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Home–country technological legitimacy in crowdfunding: The moderating role of positive psychological capital language

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ABSTRACT

This study uses the legitimacy theory as the theoretical lens to investigate how and under what circumstances home-country technological legitimacy affects the performance of crowdfunding campaigns in emerging markets. A dataset of 758 technology crowdfunding campaigns from Kickstarter was analysed. Our findings reveal that higher home-country technological legitimacy (measured by the Global Innovation Index) affects crowdfunding performance (measured by the ratio of funds raised to the pledged goal). We also find that positive psychological capital language (optimism, insistence, and tenacity) plays a crucial moderating role in strengthening this relationship. This study extends the legitimacy theory by demonstrating that country-level technological legitimacy is an external signal that shapes backer perceptions and funding decisions. Our results highlight the importance of campaign narratives in overcoming institutional voids and enhancing entrepreneurial success in global crowdfunding initiatives. These insights offer practical implications for entrepreneurs, policymakers, and investors seeking to navigate the complex dynamics of crowdfunding in emerging economies.

1. Introduction

Startups and small and medium-sized enterprises (SMEs) are less likely to secure traditional financing. The periods between the 2007 financial crisis and the COVID-19 pandemic have created uncertainties for private sector financing, worsened by high interest rates and stringent credit requirements. The post-COVID-19 era has also seen central banks raise interest rates to combat inflation, leading to tighter lending criteria (International Monetary Fund, 2022; World Bank, 2022). SMEs exploit crowdfunding opportunities by directly engaging with potential investors (Mollick, 2014). Yet Bruton et al. (2021) argue that the success of crowdfunding in emerging economies is affected by legitimacy because institutional voids create information asymmetry and market inefficiencies. To deal with information asymmetry, Zimmerman and Zeitz (2002) argued that if crowd-funders are ambivalent about guarantee for returns, using positive capital language conveyed through technological credibility, endorsements, and transparently can mitigate concerns over investment risks. Therefore, this study explores how home-country technological legitimacy impacts crowdfunding outcomes for SMEs in emerging economies and how positive psychological capital language plays a role in moderating this relationship.

Unlike other forms of legitimacy (e.g., cognitive, moral or pragmatic legitimacy), technological legitimacy reflects the firm's ability to deliver value through technological competence and innovation, thus directly impacting the perceived quality and feasibility of a venture's products or services (Diez-de-Castro et al., 2018). Technological legitimacy acts as a significant signal in crowdfunding campaigns, influencing backers' perceptions of a venture's potential for success, especially in highly innovative sectors such as Tech startups (Payette, 2014). Entrepreneurs using crowdfunding platforms must strategically manage and signal their legitimacy to attract and reassure backers using positive language that offers assurance and acceptability. Positive psychological capital language portrays SMEs as hopeful, able to meet their goals, resilient in the face of adversity and optimistic about the future (Anglin et al.,

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2018a).

Previous research has established the importance of legitimacy in crowdfunding for new ventures, particularly in contexts with high information asymmetry and uncertainty (Aldrich and Fiol, 1994; Shepherd and Zacharakis, 2003). The crowdfunding literature highlights the role of legitimacy in three main ways. Firstly, legitimacy facilitates access to essential resources and enhances organisational survival (Deephouse and Suchman, 1996; Pollok et al., 2019; Beretta et al., 2021). Secondly, legitimacy influences user adoption and funding outcomes (Mollick, 2014; Davies and Giovannetti, 2018; Maier et al., 2023). Thirdly, positive psychological capital language and rhetorical strategies enhance the legitimacy of crowdfunding campaigns (Taeuscher et al., 2021; Anglin et al., 2018a; Tajvarpour and Pujari, 2022). Despite the contributions of the current research, whether home-country technological legitimacy can influence crowdfunding performance is unknown (Kuilman and Li, 2009; Fisher et al., 2017).

This study addresses three notable gaps. Firstly, there is a lack of attention to how using positive psychological capital language can moderate the relationship between home-country technological legitimacy and crowdfunding performance. Thus, investigating how positive languages, such as persistence, tenacity, and optimism, can enhance our understanding of how SMEs in emerging economies can improve their performance in the international capital market (Anglin et al., 2018a; Taeuscher et al., 2021). Secondly, we explore the moderating effects of positive psychological capital language on crowdfunding performance by examining campaign descriptions and updates. We do so by using textual analysis to look for signs of insistence, tenacity, and optimism. Thirdly, existing studies predominantly focus on developed economies, leaving a research void regarding the unique challenges faced by entrepreneurs from less developed regions (Bi et al., 2017; Drori et al., 2009). By analysing data from 758 technology-focused crowdfunding campaigns on Kickstarter, this study provides empirical evidence on the impact of the home-country technological legitimacy on crowdfunding success (Cuervo-Cazurra, 2011; Kuilman and Li, 2009).

We also find that positive psychological capital language (i.e., insistence, tenacity, and optimism) plays a crucial moderating role. Thus, campaigns that exhibit higher levels of these traits tend to perform better, even when the home-country's technological legitimacy is low. This suggests SMEs can compensate for lower national legitimacy by leveraging their characteristics to build trust and credibility with potential backers. We also find that the home-country technological legitimacy significantly influences crowdfunding performance, with campaigns from countries with higher GII scores performing better on average. This finding underscores the importance of national technological capabilities in shaping the perceptions of international backers. Our findings have several important implications. For entrepreneurs, our results highlight the importance of crafting compelling campaign narratives that emphasise persistence, resilience, and positive outlooks. These traits can enhance perceived legitimacy and improve funding outcomes. For policymakers, our study suggests that investing in national technological capabilities can have significant positive effects on the success of crowdfunding campaigns and, by extension, entrepreneurial growth. Finally, for investors, our findings provide valuable insights into evaluating crowdfunding campaigns, suggesting that both home-country legitimacy and positive psychological capital language should be considered.

2. Theory and hypothesis

2.1. Legitimacy theory in crowdfunding

Rooted in institutional theory (DiMaggio and Powell, 1983), legitimacy is "*a social judgment of acceptance, appropriateness, and desirability*" (Zimmerman and Zeitz, 2002, p. 41). The legitimacy research has agreed that a legitimate organisation can better access key resources for survival and superior performance (Deephouse et al., 2017). For international entrepreneurial firms in particular, their legitimacy perceived by their crucial resource providers in international capital market, such as venture capitalists (e.g. Roma et al., 2021), business angels (e.g., Parhankangas and Ehrlich, 2014), and crowdfunders (e.g., Lewis et al., 2021), is one key determinant of their survival and performance (Aldrich and Fiol, 1994; Shepherd and Zacharakis, 2003; Suddaby et al., 2017). For example, young firms demonstrating legitimacy early are more likely to reduce their inherent liabilities of newness and smallness (Suchman, 1995; Zimmerman and Zeitz, 2002; Adams et al., 2019) and to obtain resources from institutional actors (Bitektine and Haack, 2015; Rutherford and Buller, 2007; Singh et al., 1986). Due to their bounded rationality and imperfect information, those resource providers often rely on legitimacy assessment to inform their resource allocation decisions (Fisher et al., 2017; Navis and Glynn, 2011). Seeking and obtaining legitimacy in the international capital market have become crucial to international entrepreneurial firms (David et al., 2017; Delmar and Shane, 2004; Lounsbury and Glynn, 2019).

