion of start-ups (Ucbasaran et al., 2013). Sarpong et al. (2021) further highlight that a 'scarcity mindset', which they referred to as the

feeling by entrepreneurs that they have low resources relative to their needs, may influence them to make suboptimal or poor decisions that could their business to fail. Thus, both physical resource scarcity and the feeling of scarcity (scarcity mindset) can drive entrepreneurs to behave in less capable ways, leading to business failure (Mani, Mullainathan, Shafir, & Zhao, 2013; Sarpong et al., 2021). This underscores the centrality of business failure experience in the entrepreneurial process as well as within the dynamic entrepreneurial ecosystem. Business failure experience refers to a period in a firm's experience of performance decline and the inability to turn things around to meet the minimum economic viability threshold despite their best efforts, which ends with the cessation of the business (Amankwah-Amoah et al., 2021; Boso et al., 2019; Byrne & Shepherd, 2015).

The existing theoretical debates around business failure experience suggest that such a prior failure experience can be an asset or a liability for learning and subsequent entrepreneurial activities (Amankwah-Amoah et al., 2021; Ucbasaran et al., 2013). The failure experience as a liability perspective suggests that business failure experience may be associated with negative effects such as the feeling of shame, stigma, grief, guilt, anger, and the loss of essential professional networks (Lafuente et al., 2019; Lee et al., 2021). It may be a traumatic experience that curtails organisational and individual learning and the potential for entrepreneurial re-entry (Amankwah-Amoah et al., 2021). In the context of B2B SMEs, their inadequate safety nets can leave them vulnerable to external shocks and failure (Zahoor et al., 2022). Such B2B SMEs' failure could have immense direct and indirect impacts on other stakeholders such as business partners and customers (Zahoor et al., 2022). When the liability of business failure experience outstrips the potential benefits of learning from it, it may lead to the obstruction of entrepreneurial careers and subsequent venture creation (Ucbasaran et al., 2013). A recent study highlighted, however, that the severity of these business failure experience effects depends on institutional conditions which differ across regions and countries (Lee et al., 2021). Business failure experience as a liability can therefore shape subsequent venture success or failure, especially in contexts of institutional voids (Amankwah-Amoah et al., 2021). Others also suggest that entrepreneurs transition from the negative feelings and effects in the immediate aftermath of the failure, to a period of sense-making that facilitates learning from the failure experience (Boso et al., 2019; Cope, 2011).

The business failure experience as an asset perspective, on the other hand, acknowledges that business failure experience could serve as an enabling force for learning and engaging in subsequent venturing activities (Amankwah-Amoah et al., 2021; Boso et al., 2019; Ucbasaran et al., 2013). Such a process is crucial and valuable for organisations' adaptation in the dynamic entrepreneurial process and the business environment (Martignoni & Keil, 2021). For example, failure leads to

entrepreneurial resilience (e.g., Corner, Singh, & Pavlovich, 2017), which can serve as an important capability for business model innovations during re-entry or new product or process introduction. Accordingly, business failure experience could lead to the accumulation of useful resources and the cultivation of relevant and resilient capabilities that underpin entrepreneurs ability to survive and effectively exploit both existing and emerging opportunities (Sørensen & Stuart, 2000). Fig. 1 below presents the conceptual model and hypotheses of the study.

## 2.1. The resource-based view (RBV)

The study draws on the tenets of the resource-based view (RBV) to explain how failure experience influences business model innovation either directly or through coopetition. The resource-based view of the firm suggest firms are heterogeneous bundles of idiosyncratic resources and capabilities – that turn out to be the sources of competitive advantage (Barney, 1991; Wernerfelt, 1984). According to the RBV, a firm's survival, success and competitive advantage depend on the possession and deployment of resources that are valuable, rare, inimitable and non-substitutable (Barney, 1991; Teece, Pisano, & Shuen, 1997). In effect, the RBV helps us understand how such resources are organised to drive firms' competitive advantage. To this end, learning from failure experience can be a tacit, firm- and individual-specific resource that entrepreneurs can use to achieve competitive advantage (e.g., Boso et al., 2019). An extension of the RBV is the dynamic capabilities perspective, which focuses on the processes that firms deploy to reconfigure, integrate and release resources as markets evolve (Eisenhardt & Martin, 2000; Teece et al., 1997). Thus, the tendency of a firm or an entrepreneur to learn and leverage failure experience as an asset may influence the development of resilient capabilities and new venture creation (Amankwah-Amoah et al., 2021). From a resource-based view, studies highlight that learning, unlearning and relearning in the aftermath of business failure are crucial capabilities that shape the ability of entrepreneurs to reconfigure and integrate diverse sources of knowledge to identify opportunities, and appropriately release resources to exploit them (Boso et al., 2019).