As for entrepreneurial firms on crowdfunding platforms, a particular group of international entrepreneurial firms with growing size worldwide, legitimacy has also been confirmed as an essential factor contributing to crowdfunding performance (Corsini et al., 2024). Block et al. (2018), Courtney et al. (2017), and Davies and Giovannetti (2018) have argued that crowdfunding, as a particular international capital-seeking phenomenon in the digital setting, is characterised by even more information asymmetry and uncertainty. The lack of legitimacy of crowdfunding campaigns may manifest itself in misunderstandings of the entrepreneurs' business model or a struggle to attract a mass of potential users (Evans, 2009). In contrast, legitimate crowdfunding projects often have more user adoption and financial and social rewards for the new ventures (Shepherd and Zacharakis, 2003), further building up backers' confidence and prospects (Drori et al., 2009; Stringfellow et al., 2013). The research has explored and distinguished four types of legitimacy: moral, associational, consequential, and technological (or pragmatic) legitimacy (Chen, 2023). Moral legitimacy indicates a firm's social evaluation and acceptance based on whether it conforms to altruistic ideals and prosocial logic (Diez-de-Castro et al., 2018; Suchman, 1995). Association legitimacy refers to a firm's received acceptance and recognition from external stakeholders, such as reputable organisations, influential individuals, or various forms of media (Fisher et al., 2017). Consequential legitimacy is a firm's social acceptance based on whether they have made their promise in the context of high information asymmetry (Suchman, 1995). Technological legitimacy relates to the social evaluation and acceptance of a firm based on whether the firm's technological capabilities can enable a firm to responsively and satisfactorily respond to the audience's demand and deliver benefits and utilities through technological advantages and innovation (Diez-de-Castro et al., 2018; Payette, 2014; Suchman, 1995). It is, therefore, well established that new ventures initiating crowdfunding must continually seek to increase their legitimacy to convince the public that they are worth trusting to obtain better crowdfunding performance (DiMaggio, 1988; Suchman, 1995).

Beyond distinct types of legitimacy and their effects on crowdfunding performance that have been fully acknowledged, existing studies have extended the legitimacy theory by exploring its impact on broader social categories to which a firm belongs during crowdfunding (Desai, 2014; Dobrev et al., 2006). Kostova and Zaheer (1999, p. 76) explained "*the interdependence in legitimacy between organisations belonging to the same classes, such as those from the same home-country or industry*". Indeed, a focal organisation enjoy (or suffer) the legitimacy (or the illegitimacy) from other organisations with similar characteristics, classes and social categories (Durand and Vergne, 2015; Kostova and Zaheer, 1999; Shi et al., 2022). The spillover effect is caused by bounded rationality, cognitive limitations in information processing, and resource constraints of social actors (Kahneman et al., 1982). Perceiving legitimacy by social actors outside a focal firm is often an exhaustive social cognition process through which they need to comprehensively

judge and assess a firm in various aspects discussed above (Choi and Shepherd, 2005). During the process, the cognitive shortcut – "the environment makes sense of the legitimacy of a given unit based on the legitimacy of other similar units" (Kostova and Zaheer, 1999, p.68) – is commonly applied by social actors for quick decision-making (Stevens and Newenham-Kahindi, 2017). Existing studies have evidenced that the cognitive shortcut draws legitimacy inferences from different social categories to which a focal firm belongs (Dobrev et al., 2006). A category embodies the shared symbolic and material attributes of products, industries, and countries, distinguishing the entities from others (Durand and Thornton, 2018). At the product level, Zuckerman (1999) argued that category-level legitimacy, i.e. a given product category meets the expected desirability and appropriateness in terms of how it should look and act of a new venture, is closely related to its performance. Using a dataset of 182,358 entrepreneurial crowdfunding endeavours, Soublière and Gehman (2020) found that when a crowdfunding campaign had outlier-level success, other campaigns in the same category were more successful. They explained that the outperformer's success increases and enhances its legitimacy to its product category, thus increasing the acceptance of the said category to the crowd. For example, a microfinance institution perceived as legitimate in each institutional context will likely benefit affiliated microenterprises (Adams et al., 2019; Bort et al., 2024). At the industry level, new entrants in each industry category, the established category legitimacy, can affect how it is evaluated (Glynn and Navis, 2013; Vergne and Wry, 2014). Investors will react less negatively to firms' restatements when the industry category in which the organisations are located has a higher status because evaluators have greater confidence in firms from high-status industries and imagine that these firms can recover from failure more quickly (Sharkey, 2014). At the country level, Kostova and Zaheer (1999) theorised that the legitimacy of all subsidiaries from the same home-country can affect the legitimacy judgement of a focal MNE's foreign subsidiary from the same home-country. This phenomenon is particularly relevant to international resource acquisition, as international investors usually face amplified information asymmetry potential backers face (Davidson and Vaast, 2010; Nambisan, 2017) and significant uncertainty and complexity across different countries (e.g., Haack et al., 2014; Kostova and Zaheer, 1999; Kuilman and Li, 2009; Attah-Boakye et al., 2022).

First, crowdfunding backers often come from various countries and suffer more information asymmetry and uncertainty due to the lack of foreign market knowledge and psychic distance (Niemand et al., 2018). Second, given that new entrepreneurial firms often initiate crowdfunding campaigns, essential information for potential backers' legitimacy evaluation to a focal firm can be less sufficient and accurate. Most backers are individuals from different countries and often have little to no prior knowledge of the campaigns and the entrepreneurial firms behind the campaigns (Chen, 2023). Third, many crowdfunding campaigns display conceptual product designs or prototypes, making evaluating a focal firm's legitimacy more difficult for an individual backer. Considering these, latent backers are more likely to evaluate a category to simplify their evaluation of the legitimacy of a crowdfunding campaign and the international entrepreneurial firm behind the campaign by only restricting to a smaller number of diagnostic features of a certain category that the crowdfunding campaign belongs to (Durand and Thornton, 2018) or by only evaluating a campaign based on where the campaign operates (Henfridsson and Yoo, 2014; Wright and Zammuto, 2013). Although insightful, whether and how the legitimacy (or illegitimacy) of the home-country of a focal crowdfunding campaign can influence the campaign's crowdfunding performance and what boundary conditions have been underexplored. Addressing these research gaps is not only important to extend the scope of legitimacy theory in crowdfunding research but also important to entrepreneurs to better acquire resources from the international capital market.

2.2. Home-country technological legitimacy and crowdfunding performance

To address the proposed research gaps, we first argue and hypothesise that home-country technological legitimacy can positively influence the crowdfunding performance of campaigns from the home-country. We pay particular attention to technological legitimacy because technological legitimacy tends to be most effective at building buzz and attracting public support, even if other types of legitimacy can influence crowdfunding performance (Chen, 2023). Although various products are pledged for crowdfunding, crowdfunding platforms have enjoyed increasing popularity among worldwide entrepreneurs for obtaining financial resources for their technological innovations. Products related to games, designs and technology have occupied a large number of crowdfunding campaigns (Pati and Garud, 2021; Zhang and Chen, 2019). Perceived technological superiority and product competitiveness allow crowdfunding campaigns to gain more technological legitimacy and enhance the product attractiveness of backers (Payette, 2014; Suddaby et al., 2017).

We offer two main reasons to support our hypothesis. First, there has been a long emphasis that international stakeholders use a firm's home-country characteristics as references for evaluating firm legitimacy (Cuervo-Cazurra, 2011; Peng, 2012; Rangan and Drummond, 2004). Especially when they lack perfect information, the stakeholders initially judge a firm's legitimacy based on the attributes, actions and capabilities of a firm's home-country. Bort et al. (2024) used the example of autonomous vehicle firms in Silicon Valley and argued the importance of the local institutional context where a venture was created. Therefore, in the crowdfunding context, backers from different countries may also start their legitimacy judgement by evaluating the legitimacy of a focal campaign's home-country. The impacts of home-country legitimacy have also been well evidenced by international marketing studies. A firm's home-country can improve a product or service's perceived value and quality (Bilkey and Nes, 1982; Obermiller and Spangenberg, 1989), build an adequate reaction in international stakeholders, and customers' purchase intention (Knight and Calantone, 2000; Peterson and Jolibert, 1995).