Despite the extensive discussion on business failure experience, it is not clear how that experience, especially based on the learning from failure perspective, influences any type of innovation, and specifically business model innovation. We argue that the process of learning, unlearning and relearning from the failure experiences could provide crucial tacit and explicit resources that could be integrated and reconfigured to facilitate B2B SMEs' business model innovation. For example, entrepreneurs and business owners learn from the failure experiences, develop new skills and knowledge, and become more resilient (see Boso

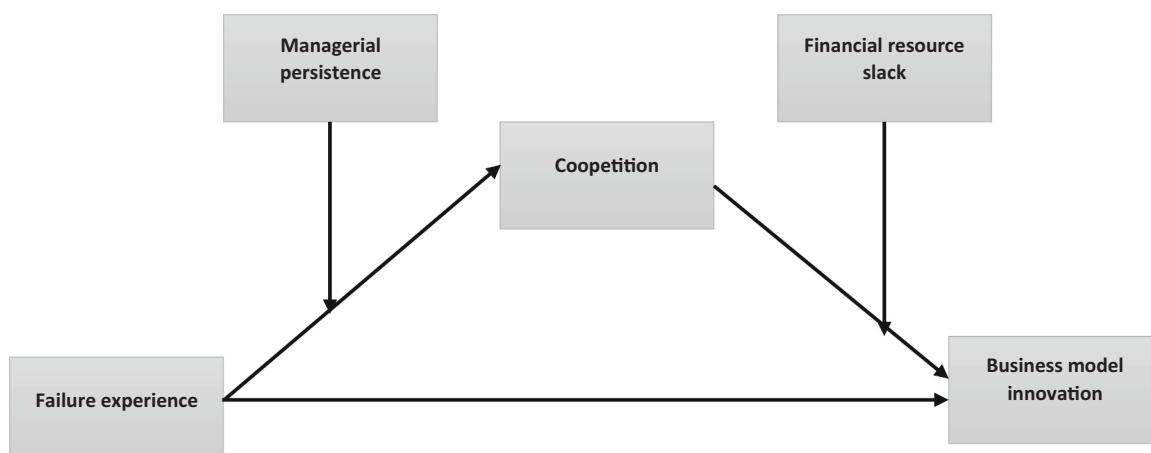


Fig. 1. Conceptual model.

et al., 2019; Corner et al., 2017; Mueller & Shepherd, 2016) – attributes that are very conducive to identifying, innovating and exploiting new business opportunities. Thus, we take a cue from the tenets of the RBV and contend that business failure experience is a resource – characterised by unique attributes – that helps owner-managers of B2B SMEs to innovate their business models either directly or through coopetition. We further rely on the tenets of the RBV, and argue for the significant roles of managerial persistence and financial resource slack as boundary condition resources that can shape the failure experience – coopetition – business model innovation relationships (see Fig. 1). The cognitive resource of persistence helps entrepreneurs to stay motivated, committed, and continue to engage in venture-creation activities despite challenging conditions within the firm and the external environment (e.g., Holland, 2011; Holland & Shepherd, 2013; Caliendo et al., 2020). We contend that such psychological commitment is a rare resource that entrepreneurs can use after a failure experience. Similarly, high resource slack is crucial for B2B SMEs that seek to continually innovate their business models. Thus, the availability of such resource will help managers of B2B SMEs to explore new partners, markets, knowledge and opportunities that are relevant to latent customer needs (see Boso et al., 2017; Nwoba et al., 2021).

## 2.2. Failure experience and business model innovation

Business model refers to the representation and interaction of an organisation's components in value proposition, creation, delivery and value capture that are underpinned by organisational capabilities and resources (Geissdoerfer, Vladimirova, & Evans, 2018). Business model describes the value structures, relevant activities and functions that serve as sources of value creation and enable an organisation to achieve its goals (Massa, Tucci, & Afuah, 2017; Wirtz, Pistoia, Ullrich, & Göttel, 2016). However, because firms operate under a volatile and ever-changing business environment, they require adaptation of their business models to survive (Klein, Spieth, & Heidenreich, 2021). According to Geissdoerfer Vladimirova and Evans (2018:406), business model innovation refers to the “process of business model exploration, adjustment, improvement, redesign, revision, creation, development, adoption, and transformation”. The capability for timely and appropriate business model innovation is suggested to have the potential to enhance a firm's resilience to changes in its environment and constitute a source of sustainable competitive advantage (Mitchell & Coles, 2003).

While research has highlighted the crucial role of business model innovation in firms' performance (Bocken, Short, Rana, & Evans, 2014; Zott, Amit, & Massa, 2011), it is not clear how business failure experience shapes or facilitates business model innovation. Similarly, prior research has signalled the role of business failure experience on firms' learning and deployment of new knowledge into new ventures (Amankwah-Amoah et al., 2021; Boso et al., 2019; Martignoni & Keil, 2021). Nevertheless, the role of business failure experience on business model innovation has not been conceptualised or empirically examined. This study seeks to advance both the business failure and business model innovation research streams by arguing that learning and developing resilience capabilities from failure experience enable the identification and exploration of new opportunities through business model innovations. Arguably, establishing a new venture, and partnering with other businesses following a failure experience would require a new business model. Firms would integrate the knowledge, experiences and capabilities acquired from the prior failure to adapt the new venture business model to overcome the missteps made and pitfalls encountered in the previous venture. Failure experience should influence the set of choices that a B2B SME makes that reflects its strategy for survival and performance enhancement in the new venture.