Second, we argue that international crowdfunding backers may pay close attention to the home-country technological capabilities as references for their legitimacy judgment. Investing in a crowdfunding project, especially from an emerging country, involves two substantial uncertainties: "*get neither promised rewards nor their money back*" (McKenny et al., 2018, p.297). Technological legitimacy determines whether a product can be made and satisfy stakeholders' pragmatic needs and expected utilities (Dowling and Pfeffer, 1975; Suchman, 1995). It emphasises utility to be delivered and often displays through technological advantages and innovation (Handelman and Arnold, 1999). As most products/services on crowdfunding platforms are innovative and technological products or services, technological legitimacy plays a prominent role in shaping backer's investment decisions. International backers would judge the technological legitimacy of foreign products based on the performance properties of the origin country. Products from origin countries with superior technological capabilities can be perceived as more competitive and technologically legitimate (Payette, 2014; Suddaby et al., 2017). On the one hand, products or services from a technologically legitimate country are inherently perceived as high-quality products/services, thus meeting or exceeding audience members' needs and self-interested calculations (Suchman, 1995). On the other hand, crowdfunding campaigns from a home-country with more technological legitimacy can gain support and resources from the macro context to ensure the likelihood of being responsive to the audience's interests and delivering on its promise that benefits the audience (Diez-de-Castro et al., 2018; Foreman and Whetten, 2002).

Hypothesis 1. There is a negative association between home-country

technological illegitimacy and crowdfunding performance.

2.3. The moderating role of positive psychological capital languages

If home-country technological legitimacy can affect the crowdfunding campaigns originating from the country, it is also important to understand under what conditions the influence of such legitimacy may vary. Perceiving legitimacy is a social cognition process interplayed by received information at both macro and micro levels in the mind of social actors. That is, backers' attitudes towards a crowdfunding campaign may not only rely on the technological legitimacy spillover from its home countries but also on the legitimacy they perceive based on the informational cues about the campaigns and the entrepreneurs behind the campaigns (Aldrich and Fiol, 1994). In crowdfunding, the base for establishing legitimacy perceived by backers is the entrepreneurial story or the crowdfunding campaign profile (Taeuscher et al., 2021). Due to the liabilities of newness and smallness and lack of market history, firms initiating crowdfunding campaigns often have fewer resources and limited repertories of objective informational cues for proving legitimacy (Reuber and Fischer, 2011; Zott and Huy, 2007), such as track records of past successes (Wang et al., 2014).

Linguistic cues are meaningful tools to cultivate first impressions and share values of entrepreneurial firms and their crowdfunding products to make the ventures more visibly meaningful to outsiders and to overcome their lack of legitimacy (Aldrich and Fiol, 1994; Lounsbury and Glynn, 2001), influencing new venture's resource acquisition (Lounsbury et al., 2019). Crowdfunding campaigns can gain legitimacy when they skilfully communicate by using positive psychological capital languages to show certain positive attributes and behaviours in their entrepreneurial stories (Suddaby and Greenwood, 2005). Positive psychological capital languages can demonstrate unobservable characteristics and establish legitimacy under information asymmetry (Frydrych et al., 2014), convey comprehensive identities (Martens et al., 2007) and serve to establish local cultural schemas in the mind of investors, filling "a cultural void" by making the venture "more familiar, understandable, acceptable, and thus more legitimate to key constituencies" (Lounsbury and Glynn, 2001). The uses of positive psychological capital languages in crowdfunding campaigns demonstrate the identity and characteristics of the entrepreneurs, i.e. 'who you are' (Hmieleski et al., 2015). Showing more positive psychological capital languages often sends images about the focal campaign, such as being capable, high-performing (Avey et al., 2011), inspiring, convincing (Luthans et al., 2007), leadership potential (Chemers et al., 2000), authenticity (Jensen and Luthans, 2006), and confidence to meet an objective (Anglin et al., 2018a), Taken together, more uses of positive psychological capital languages in a crowdfunding campaign can alleviate backers' perceived illegitimacy of the campaign's home-country technological illegitimacy and increase backers' positive perceptions toward the focal campaign (Friend et al., 2016).

Therefore, our research further explores the moderating effects of positive psychological capital languages closely related to alleviating technological illegitimacy from the home country: optimism, insistence and tenacity. Developing new technological products is inherently uncertain (Song et al., 2019; Stockstrom and Herstatt, 2008). Such technological uncertainties often cause new product initiatives to be frequently abandoned. To successfully develop and launch a new product, firms should actively and continuously commit resources and efforts to exploring and iterating new products. The optimism, insistence and tenacity shown in crowdfunding campaigns are the crucial psychological capitals which ensure backers that the campaigns can be less likely abandoned and that the promised rewards can be obtained (Droge et al., 2008; Liang et al., 2014; Simon and Shrader, 2012).

We first explain the moderation effect of using optimistic language. Optimistic entrepreneurs often expect positive things in the future and usually link to pursuing entrepreneurial opportunities (Dushnitsky, 2010) and proactive responses to failure (Luthans et al., 2004; Ucbasaran et al., 2010). Existing research has argued that optimistic entrepreneurs are more likely to gain support (Cooper et al., 1988). Given that entrepreneurship is inherently uncertain and challenging, entrepreneurs with optimistic propensity are more likely to address various forms of adversity and challenges during entrepreneurship (Markman et al., 2005; Wu et al., 2007) and remain persistent and engaged in pursuing their goals (Carver and Scheier, 2002). In contrast, pessimistic entrepreneurs tend to give up when facing adversity. Especially in emerging economies where entrepreneurship suffers more constraints and uncertainties (Robson and Obeng, 2008), optimism signposted by crowdfunding campaigns is particularly important to mitigate the disadvantages derived from home-country technological legitimacy (Shane and Venkataraman, 2000).

Hypothesis 2a. Using optimism language mitigates the negative relationship between the lack of home-country technological legitimacy and crowdfunding performance.

We then consider the moderating role played by using insistence language in crowdfunding campaign stories. Entrepreneurial insistence reflects the entrepreneur's commitment towards a particular focus and repeated efforts in the face of adversity and difficulties (Wu et al., 2007). Entrepreneurship is particularly uncertain and challenging in emerging markets, as discussed above, where "continuation of effortful action despite failures, impediments, or threats" is needed (Gimeno et al., 1997). Crowdfunding initiated by insistent entrepreneurs can possess sustained goal-directed energy, especially during the early venturing phase (Seo et al., 2004), which helps to ensure successful new product prototyping, commercialisation and well-functioning (Wu et al., 2007). Taken together, insistence signposted by crowdfunding campaigns is vital to reduce backers' perceived uncertainties about whether they will get promised rewards (McKenny et al., 2018), which can further mitigate the disadvantages derived from home-country technological legitimacy.

Hypothesis 2b. Using insistence language mitigates the negative relationship between home-country technological illegitimacy and crowdfunding performance.