Drawing on the resource-based view, recent scholars have identified the cultivation of resilience and learning from failure experience as key capabilities that could facilitate entrepreneurs and B2B SMEs' integration and reconfiguration of knowledge to effectively identify and exploit

opportunities in the ever-changing business environment (Boso et al., 2019; Sørensen & Stuart, 2000). In line with this reasoning, we argue that learning from failure experience enables entrepreneurs and firms to innovate their new venture business model. Innovation in processes, products and services relies on the acquisition of new knowledge or experience which enables the organisation to recombine its resource portfolio in a unique way. This allows firms to deploy their resources effectively to survive environment turbulence, meet emerging customer needs and survive. Thus, we hypothesise that:

**H1. Failure experience is positively related to business model innovation.**

## 2.3. The mediating role of coopetition

This study further posits that the effects of business failure experience on business model innovation are channelled through a firm's collaboration with its competitors in collectively pooling and utilising valuable resources together. First, the concept of coopetition refers to a collaborative arrangement by rival firms in committing to common goals and sharing complementary resources for value creation, while competing at the same time through independent actions for value appropriation (Arakpogun, Elsaahn, Nyuur, & Olan, 2020; Bouncken, Fredrich, & Kraus, 2020). The hybrid behaviour of competing and collaborating between two or more rival firms has become salient in recent times and has attracted research attention (Bouncken et al., 2020). Studies have highlighted that coopetition allows firms to learn from each other, share risks and costs, as well as pool resources (Amankwah-Amoah, 2020) – processes that are very conducive for innovative activities. In the context of SMEs, coopetition is said to be crucial for their innovativeness (Bouncken & Kraus, 2013). Thus, despite the associated risk of opportunism in coopetition, B2B SMEs are able to bypass the challenges of limited resources and capabilities and innovate (Bouncken & Kraus, 2013) by engaging in coopetition Second, drawing on the resource-based view, researchers have articulated that firms are able to use their limited resources and knowledge more efficiently through the integration and bundling of resources and capabilities from competing firms (Ritala, 2012; Sanou, Le Roy, & Gnyawali, 2016). Thus, through coopetition, B2B SMEs will be able to integrate their knowledge with that of competing firms to identify market gaps and cues, customer needs, changes in market conditions and other relevant information necessary for the innovation of their business models. Third, a recent study revealed that many failed businesses used their experiences to relaunch subsequent ventures with their competitors (Amankwah-Amoah et al., 2021). Collaborating with their competitors enables them to leverage their diverse failure experiences, mitigate risks of subsequent failure and innovate (Bouncken et al., 2020). Additionally, coopetition helps businesses with failure experience to carefully reshape their business routines and processes (Amankwah-Amoah et al., 2021). Coopetition allows easy transfer of tacit knowledge, skills and other resources among the collaborating and competing firms, which shape their business models (Bouncken & Kraus, 2013). Put together, the sharing of resources, market knowledge and information by competing firms can enhance business model innovation. Thus, we hypothesise that:

**H2. Coopetition mediates the positive relationship between failure experience and business model innovation.**

## 2.4. The moderating roles of managerial persistence and financial resource slack

The process of founding and growing a business is full of uncertainties as entrepreneurs encounter various constraints along the way (Bylund & McCaffrey, 2017; Shane et al., 2003a, 2003b). As such, prior literature considers managerial persistence as an important tool for achieving success in the pursuit of a goal (Adomako et al., 2016; Caliendo et al., 2020). Persistence entails the decision to pursue effortful action in spite of the presence of treats, impediments or failures

(Caliendo et al., 2020; Gimeno et al., 1997). To this end, entrepreneurs can leverage the cognitive capability of persistence to enhance the effect of failure experience on coopetition. Thus, even in times of difficulty such as failure, entrepreneurs that persist will be more likely to collaborate and network with competing firms as a way of re-growing or re-creating their ventures. Again, from the work of Cardon and Kirk (2015), persistence is identified as essential for entrepreneurial success. Particularly, they propose that persistence assists entrepreneurs to navigate through complex challenges involved in starting and running a business – such problems may be the negative attributes or opportunism involved in coopetition. Thus, entrepreneurs that demonstrate persistence are well placed to sail through these challenges and derive the maximum benefits from the effect of failure experience on coopetition. Indeed, in a more challenging and resource-constraint context such as sub-Saharan Africa, where decisions to persist with business activities must be repeatedly made, entrepreneurial persistence has been found to play an even more important role in determining the outcome of entrepreneurial activities (Adomako et al., 2016). Accordingly, we argue that persistence will enable entrepreneurs with failure experience to continue to engage and collaborate with competitors. Thus, extrapolating from the above, we state our next hypothesis as:

**H3a.** *The positive relationship between failure experience and coopetition is strengthened when managerial persistence increases in magnitude.*

The concept of financial resource slack refers to unabsorbed and usable liquid capital that can be utilised by an organisation towards its goals (George, 2005; Voss et al., 2008). As such, prior studies consider finance resource slack as an important buffer for a firm's operations (Lee, 2015; Wang et al., 2016). Again, recent literature suggests that resource slack may have a role to play in inter-firm learning and coopetition (e.g. Fredrich, Bouncken, & Kraus, 2019). Against this backdrop, we anticipate that B2B SMEs that possess resource slack while simultaneously cooperating and competing with competitors are more likely to achieve the maximum from their business model innovations. Specifically, for B2B SMEs within a resource-constraint environment, engaging in coopetition and the availability of resource slack, may help to explore new knowledge and markets, spend on R&D activities, and stimulate learning, while exploiting existing market opportunities to enhance the innovation of their business models. Thus, seen from a slack resource theory standpoint, having a substantial amount of financial slack is expected to enhance greater financial support for innovation activities (O'Brien, 2003). Relatedly, financial resource slack has been repeatedly shown in the literature to be an important aspect of entrepreneurial activities as it allows firms to proactively respond to opportunities and deal with uncertainties (e.g., Boso et al., 2017; Nwoba et al., 2021). Thus, considering the paradoxical effect of coopetition, the availability of resource slack may carry the advantage of (1) offsetting the cost involved in coopetition and/or (2) complement the benefits of coopetition in order to enhance business model innovation. Put together, the effect of coopetition on business model innovation will be more pronounced when B2B SMEs possess resource slack. Taken together, we state our final hypothesis as follows:

**H3b.** *The positive relationship between coopetition and business model innovation is strengthened when financial resource slack increases in magnitude.*

### 3. Methods

#### 3.1. Study setting

Our study setting is Ghana, a developing economy in sub-Saharan Africa. The reasons for using Ghana as a context are threefold. First, Ghana's business environment is characterised by small and medium-sized enterprises that contribute to >80% of the country's economic activities and significant growth in its Gross Domestic Product (GDP)

(OECD, 2008; Amankwah-Amoah et al., 2018). Thus, the activities of SMEs have contributed to increased economic activities, employment and GDP growth. Second, the economic and socio-political landscape of Ghana has seen considerable improvements in the past decades. Key among them include favourable trade and international business policies, competitive business environment, improved internet infrastructure and democratic principles. This landscape has opened up the country to entrepreneurial activities from within the country and outside investors (African Development Bank Group, 2018; Amankwah-Amoah et al., 2018). Third, like most developing countries, Ghana is susceptible to institutional weakness and voids that can have a paradoxical role of (1) limiting the growth of entrepreneurial firms (Adeleye, White, & Boso, 2016) or (2) becoming a propeller and a source of competitive advantage for SMEs (Gao, Zuzul, Jones, & Khanna, 2017; Adomako et al., 2016). In sum, despite the unique characteristics of Ghana, such as rapid economic growth and increased developing markets and investment, as well as the paradoxical effects of its institutions, the processes and outcomes of business failure experiences have largely been dominated by Western contexts in the entrepreneurship and management literature. We argue that testing our hypotheses in such a resource-advantaged, yet unique context will contribute significantly to the growth and management of SMEs as well as the business failure literature.

#### 3.2. Sample and data collection procedure

We test our model on a sample of business-to-business (B2B) small and medium-sized enterprises (SMEs) operating in Ghana. In line with previous B2B studies (see Reijonen, Hirvonen, Nagy, Laukkanen, & Gabrielsson, 2015) and relative to the study context, a professional marketing research company in Ghana was contracted to collect data (through survey questionnaire) from a sample of B2B SMEs. The company has a mailing list of 500 B2B SMEs sourced from multiple databases such as the Ghana Business Directory and the Ghana Company Register (Acquaah, 2007; Boso, Story, & Cadogan, 2013), across multiple industries. Subsequently, a well-developed and valid survey questionnaire was sent to the data collection agency to administer to the selected respondents. A key feature of the questionnaire was the inclusion of a screening question asking about any failure experience of the responding firms. We followed previous business failure research (e.g., Boso et al., 2019; Ozcan & Eisenhardt, 2009) to ensure that participants have experienced at least one of the many criteria of business failure (a full description of the measurement of business failure experience is provided in the next section). Next, we adopted the multiple respondents approach as a way of mitigating the effect of common method bias. The key respondents include CEOs, owner-managers, finance officers, and new business development (innovation) managers. After many rounds and two time points of data collection activities through face-to-face, online and mail, the agency returned to us 198 completed questionnaires, of which 182 were usable – representing a 36.4% effective response rate. The final sample is spread across different industries including Manufacturing (48.3%), Services (17.1%), E-commerce (15.4%), Wholesale/Retail (9.3%), Construction/Real Estate (7.2), and Oil and Gas (2.7%). The mean value of the firm size (measured by number of full-time employees) is 42, while the average age of the sample firms was 8.8 years.

#### 3.3. Measurements

##### 3.3.1. Business failure experience

Following on from previous research, we perceived business failure experience “to have taken place if the respondent had closed or sold a business due to bankruptcy, liquidation or receivership, or if the business had been closed or sold because it had failed to meet the expectations of the entrepreneur” (Ucbsaran et al., 2010, p. 6). Based on this definition, we measured failure experience by asking respondents to

state “the total number of failed businesses they had owned” (Ucblasan et al., 2010, p. 6).

### 3.3.2. Business model innovation

We followed a recent study by Klein et al. (2021) to measure BMI as a second-order dimension with three dimensions. The dimensions are Value offering innovation (VOI), Value architecture innovation (VAI) and Revenue model innovation (RMI). With all three dimensions, BMI can be captured in any of those constituents. Accordingly, respondents were asked to indicate the extent to which they agree with statements (7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*) concerning any changes that have been made in all three dimensions of the BMI construct. The specific number of items for each dimension are VOI (3), VAI (3) and RMI (2).

### 3.3.3. Coopetition

As with previous research, we conceptualised coopetition as an interorganisational relationship capability that concerns collaboration and competition (Bouncken & Fredrich, 2012). Three items were adopted from Bouncken and Kraus (2013) to measure coopetition. Using a 7-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*), respondents were asked to indicate the extent to which the chosen statements apply to them. The coopetition items include “...are in close competition with our partner(s)” and “...collaborate with competitors to achieve a common goal underpinning these products”.

### 3.3.4. Managerial persistence

We measured managerial persistence by adopting three items from Cardon and Kirk's (2015) measures of entrepreneurial persistence. On a 7-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*), we asked respondents to indicate their agreement with the selected items including “I continue to work on hard projects even when others oppose me”.