We finally postulate the moderating role played using tenacity language. Again, given the inherent uncertainty and disturbance in emerging economies, entrepreneurs also need to maintain tenacity in pursuing their goals in the face of challenges and obstacles during their early entrepreneurship (Baum and Locke, 2004). Prior works have demonstrated that an entrepreneur's tenacity is also an archetypical entrepreneurial trait to confront formidable barriers, sustain goal-directed action and energy when facing challenges (Gartner et al., 1992) and develop successful leadership (Bass and Stogdill, 1990; Locke, 2000). It has also been argued that tenacious entrepreneurs are more likely to pursue their goals continuously and less likely to give up, thus increasing their chances of entrepreneurship survival and success (Timmons, 2000). The survey conducted among 414 CEOs by Baum and Locke (2004) has shown that the greater the entrepreneur's tenacity is associated with the entrepreneur's new resource skill, self-efficacy about venture growth, and higher venture growth goals. Taken together, more tenacity signposted in crowdfunding campaign stories can reduce backers' uncertainties and mitigate the disadvantages derived from home-country technological legitimacy. Fig. 1 summarises our conceptual framework.

Hypothesis 2c. The use of language showing tenacity mitigates the negative relationship between the lack of technological legitimacy in the home-country and crowdfunding performance.

3. Method

3.1. Data and samples

To test our proposed hypotheses, we collected secondary data from

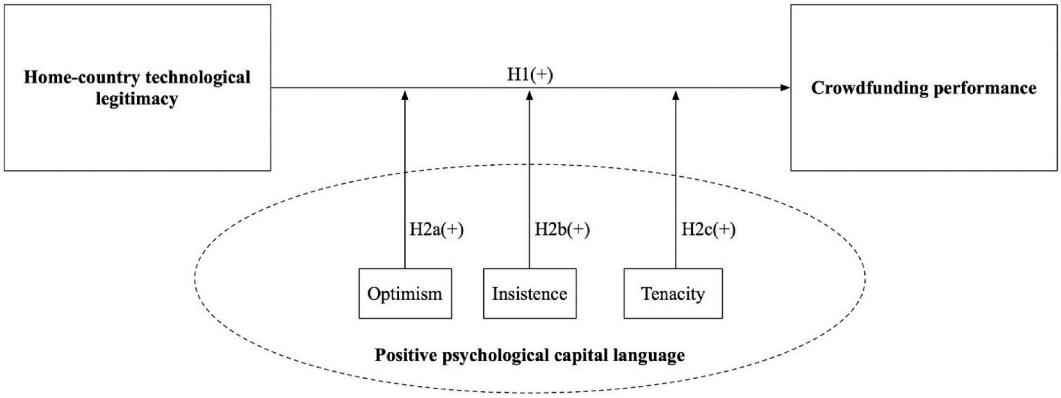

Fig. 1. Conceptual framework.

758 randomly selected crowdfunding campaigns from emerging economies listed on Kickstarter that are involved in the technology category. Kickstarter is one of the largest international crowdfunding platforms and has been extensively used in crowdfunding research (e.g. Anglin et al., 2018a; Chandler et al., 2024; Courtney et al., 2017; Mollick, 2014). All projects completed their funding between January 2010 and April 2024. Campaigns in the product category focus on producing tangible high-tech goods and resemble entrepreneurial ventures in equity-based resource acquisition research (Scheaf et al., 2018; Parhankangas and Renko, 2017), thus providing us with an ideal context for examining the effect of the home-country technological legitimacy.

To screen appropriate samples to answer our research question, we decided to only include crowdfunding campaigns from emerging economies rather than developed ones. Our sample selection is unbiased and is predicated on the availability of data regarding new ventures from emerging countries that satisfy our selection criteria. We only included the completed campaigns and excluded ongoing or cancelled ones. The campaigns with no disclosure of "Story" were excluded. Ultimately, we had a final sample of 758 crowdfunding campaigns. Of these campaigns, we manually collected data related to the variables in our interests from each crowdfunding campaign website, including the pledged funding goal, the actual amount of funds raised, the total number of backers, each crowdfunding campaign story text, the number of updates posted, and the number of comments. Tables 1 and 2 below show the variable definition and sample characteristics tables respectively.

3.2. Dependent variable: crowdfunding performance

Our dependent variable is crowdfunding performance. Given that crowdfunding performance or success is "multifaceted" (Ahlers et al., 2015, p.7), existing crowdfunding works have employed different ways of measuring crowdfunding performance or success (Allison et al., 2015; Bi et al., 2017; Anglin et al., 2018a). The first and most used measure in entrepreneurial finance research (Allison et al., 2013) captures whether the pledged funding goal was met at the beginning of a campaign (Parhankangas and Renko, 2017). This is a meaningful measure because if entrepreneurs do not fully meet the goal during the campaign, they receive none of the funding (Mollick, 2014; Anglin et al., 2018a). Therefore, crowdfunding performance is operationalised as a binary variable: a campaign is coded as "1" if it meets the pledged goal and "0" otherwise. The second measure operationalises crowdfunding performance using a continuous percentage of funds raised. Crowdfunding performance is therefore measured by the ratio between the total funding amount raised by the end of the campaign and the pledged funding goal set by the entrepreneurs (Belleflamme et al., 2014).

Results using the second measure have been argued to be more generalisable because other crowdfunding platforms allow entrepreneurs to receive funds raised even if they did not meet the pledged goal

Table 1
Variable definitions.

Dependent variable	Measure	Source
Crowdfunding performance	The ratio between the total funding amount raised by the end of the campaign and the pledged funding goal set by the entrepreneurs A campaign is coded as "1" if the pledged funding goal at the beginning of a campaign was met and "0" otherwise	Kickstarter
Independent variable	**Measure**	**Source**
Country Index (Home country technological legitimacy)	Global Innovation Index (GII) includes institutions, human capital and research, infrastructure, market sophistication, business sophistication, knowledge and technology outputs, and creative output sub-indexes.	World Intellectual Property Organization (WIPO)
Moderating variable	**Measure**	**Source**
Insistence	The calculation score of the repetition of key terms by DICTION 7.0	Kickstarter and DICTION 7.0
Tenacity	The calculation score of the use of the verb "to be" (e.g. is, am, will, shall), three definitive verb forms (e.g. has, must, do), their variants, and associated contractions (e.g. he'll, they've, ain't) by DICTION 7.0	Kickstarter and DICTION 7.0
Optimism	The calculation score by DICTION 7.0 by combining the scores of praises, satisfaction, inspiration, blame, hardship and denial.	Kickstarter and DICTION 7.0
Control variables	**Measure**	**Source**
Average word size	The average number of words in a 500-word unit	Kickstarter and DICTION 7.0
Number of updates	The number of updates posted	Kickstarter
Number of comments	The number of comments posted	Kickstarter
Number of strategic partners	The number of collaborators in each crowdfunding campaign	Kickstarter
Competitive aggressiveness	The score of competitive aggressiveness calculated by DICTION 7.0	Kickstarter and DICTION 7.0
Analytical thinking	The score of the degree to which people use words that suggest formal, logical, and hierarchical thinking patterns calculated by LIWC	Kickstarter and LIWC

Table 2
Sample characteristics.

Country	Sample	Percentage
Bangladesh	2	0.3%
Brazil	17	2.2%
Cameroon	1	0.1%
China	74	9.8%
Columbia	4	0.5%
Ghana	13	1.7%
Hong Kong	57	7.5%
India	39	5.1%
Ireland	2	0.3%
Israel	33	4.4%
Kenya	14	1.8%
Malaysia	15	2.0%
Mexico	119	15.7%
Mongolia	2	0.3%
Nepal	7	0.9%
Pakistan	8	1.1%
Puerto Rico	17	2.2%
Qatar	2	0.3%
Romania	20	2.6%
Russia	20	2.6%
Singapore	16	2.1%
Slovenia	2	0.3%
South Africa	14	1.8%
South Korea	27	3.6%
Taiwan	118	15.6%
Thailand	29	3.8%
Turkey	31	4.1%
Ukraine	55	7.3%
Total sample	**758**	**100.0%**

Note: The selection of the sample is unbiased and is predicated on the availability of data regarding new enterprises from emerging countries that satisfy our selection criteria.

(Anglin et al., 2018a). This measure can provide a more precise differentiation of crowdfunding performance among campaigns. The first measure, in terms of dummy variables, may mix up campaigns that barely meet their pledged goals and those that exceed significantly (Ahlers et al., 2015; Anglin et al., 2018a). In this research, we adopted the two meaningful measures used by previous studies to build our estimation models and ensure the robustness of our results (please refer to equations (1) and (2), respectively, from our model estimations). Specifically, we operationalised crowdfunding performance into the binary variable to establish our baseline model using equation (1) (Anglin et al., 2018a; Bi et al., 2017; Anglin et al., 2013) and check the robustness of our results using equation (2) which captures crowd funding performance in terms of percentages of funds raised (Belleflamme et al., 2014).

3.3. Independent variable: Home-Country's technological legitimacy

Our independent variable is the home-country technological legitimacy, measured by the Global Innovation Index (GII) developed by the World Intellectual Property Organisation (WIPO). GII has been increasingly adopted to analyse national comparative innovation competence (Crespo and Crespo, 2016; Huarng and Yu, 2022; Yu et al., 2022). GII is measured by five innovation input conditions and two innovation output conditions, with a total of 79 indicators. Specifically, innovation input conditions include institutions (including indicators of the political, regulatory, and business environments), human capital and research (including indicators of investment in education and research and development), infrastructure (including indicators of the investment in general infrastructures, information, and communication technologies), market sophistication (including indicators of market conditions, credit, investment, and trade and competition), and business sophistication (including indicators of innovation and knowledge linkages) (Crespo and Crespo, 2016). The two innovation output conditions include knowledge and technology outputs and creative outputs, reflecting the cumulative nature of a country's capabilities and performance in innovation and creativity (Crespo and Crespo, 2016; Adams et al., 2023). According to the index calculation, a home-country with a higher GII index score (or a higher global GII rank) can be viewed as possessing more technological legitimacy. The GII index score of the emerging country, where each of our sampled crowdfunding campaigns was initiated in the given year when each campaign was initiated, was collected and merged with our crowdfunding dataset.

3.4. Moderating variables

To operationalise the moderating variables, we used the DICTION 7.0 program to read all the sample campaign stories and generate the linguistic variables. Originally developed to analyse the speeches of politicians (Bligh et al., 2004; Hart and Jarvis, 1997), DICTION 7.0 has now been widely used in management research (Short and Palmer, 2008; Yuthas et al., 2002), especially in crowdfunding research (e.g. Allison et al., 2015; Anglin et al., 2023; Franzoni and Tenca, 2023). The program, with over 10,000 search keywords, calculates and assigns the scores of each text to 35 linguistic theoretical categories (Davis et al., 2012; Pennebaker et al., 2003). DICTION 7.0, a common approach to Computer Aided Text Analysis (CATA), is advantageous because it helps avoid mistakes and offers a stable coding scheme and coder reliability (Short et al., 2010).

The three moderating variables in our research are insistence, tenacity and optimism. Insistence was measured by DICTION 7.0 by calculating the repetition of key terms (Bligh et al., 2004). A higher score of insistence means a higher level of repetition of key terms, indicating references to tangible outcomes and a preference for an ordered and organised world (Bligh and Robinson, 2010). Tenacity was operationalised as the use of the verb "to be" (e.g. is, am, will, shall), three definitive verb forms (e.g. has, must, do), their variants, and associated contractions (e.g. he'll, they've, ain't). A higher tenacity score indicates more use of these verbs and more confidence and totality (Hart, 2000). Finally, optimism is the language endorsing the entrepreneurs' positive entailments. DICTION 7.0 operationalises the variable by combining the scores of praise, satisfaction, inspiration, blame, hardship and denial.

3.5. Control variables

We controlled for additional factors that may influence crowdfunding performance, including the average word size, the number of updates posted by entrepreneurs, and the number of comments associated with the campaigns. These are the variables reflecting the level of entrepreneurial efforts. Existing research has shown that the more efforts and preparedness entrepreneurs demonstrate, the more likely they are to enhance the legitimacy of a new venture and improve its funding performance (Franzoni and Tenca, 2023). We also control the number of strategic partners (Colombo et al., 2015) representing the external social capital. Each campaign's competitive aggressiveness and analytical thinking scores are also controlled, which could positively affect entrepreneurial financing performance (Covin and Covin, 1990). Analytical thinking captures the degree to which entrepreneurs use formal and logical thinking patterns (Boyd and Pennebaker, 2015). We used Linguistic Inquiry and Word Count (LIWC) software, another commonly used language analysis tool for investigating linguistics and psychological variables (Tausczik and Pennebaker, 2010), to calculate the analytical thinking. Finally, we employed the dictionary created by Short et al. (2010) to measure competitive aggressiveness.

3.6. Empirical model estimation

Following previous similar empirical studies, including Anglin et al. (2018b), Bi et al. (2017) and Franzoni and Tenca (2023), we approached the baseline estimation model with caution. First, given that our dependent variable measures the success and failures of new ventures as

a binary variable, we use the logit equation below to estimate our baseline regression model.

$$VtrSuccDummy_{i,t} = \alpha + \beta_1 ctrindex_{i,t} + \sum_{i=1}^{n=9} \beta_n Contrvar_{i,t} + \gamma + \varepsilon_{i,t}$$

Equation 1

Where α represents the intercept or constant of the dependent variable, *VtrSuccDummy* represents the dummy dependent variable that takes the value of 1 for success otherwise 0 for failure. β is the beta coefficient that measures the rate by which the dependent variable changes in relation to the changes of the independent variable by one standard deviation, keeping all other variables constant. *i,t* represent a period, *ctrindex* represents country index, and $\sum_{i=1}^{n=9} \beta_n Contrvar_{i,t}$ represent the control factors, which include the number of updates, partners, comments, average word size, competitive aggression, and analytics. The error term is denoted by ε, and the year effect is represented by γ. By integrating equation (2) in our model estimation and substituting venture success as a percentage (continuous variable) for the dependent variable, we were able to assess the robustness of our baseline model. Please find our model estimation for equation (2) below where $VtrSucc\ percentage_{i,t}$ represents venture success measured in percentage terms

$$VtrSucc\ percentage_{i,t} = \alpha + \beta_1 ctrindex_{i,t} + \sum_{i=1}^{n=9} R_n Contrvar_{i,t} + \gamma + \varepsilon_{i,t}$$

Equation 2

4. Results

4.1. Descriptive statistics

Our summary statistics and Pearson correlation (Table 3) revealed interesting results. We noted that overall, approximately 47% of the new ventures in our database achieved their funding target with a standard deviation of approximately 49.9%. This result is rather intriguing, considering that these ventures are captured in the context of emerging countries. In addition, we noted that the average home country technological index of the nations in our dataset is 40.5%, which is relatively low with a standard deviation of 26%. We noted an average word size of approximately five words in each crowdfunding campaign, and approximately 80% of all the campaigns use AI analytics to bolster their funding successes. We recorded a significant amount of positive language being used to entice funders to fund these new ventures. For example, strong and positive language involving insistence, tenacity and optimism recorded a mean value of 7.39, 1.2 and 51, respectively. Interestingly, we found a positive correlation between funding achievements and these strong positive languages.