### 3.3.5. Financial resource slack

Financial resource slack was measured by three items adopted from Boso et al. (2017). The items include “There has been easy access to financial capital to support our business”, “There have been substantial financial resources at the discretion of our managers for funding operations” and “If we needed more financial capital for our operations, we could easily get it”.

### 3.3.6. Control variables

Following on from extant studies and the study contexts, we controlled for both firm- and market-level variables that may have any influence on coopetition and business model innovation. Specifically, we controlled for firm size (measured as total number of full-time employees); firm age (number of years the firm has been in operation); industry classification (Manufacturing = 1; Services = 2; Ecommerce = 3; Wholesale/Retail = 4; Construction/Real Estate = 5; and Oil and Gas = 6). Additionally, we included other multi-scale variables such as institutional support and perceived environmental dynamism – with each being measured with three items. Firm size, age and the industry within which the firm operates can affect the level of coopetition as well as how firms innovate their business models (Klein et al., 2021; Lechner, Soppe, & Dowling, 2016). For example, large firms have the advantage of economies of scale and high visibility in the external market, hence are able to innovate their business models (Bashir and Verma, 2019). In contrast, the effects of coopetition on growth differ among young and small firms (see Lechner et al., 2016). Further, we selected perceived institutional support and environmental dynamism as control variables, in that government support (e.g., R&D support), the continuous changes in customer preferences, competitor strategies, changes in technology, and other market conditions may influence the likelihood of firms innovating their existing business models (Foss & Saebi, 2017; Amankwah-Amoah et al., 2021). Table 1 provides details of measurement items

**Table 1**  
Constructs and measurement items.

	Factor loadings	CR	AVE
<b>Value offering innovation</b>		0.95	0.88
Our target customers have changed	0.95		
The product and service offering has changed	0.94		
Our positioning in markets has changed	0.91		
<b>Value architecture innovation</b>		0.88	0.72
The firm's core competences and resources have changed	0.94		
Our internal value creation activities have changed	0.90		
The roles and involvement of our partners in the value creation process have changed	0.69		
<b>Revenue model innovation</b>		0.79	0.65
The firm's revenue mechanisms have changed	0.81		
Our cost mechanisms have changed	0.80		
<b>Managerial persistence</b>		0.90	0.75
I continue to work on hard projects even when others oppose me	0.83		
I can think of many times when I persisted with work when others quit	0.87		
No matter how challenging my work is, I will not give up	0.88		
<b>Coopetition</b>		0.83	0.62
We are in close competition with our partner(s)	0.68		
We collaborate with competitors to achieve a common goal underpinning these products	0.92		
An active competition with our collaborator is important to us	0.75		
<b>Financial resource slack</b>		0.84	0.65
There has been easy access to financial capital to support our business	0.68		
There have been substantial financial resources at the discretion of our managers for funding operations	0.91		
If we needed more financial capital for our operations, we could easily get it	0.81		
<b>Institutional support</b>		0.89	0.74
Government policies and programs are beneficial to our operations	0.76		
Government provides us with much useful business information	0.91		
Unnecessary bureaucracy and weak legal systems characterize our business environment (R)	0.90		
<b>Environmental dynamism</b>		0.79	0.57
The rate at which products become obsolete to consumers is very slow	0.78		
It is easy to predict the actions of one's competitors	0.86		
It is easy to forecast customers' future demands	0.60		

for all the multi-scale variables.

## 4. Analyses and results

### 4.1. Validity and reliability of measurement model

Using Amos 27, we performed confirmatory factor analysis (CFA) to establish the validity and reliability of all multi-item variables used in the study. The CFA estimation provided the following adequate fit indices ( $\chi^2/df = 1.32$ , RMSEA = 0.04, CFI = 0.97, TLI = 0.96; SRMR = 0.04) and significant standardized factor loadings ( $p < 0.001$ ) for all the measurement items. Further validity and reliability estimations indicate that the average variance extracted (AVE) and the composite reliability (CR) for all constructs exceeds the recommended threshold of 0.50 and 0.70 respectively, while the square roots of the AVEs (shown at the diagonals of Table 2) are each greater than the squared correlation coefficient of each construct (see Table 2). Based on recommended model fit indices and thresholds (e.g., Fornell & Larcker, 1981; Hair, Black, Babin, & Anderson, 2014; Hair Jr, Babin, & Krey, 2017), we can conclude that our measurement model is valid and reliable. Table 1 provides details of the measurement items, reliability and validity indicators.

**Table 2**  
Correlation and descriptive statistics.

No.	Study variables	1	2	3	4	5	6	7	8	9	10	11	12
1	Value offering innovation	<b>0.93</b>											
2	Value architecture innovation	0.35***	<b>0.85</b>										
3	Revenue model innovation	0.42***	0.31***	<b>0.81</b>									
4	Financial slack resources	0.26**	0.06	0.39***	<b>0.80</b>								
5	Managerial persistence	0.01	-0.02	-0.06	0.05	<b>0.86</b>							
6	Coopetition	0.30***	0.25**	0.18*	0.08	-0.09	<b>0.79</b>						
7	Institutional support	-0.21**	-0.06	-0.16*	-0.12	-0.02	-0.24**	<b>0.86</b>					
8	Environmental dynamism	-0.04	0.07	0.02	0.02	0.33***	-0.03	0.04	<b>0.75</b>				
9	Failure experience	0.24**	0.29***	0.18*	0.12	0.06	0.39***	-0.36***	0.03				
10	Firm age <sup>Ψ</sup>	-0.05	-0.05	-0.06	0.01	0.22**	-0.05	0.11	-0.04	-0.02			
11	Firm size <sup>Ψ</sup>	-0.02	0.05	0.05	0.03	0.05	0.07	0.03	0.11	0.07	-0.12		
12	Industry <sup>†</sup>	-0.01	0.15*	0.04	0.07	-0.10	-0.03	-0.11	-0.06	0.14	-0.07	0.16*	
	<b>Mean</b>	5.08	5.17	4.78	4.88	4.78	4.67	4.50	4.55	1.95	1.94	3.20	-
	<b>SD</b>	1.06	1.27	1.11	1.01	1.40	1.12	1.14	1.31	1.91	0.67	0.92	-