4.2. Association between home-country technological legitimacy and crowdfunding performance

We test our hypothesis 1 using our baseline regression model 1 in Table 4. Our hypothesis 1 posited, using the legitimacy-based view theoretical lens, that there is a noteworthy inverse relationship between crowdfunding performance and weak technological legitimacy in the context of emerging countries. Our results from Table 4 Model 1 showed a substantial negative association (*Model 1: β= -0.2306, p <0.0021*) between the performance of crowdfunding and countries with lower global innovation indices which was in line with our expectations. This significant negative relationship between the weaker global innovation index and crowdfunding performance is even more pronounced after changing our dependent variable from binary to percentages in Model 5 on Table 4 (*Model 5: β= -0.2064, p <0.0038*). According to our findings, backers of crowdfunding perceived that, countries with strong innovation and technological index are more likely to ensure product

Table 3
Summary statistic and pairwise correlations.

Variables	Mean	SD	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Crowdfunding Performance	0.468	0.499	0.000	1.000	1.000										
(2) Country Index	40.505	26.010	5.000	136.000	−0.335[a]	1.000									
(3) Number of Updates	6.852	10.268	0.000	57.000	0.576[a]	−0.312[a]	1.000								
(4) Comments	1.781	6.063	0.000	10.543	0.305[a]	−0.239[a]	0.541[a]	1.000							
(5) Partner	1.211	2.355	0.000	16.000	0.368[a]	−0.356[a]	0.361[a]	0.428[a]	1.000						
(6) Average Words Size	4.878	0.299	4.070	6.330	0.158[a]	−0.023	−0.010	−0.038	0.038	1.000					
(7) Competitive Aggression	0.494	1.075	0.000	9.210	0.145[a]	0.173[a]	−0.093[a]	−0.018	−0.069	0.041	1.000				
(8) Analytic	79.846	12.749	3.200	98.400	0.175[a]	−0.072	0.104[a]	0.061	0.110[a]	0.307[a]	0.047	1.000			
(9) Insistence	7.390	5.862	0.020	61.250	0.266[a]	0.643[a]	0.273[a]	−0.055	−0.036	0.003	0.100[a]	−0.000	1.000		
(10) Tenacity	1.172	1.803	0.030	25.750	0.214[a]	0.622[a]	0.241[a]	−0.018	−0.044	0.013	0.004	0.037	0.216[a]	1.000	
(11) Optimism	51.200	2.511	37.610	67.380	0.248[a]	0.617[a]	0.291[a]	0.016	0.099[a]	0.054	−0.035	0.122[a]	0.013	0.013	1.000

[a] Shows significance at the 0.05 level.

Table 4
Baseline regression model.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Logit	VCE (Robust)	VCE (Bootstrap)	Probit	VCE (Robust)	VCE (Bootstrap)	VCE (Bootstrap)
Country Index	−0.2306***	−0.2046***	−0.2057***	−0.2074***	−0.2064***	−0.2104***	−0.2104***
	(0.0046)	(0.0043)	(0.0044)	(0.0027)	(0.0025)	(0.0027)	(0.0027)
Number of Updates	0.2413***	0.2413***	0.2413***	0.1306***	0.1306***	0.1306***	0.1306***
	(0.0359)	(0.0467)	(0.0464)	(0.0180)	(0.0268)	(0.0300)	(0.0300)
Comments	0.0238***	0.0238***	0.0238**	0.0135***	0.0135***	0.0135***	0.0135***
	(0.0063)	(0.0071)	(0.0095)	(0.0033)	(0.0036)	(0.0035)	(0.0035)
Partner	0.2429***	0.2429***	0.2429***	0.1548***	0.1548***	0.1548***	0.1548***
	(0.0848)	(0.0805)	(0.0886)	(0.0499)	(0.0469)	(0.0571)	(0.0571)
Average word Size	0.3282	0.3282	0.3282	0.1595	0.1595	0.1595	0.1595
	(0.3681)	(0.4056)	(0.3776)	(0.2065)	(0.2228)	(0.2591)	(0.2591)
Aggressive competitiveness	0.1708**	0.1708**	0.1708**	0.1521**	0.1521**	0.1521**	0.1521**
	(0.0835)	(0.0827)	(0.1012)	(0.0501)	(0.0505)	(0.0483)	(0.0483)
Analytic	0.1192**	0.1192**	0.1192**	0.1134**	0.1142**	0.1154**	0.1154**
	(0.0102)	(0.0103)	(0.0116)	(0.0056)	(0.0060)	(0.0060)	(0.0060)
Insistence	0.0214*	0.0215*	0.0219*	0.0217*	0.0218*	0.0220*	0.0321*
	(0.0084)	(0.0084)	(0.0082)	(0.0082)	(0.0082)	(0.0078)	(0.0068)
Tenacity	0.0431*	0.0433*	0.0441*	0.0442*	0.0448*	0.0451*	0.0455*
	(0.0064)	(0.0064)	(0.0062)	(0.0062)	(0.0061)	(0.0060)	(0.0060)
Optimism	0.0310*	0.0312*	0.0318*	0.0320*	0.0322*	0.0341*	0.0364*
	(0.0076)	(0.0076)	(0.0075)	(0.0072)	(0.0072)	(0.0068)	(0.0065)
Constant	−5.0692***	−5.0692***	−5.0692***	−2.9795***	−2.9795***	−2.9795***	−2.9795***
	(1.7815)	(1.8619)	(1.6580)	(0.9989)	(1.0261)	(1.2019)	(1.2019)
Year fixed effects	730	730	730	730	730	730	730
Pseudo R-square	0.4827	0.4829	0.4819	0.4808	0.4817	0.4818	0.4818
Year fixed Effect	No	No	No	No	No	No	No

Standard errors in parentheses ***p < 0.01, **p < 0.05, *p < 0.1.

superiority and profitable returns on their investments (Diez-de-Castro et al., 2018; Foreman and Whetten, 2002). The robustness of our baseline results was tested using our VCE (robust) and VCE (bootstrap) in models 2 and 3, respectively, in Table 3. The results were consistent *(Model 2: β = -0.2046, p <0.0027; Model 3: β = -0.2057, p <0.0024)*. Our regression models 6 and 7 were used to test the robustness of our baseline results in model 5. Our research offers a fresh perspective on the legitimacy view theory as it relates to crowdfunding in developing nations.

Table 5
Moderation effects with GLM regression.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	GLM	VCE (Robust)	VCE (Bootstrap)	Moderation Effect	Moderation Effect	Moderation Effect	Moderation Effects
Country Index	−0.2426***	−0.2416***	−0.2524***	–	–	–	–
	(0.0006)	(0.0006)	(0.0006)	–	–	–	–
Number of updates	0.1247***	0.1253***	0.1265***	0.1246***	0.1248***	0.1246***	0.1658***
	(0.0017)	(0.0019)	(0.0017)	(0.0019)	(0.0019)	(0.0019)	(0.0010)
Comments	0.2041***	0.2061***	0.2021***	0.2161***	0.2311***	0.2401***	0.3662***
	(0.0011)	(0.0010)	(0.0011)	(0.0010)	(0.0009)	(0.0008)	(0.0004)
Partner	0.0345***	0.0345***	0.0345***	0.0344***	0.0348***	0.0341***	0.1263***
	(0.0072)	(0.0056)	(0.0053)	(0.0057)	(0.0057)	(0.0057)	(0.0042)
Average words Size	0.0417	0.0417	0.0417	0.0421	0.0426	0.0401	0.0623*
	(0.0524)	(0.0561)	(0.0565)	(0.0562)	(0.0563)	(0.0574)	(0.0346)
Competitive Aggressive	0.0145	0.0145	0.0145	0.0143	0.0148	0.0144	0.0352
	(0.0138)	(0.0154)	(0.0174)	(0.0155)	(0.0154)	(0.0157)	(0.0157)
Analytic	0.0638***	0.0728***	0.0679***	0.0638***	0.0727***	0.0636***	0.1435***
	(0.0012)	(0.0011)	(0.0012)	(0.0012)	(0.0011)	(0.0011)	(0.0011)
Insistence x Country Index				0.2578***			
				(0.0021)			
Tenacity x Country Index					0.2472***		
					(0.0086)		
Optimism x Country Index						0.2585***	
						(0.0064)	
Insis x Optim x Ten x CI							0.3465***
							(0.0032)
Constant	−0.1245	−0.1245	−0.1245	−0.1287	−0.1362	−0.5450	−0.6572
	(0.2460)	(0.2508)	(0.2743)	(0.2521)	(0.2518)	(0.2199)	(0.2124)
AIC	0.9842	0.9342	0.9320	0.8452	0.84541	0.8421	0.8421
Year Fixed Effects	No	No	No	No	No	No	No

Note: Standard errors in parentheses ***p < 0.01, **p < 0.05, *p < 0.1. Also, we noted that insistence, tenacity and optimism on their own have positive but weak association with crowdfunding success. However these weak positive associations becomes significant when we moderate each of these variables with country index in emerging country context. Therefore, in our model 7 we moderate insistence, optimism and tenacity with the country index (Insis x Optim x Ten x CI) and this resulted in much significant positive association with new venture successes.

4.3. Optimistic language moderates the relationship between a country's technological legitimacy and crowdfunding performance

Our hypothesis 2a argues that using optimistic language during crowdfunding campaigns can mitigate the negative relationship between the lack of home-country technological legitimacy and crowdfunding performance (Shane and Venkataraman, 2000). We used our regression model 4 in Table 5 in testing for our hypothesis 2a. We observed that on its own, optimistic language in crowdfunding campaigns has a weak positive association with crowdfunding performance (*Model 1: β= 0.0310, p <0.0618*). However, the strong negative association between the weaker home country innovation index and crowdfunding performance becomes positive and statistically significant (*Model 4: β = 0.2585, p <0.0018*) when optimistic language is moderated with the home country innovation score. Our findings highlight the significance of optimism in crowdfunding efforts, especially when the campaign originates from nations with lower innovation and technology indexes. Our results corroborate earlier research suggesting that optimism in crowdfunding campaigns can reduce potential backers' perceived uncertainty and raise their favourable opinions of the new business (Friend et al., 2016).

4.4. How positive insistence languages moderates the relationship between a country's technological legitimacy and crowdfunding performance

We test hypothesis 2b using our regression model 5 in Table 5. Our hypothesis 2b argues that positive insistence languages moderate the relationship in inverse relationships between a country's technological legitimacy and crowdfunding performance. We noted from our results from our baseline regression results from Model 1 to 3 that, on their own, positive insistence languages have a weak positive association with crowdfunding performance (*Model 1: β= 0.0214, p <0.0818; Model 1: β= 0.0215, p <0.0818; Model 1: β= 0.0219, p <0.0820)*. However, the strong inverse relationship between the weaker home country innovation index and crowdfunding performance becomes positive and statistically significant (*Model 4: β = 0.2578, p <0.0019*) when positive insistence language is moderated with the home country innovation score. Our findings support earlier research suggesting that using positive instance language by entrepreneurs can sustain backers and/or funders' interest in the new venture, particularly in the early stages of the venture (Seo et al., 2004). Furthermore, crowdfunding campaigns must emphasise on positive attributes of the venture to allay backers' concerns about the venture (McKenny et al., 2018).

4.5. How language emphasising tenacity moderates the relationship between a country's technological legitimacy and crowdfunding performance

Hypothesis 2c argues that positive campaign language that emphasises tenacity could moderate the significant inverse relationship between a country's technological legitimacy and crowdfunding performance. To test this hypothesis, we moderate tenacity with the home country's global innovation index in model 6 in Table 5. First, we observed from our baseline regression model 1 on Table 4 that, tenacity on its own has a positive but weaker association with crowdfunding performance in our baseline regression model 1 on Table 4 (*Model 1: β= 0.0431, p <0.0612*). However, on our regression model 6 in Table 5, we noted that the strong inverse relationship between the weaker home country innovation index and crowdfunding performance becomes positive and statistically significant (*Model 4: β = 0.2472, p <0.0019*) when tenacity is moderated with the home-country innovation score. Our findings are consistent with earlier research showing that persistent entrepreneurs have a higher likelihood of persevering through difficult times and are less likely to give up, which increases their chances of surviving and succeeding in business (Timmons, 2000). We noted that the significant positive association between the home country's technological legitimacy and crowdfunding performance were more pronounced (*Model 7: β = 0.3465, p <0.0008*) when we combined all the three variables of insistence, tenacity and optimism and moderated it with global innovation index in our model 7 in Table 5. Our results provide new insights into how positive language involving persistence, optimism, and tenacity might support new ventures from emerging economies in raising the necessary capital. Thus, the findings of our research add to the body of knowledge on crowdfunding in the context of developing nations.

4.6. Test of robustness

To ensure the validity of our findings, we conducted a series of robustness tests. Initially, we employed logistic regression to test our hypothesis in our baseline regression, following the approach of similar empirical studies such as De Crescenzo et al. (2020) and Song et al. (2019), which utilised a binary dependent variable (zero and one) to capture crowdfunding success. This is presented in Table 1, Model 1. Recognising that logistic models applied to panel data, like ours, may encounter issues such as heteroskedasticity, autocorrelation, and multicollinearity (as discussed by Bruno (2024), Cameron and Miller (2015)), we addressed these concerns by further testing our baseline model. In Table 4, we applied a robust VCE model (Model 2) and a bootstrapping VCE model (Model 3) to our baseline model. The results from the robust VCE model confirmed that our baseline regression did not suffer from heteroskedasticity. Additionally, the bootstrapping VCE test indicated that our model passed the autocorrelation test. These findings demonstrate the robustness and consistency of our baseline results across various regression models, including probit, as shown in Models 4, 5, and 6 of Table 4. Furthermore, our baseline model successfully passed the multicollinearity test for potential endogeneity issues when we initially used OLS regression.

Acknowledging the variety of measurement approaches used in existing crowdfunding literature, such as Allison et al. (2015), Bi et al. (2017) and Anglin et al. (2018a), we extended our analysis by switching the dependent variable from binary to percentages (a continuous variable) and applying a generalised linear model in Table 5, Models 1–3. Given our particular interest in the variables of country-level technological legitimacy and the moderating effects of insistency, tenacity, and optimism, we provided graphical illustrations to depict their impact on crowdfunding performance using Figs. 1, 2a and 2b. Fig. 1 illustrates the quantile relationships between a country's technological legitimacy and crowdfunding performance. Fig. 2a & b shows how insistency, tenacity, and optimism collectively moderate the relationship between a country's technological legitimacy and crowdfunding performance. By adopting a quantile approach, we aimed to offer more comprehensive insights into how the various distributions of our dataset affect crowdfunding performances.