\*p<0.05; \*\*p<0.01, \*\*\* p<0.001. <sup>†</sup> = dummy variable; <sup>Ψ</sup> = natural logarithm transformation of original values: square root of AVEs at the diagonal (in bold).

#### 4.2. Assessment of common method bias

Since our data is perceptual survey data, we adopted both data collection procedures and statistical analysis to help minimise the effect of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, we adopted several survey procedures including the use of multiple respondents as well as a non-logical or pattern layout of the questionnaire. Second, we used a statistical procedure by estimating three competing CFA models. In model 1, we estimated a method-only CFA model where all measurement items are loaded on a single factor ( $\chi^2/df = 17.16$ , RMSEA = 0.24, CFI = 0.25, TLI = 0.28; SRMR = 0.25). Model 2 estimates a trait-only model where each item is loaded on its respective construct ( $\chi^2/df = 1.32$ , RMSEA = 0.04, CFI = 0.97, TLI = 0.96; SRMR = 0.04); and, finally, model 3 combines model 1 and model 2 ( $\chi^2/df = 1.30$ , RMSEA = 0.04, CFI = 0.98, TLI = 0.96; SRMR = 0.04). A comparison of the three models indicates that model 1 has poor fit indices, while model 2 and 3 have superior fit indices (compared to model 1) – demonstrating common method bias is not a significant concern to our data.

#### 4.3. Hypotheses testing

We tested our hypothesised relationships using hierarchical regressions and PROCESS macro. Specifically, hypotheses H1, H3a and H3b were tested through hierarchical regressions, while the mediation

hypothesis (H2) was tested using PROCESS macro (Model 4) in SPSS. To test the moderation relationships, we adopted the mean-centring approach to compute two interaction terms: (1) failure experience x managerial persistence and (2) coopetition x financial resource slack. The mean-centring approach helps reduce the effect of multicollinearity on our model estimations – consequently, the largest variance inflation factor (VIF) of the regression analysis was 1.32, a value that is below the recommended threshold value of 10 (Neter & Wasserman, 1990). Table 2 presents the correlations and descriptive statistics of the study variables, while the regression and results are shown by Tables 3 and 4.

The results of Table 4 indicate that failure experience is positively related to business model innovation ( $\beta = 0.30, p < 0.001$ ) – confirming

**Table 4**  
Direct and indirect effects.

	Estimates	SE <sup>a</sup>	LL 95% CI <sup>b</sup>	UL 95% CI <sup>b</sup>
Failure experience → BMI	0.15*	0.04	0.08	0.22
Failure experience → coopetition	0.19*	0.04	0.10	0.27
Coopetition → BMI	0.22*	0.06	0.10	0.34
Indirect effect of failure experience on BMI via coopetition	0.09*	0.04	0.02	0.17

Notes: N = 182; Bootstrap sample size = 5000; \*Indicates non-zero within the boundaries (significant); LLCI = lower limit confidence interval; ULCI = upper limit confidence interval; SE = standard error.

**Table 3**  
Predicting coopetition and business model innovation.

Controls	Coopetition			Business model innovation			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Industry <sup>†</sup>	-0.05 (-0.64)	-0.08 (-1.09)	-0.08 (-1.10)	0.09 (1.08)	0.06 (0.73)	0.08 (1.05)	0.05 (0.75)
Firm age <sup>Ψ</sup>	-0.01 (-0.11)	-0.03 (-0.38)	-0.01 (-0.14)	-0.05 (-0.67)	-0.07 (-0.94)	-0.07 (-0.87)	-0.03 (-0.47)
Firm size <sup>Ψ</sup>	0.04 (0.49)	0.00 (0.05)	0.01 (0.18)	0.01 (0.16)	-0.02 (-0.24)	-0.02 (-0.27)	-0.08 (-1.17)
Institutional support	-0.27*** (-3.55)	-0.16 (-2.00)	-0.17 (-2.16)	-0.18* (-2.36)	-0.08 (-0.96)	-0.03 (-0.44)	0.02 (0.22)
Perceived dynamism	-0.00 (-0.05)	-0.00 (-0.03)	0.03 (0.37)	0.02 (0.28)	0.02 (0.31)	0.03 (0.33)	0.02 (0.26)
<i>Direct effects</i>							
Failure experience (FAILURE)		0.32*** (3.99)	0.31*** (3.94)		0.30*** (3.60)	0.21** (2.49)	0.19* (2.38)
<i>Moderating effect</i>							
Managerial persistence (PERS)				-0.09 (-1.18)			
FAILURE * PERS				-0.04 (-0.52)			
<i>Mediator</i>							
Coopetition						0.27*** (3.42)	0.21** (2.75)
<i>Moderating effect</i>							
Financial resource slack (SLACK)							0.24*** (3.51)
Coopetition * SLACK							0.28*** (3.78)
<i>Model fit</i>							
R <sup>2</sup>	0.08	0.16	0.17	0.05	0.13	0.19	0.30
R <sup>2</sup> change	-	0.08	0.01	-	0.08	0.06	0.11
Highest VIF	1.07	1.19	1.23	1.07	1.20	1.31	1.32

\*p<0.05; \*\*p<0.01, \*\*\* p<0.001; standardized coefficients are shown. <sup>†</sup> = dummy variable; <sup>Ψ</sup> = natural logarithm transformation of original values.

H1. With respect to H2, we find that failure experience is positively related to coopetition ( $\beta = 0.32, p < 0.001$ ); and coopetition, on the other hand, is positively related to business model innovation ( $\beta = 0.21, p < 0.01$ ). This provides partial support for a mediation effect of failure experience on business model innovation via coopetition. To further confirm H2, the PROCESS macro analysis in Table 4 indicates that coopetition mediates the relationship between failure experience and business model innovation (indirect effect = 0.09, 95% CI = 0.02–0.17). Next, we find no evidence for H3a that the positive relationship between failure experience and coopetition is strengthened when managerial persistence increases in magnitude ( $\beta = -0.04, p > 0.05$ ). Lastly, there is support for H3b that high levels of financial resource slack strengthen the positive relationship between failure experience and business model innovation ( $\beta = 0.28, p < 0.001$ ) of the sampled firm. To help understand the interaction effect of financial resource slack and coopetition on business model innovation, we followed Cohen, Gibbons, Mugridge, Colbourn, & Collofello (2003) to plot a two-way interaction graph. As shown in Fig. 2, high levels of financial resource slack enhance the effect of coopetition on business model innovation – confirming our initial results on H3b.

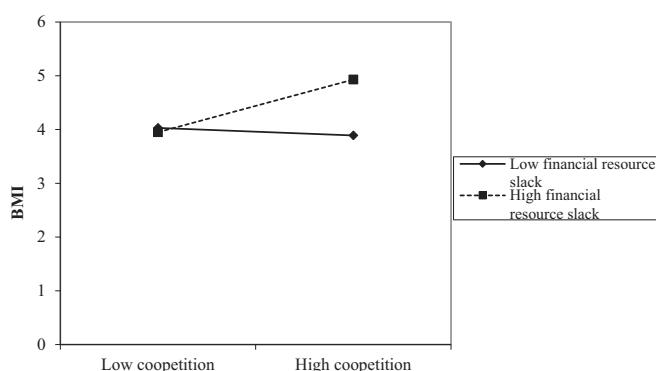
## 5. Discussion and implications

Following on from the paradoxical effect of failure experience on strategic orientations and performance outcomes (e.g., Amankwah-Amoah et al., 2021; Boso et al., 2019; Lee et al., 2021), this study investigates how and when B2B SMEs can leverage their failure experience to enhance their competitiveness. Thus, while extant literature has documented both negative and positive effects of failure experiences of entrepreneurs, little is known about how B2B SMEs within developing economies make meaning out of their failure experiences as they attempt to innovate new and existing business models. Analysing survey data from B2B SMEs, we find that failure experience impacts positively on business model innovation and that such an effect is mediated by coopetition capability. Further analysis revealed that financial resource slack strengthens the positive relationship between coopetition capability and business model innovation. These findings make significant contribution to the business failure literature, while impacting on the management and growth of B2B SMEs operating within institutionally constrained environment.

First, our findings expand current discourse on business failure experience in a novel way. Specifically, while extant research has explored the effect of failure experience on outcomes such as learning, opportunity identification and financial performance (e.g., Amankwah-Amoah et al., 2018; Amankwah-Amoah et al., 2021; Boso et al., 2019), our study takes a different but unique perspective of how failure experience impacts business model innovation of B2B SMEs. Thus, we integrate the literature on business model innovation and business failure to demonstrate that failure experience can be an important resource to B2B

SMEs that seek to innovate their business models. Second, we contribute to recent literature in coopetition and dynamic capabilities (e.g., Riquelme-Medina, Stevenson, Barrales-Molina, & Llorens-Montes, 2022) by highlighting the role of coopetition as an important capability through which failure experience impacts on business model innovation. Thus, despite the cascading research on the benefits of coopetition to firms' competitive advantage and other performance outcomes, albeit paradoxical (see Bengtsson & Raza-Ullah, 2016; Chou & Zolkiewski, 2018), little is known about the role of such capability in translating failure experiences into innovating business models of B2B SMEs. Per our findings, we extend this stream of research on coopetition to argue that failure experiences can drive firms to form collaborations and alliances with competitors, and that such collaborations can be necessary resources needed by B2B SMEs to innovate their business models. Third, we add to the contingency perspectives by highlighting the unique boundary condition roles of managerial persistence and financial resource slack. Specifically, the study demonstrates that financial resource slack enhances the positive effect of coopetition on business model innovation – this finding, in part, helps shed light on possible firm-level resources that can help shape business model innovation (see Foss & Saebi, 2017). While this revelation extends the business model innovation literature, it also adds to recent studies in emerging and developing markets on the significance and use of financial resource slacks by managers during strategy making and implementations (e.g., Boso et al., 2017; Nwoba et al., 2021). Contrary to our claim, we find no support that managerial persistence strengthens the effect of failure experience on coopetition capability. A plausible explanation for this may be attributed to the dark side of persistence. Thus, even though persistence can be a positive entrepreneurial capability that helps managers to continue to engage in exploiting business opportunities (e.g., Caliendo et al., 2020), it cannot always be a good trait (see Cardon & Kirk, 2015), and hence can be detrimental to strategies and performance outcomes when overly deployed. Relatedly, we make a significant contextual contribution to the literature on how entrepreneurs within marginalised economies and resource-constrained environments can benefit from their failure experience. Despite the uniqueness, contextual nuances and competitive business landscape of African economies, the majority of the research on business failure experiences has been dominated by developed and Western economies (see Boso et al., 2019). Using Ghana as a model, our findings show that SMEs within developing economies can still benefit (in the form of business model innovation) from business failure, when those experiences are channelled through cooperation and competition with their rival firms.

In addition to the research contributions, this study has significant implications for the management and growth of B2B SMEs. First, the findings suggest that, despite the negative effects that characterize business failure, the failure experience can enable owners and managers to innovate their business models and become more competitive. Specifically, the findings reveal that owner-managers ought to continuously form collaborations with competitors; as such, collaborations can be used to translate failure experience into innovating business models. Thus, in times of hardships and adversities (due to failure experience), B2B SMEs ought to channel their strength into collaborating with competitors and other relevant partners – as such activity can help them respond to market changes and become more innovative in terms of their value offerings, architecture and revenue models. In effect, rather than seeing competitors as adversaries during failure experiences, managers can exploit their relationships with competitors in order to become innovative and grow. Second, while collaborating and forming relationships with competitors can help B2B SMEs translate their failure experiences into creating and innovating business models, such benefits will be more impactful when managers have slack resources at their disposal. This underscores the significance of financial resource slack in helping businesses bounce back after a failure experience – as managers will have the latitude to spend on activities (e.g., knowledge



**Fig. 2.** The moderating effect of financial resource slack on the coopetition – BMI relationship.

acquisition, R&D, information search, exploratory activities etc.) that are relevant to innovating their business models.

## 6. Conclusion and direction for future research

This study aimed to test a moderated mediation model of the impact of previous failure experience on business model innovation. The use of unique data from 182 B2B SMEs in Ghana allowed us to investigate the mediating role of coopetition and the moderating roles of managerial persistence and financial resource slack. The findings support our proposition that, within the context of developing economies, anecdotal evidence suggests that business failure experience can be either an asset or a liability for learning and subsequent entrepreneurial activities. The study supports the view that business failure experience can be an important tool in driving innovation among businesses. This key finding is important, as it shows how failure experience can motivate entrepreneurs towards positive goals. We hope our main findings stimulate further research into the synergistic impacts of different mechanisms on SME business model innovation in different environmental contexts.

Despite the important implications of our study, it has several limitations that offer avenues for future research to further enhance our understanding of the experience of failure and business model innovation. First, although the study is focused on a single country with unique social and cultural features which may shape managers' perceptions of and attitudes towards business failure, the generalisability of our findings may be limited to Ghanaian SMEs. This is because the business failure experience of managers may differ across different contexts, particularly where there are significant differences in the level of institutional development (Lee et al., 2021) and culture, together with socio-political differences. Therefore, future research could focus on comparing our results across different contexts, especially within developed economies, considering how institutional differences may impact the relationship between the experience of failure and business model innovation.

Second, although our study has focused on the effect of previous failure experience on business model innovation, little is known about how failure experience impacts firms' innovation capabilities. Future studies could investigate how learning from failure relates to innovation's novelty (radical VS incremental). Innovation of this type requires greater risk-taking and so is more related to the learning about failure (Carmeli & Dothan, 2017). Combining these two variables might lead to an interesting taxonomy of firms. Using such a taxonomy, scholars might be able to identify different firm configurations based on their level of failure experience and level of innovation.

Third, the study has examined coopetition as a significant mediator in the failure experience-business model innovation link. However, other mechanisms could be used to analyse the association between previous failure experience and subsequent business model innovation. For instance, entrepreneurial learning from failure (Boso et al., 2019) is likely to play a critical role in facilitating the impact of previous failure experience on enabling entrepreneurs to innovate their business model. Therefore, coopetition could be used in conjunction with other mechanisms to examine when and why failure experience can affect the subsequent business model innovation of entrepreneurial firms. In addition, despite our findings on the insignificant role of managerial persistence in the failure experience-coopetition relationship, we encourage scholars to apply our model in different contexts, as managerial persistence is considered to be essential in determining entrepreneurial success (Adomako et al., 2016; Cardon & Kirk, 2015).

Fourth, the study focuses on a cross-sectional sample, which limits its ability to draw conclusions on the possibility of causality from the variables examined. Consequently, future research could use a longitudinal design, gathering data from multiple periods to observe the extent to which the explanatory power of the variables varies across different periods. In addition, such an approach would help examine how the impact of previous failure experience changes over time in the

developing market context and its effects on enhancing owners' capabilities to innovate their new venture business model.

Finally, fieldwork and interviews with SME owners/managers are needed to better understand the nature of their failure experience, and its impact on SME business model innovation. While the quantitative approach has been extensively used in the literature due to its objectivity, the qualitative approach through interviews provides the meaning and the nature of the phenomenon studied; allows verification of the validity of the study results; and can be used as additional evidence.

## Data availability

The authors do not have permission to share data.

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