To deal with any possible heterogeneity issues, we utilised Cochran's Q test in the early phases of our study to see if our data had any potential heterogeneity issues. Our results showed a moderately high p-value, indicating that heterogeneity in our data is insignificant. Notwithstanding, to ensure the reliability and validity of our findings, we conducted a series of tests on our heterogeneous dataset. First, we follow Morimune and Hoshino (2008) by using bootstrapping to assess the stability and validity of the regression coefficients in both our baseline model (Table 4) and our moderating effects model (Table 5). Bootstrapping was done using the randomised resampling procedure from the heterogenous panel dataset to estimate the regression coefficients in our models. Additionally, we utilised quantile analysis, following Zhang et al. (2019), to explore the relationships between a country's technological legitimacy and crowdfunding performance. We divided our dataset into four parts using quantile plots, as depicted in Fig. 2a. We adopted a similar approach in Fig. 2b, segmenting our data into four parts to examine how the combined effects of insistency, tenacity, and optimism moderate the relationship between a country's technological

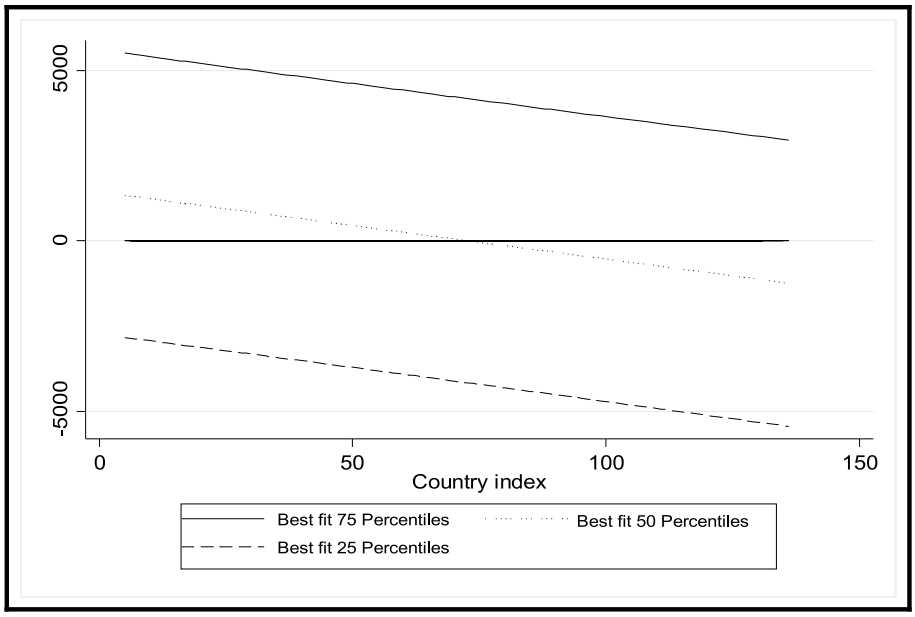

Fig. 2a. Quantile Relationships between the country technological legitimacy and crowdfunding performance.

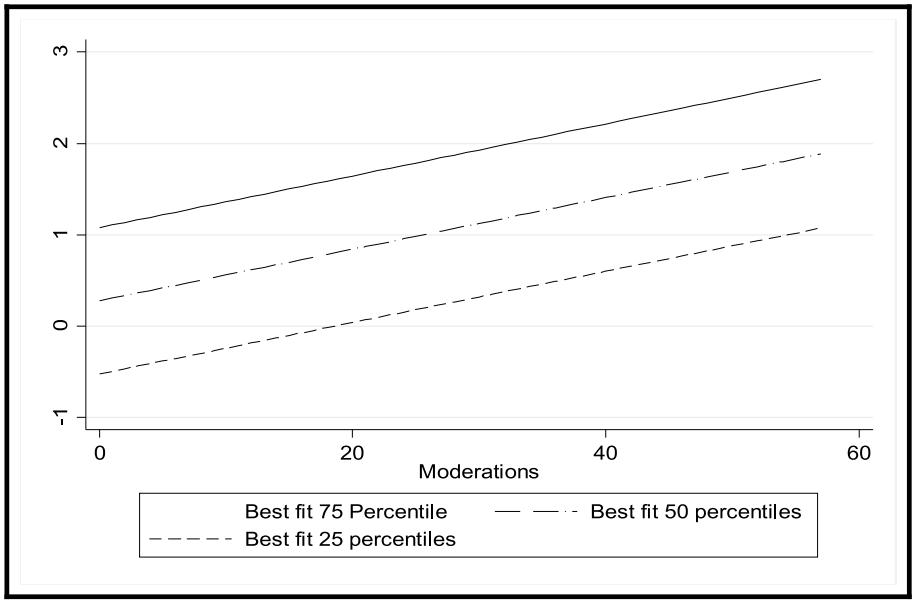

Fig. 2b. Moderation Effects- How insistency, tenacity and optimism together moderate the relationships between country's technological legitimacy and crowdfunding performance.

legitimacy and crowdfunding performance. Our findings were robust and consistent and remained unchanged after applying both bootstrapping and quantile analysis.

5. Discussion

5.1. Theoretical contributions

Our research provides three core contributions to the crowdfunding literature and legitimacy theory. First, it extends legitimacy theory and crowdfunding research by revealing that home-country technological legitimacy can positively affect crowdfunding performance. Existing works have shown that crowdfunding performance is influenced by the legitimacy of the social category to which a focal firm belongs. This is mainly because international backers have bounded rationality and imperfect information in assessing whether they can get promised rewards or at least their funds back (McKenny et al., 2018). Studies (Rodgers et al., 2020) show that in this position, backers would be forced to adopt cognitive shortcuts to evaluate a focal firm's legitimacy. However, the question of whether and how a country's technological legitimacy affects crowdfunding performance has mainly been unclear. Our research, therefore, addresses the gaps by examining crowdfunding campaigns from emerging countries. Given that technological legitimacy can be judged and perceived as more trustworthy and competitive by crowdfunding backers and receive more support from backers (Diez-de-Castro et al., 2018; Suddaby et al., 2017), our finding is both a new and meaningful addition for entrepreneurs in emerging economies who seek to use crowdfunding platforms to raise start-up capital.

Second, our research enriches our understanding of what and how country-level legitimacy affects crowdfunding performance in emerging

economies context. While extant crowdfunding research has emphasised the importance of legitimacy as an essential mechanism explaining crowdfunding performance at the product category level (e.g. Soublière and Gehman, 2020), there is limited understanding 'of whether legitimacy as a mechanism can be influenced at the country level. Indeed, the importance of the legitimacy spillover mechanism at product, industry and country levels to a focal firm performance have been well argued Dobrev et al. (2006); Glynn and Navis (2013); Kostova and Zaheer (1999); Vergne and Wry (2014); Zuckerman (1999). The limitation may be partly attributable to the fact that existing crowdfunding research has paid considerable attention to samples from developed countries with relatively similar technological capabilities and institutional environments, thus disguising country-level legitimacy disparity between developed and emerging economies. By exploiting crowdfunding campaign samples from emerging economies where national technological capability varies significantly, our study adds that the performance of crowdfunding campaigns is subject to their home country's technological (il)legitimacy. The study lays the foundation for future works that explore home-country legitimacy effects in crowdfunding research.

Our final contribution extends the boundary conditions of why and how the effect of the home-country technological legitimacy may vary in terms of crowdfunding performance. We provide empirical evidence that language depicting optimism, insistence and tenacity shown in crowdfunding campaigns can strengthen the positive relationship between their home-country technological legitimacy and crowdfunding performance. The optimism, insistence and tenacity shown in a crowdfunding campaign are also crucial psychological capital which helps to assure international backers that the campaigns can be less likely abandoned and that the promised rewards can be obtained (Droge et al., 2008; Liang et al., 2014; Simon and Shrader, 2012). Our results complement existing studies and develop a holistic view by showing positive psychological capital languages have significant interactive effects on crowdfunding performance (Taeuscher et al., 2021).

In addition, given that entrepreneurship is particularly uncertain and challenging in emerging economies, the use of languages showing optimism, insistence and tenacity helps to show entrepreneurs' expectancy about the future. The show of commitment and repeated efforts in the face of adversity and challenges could strengthen the legitimacy of the business venture and its prospects (Gartner et al., 1992). These findings provide novel insights into how firms can tailor language across multiple audiences in crowdfunding platforms. This study advances our understanding of how entrepreneurs from emerging economies could employ positive linguistics in crowdfunding campaign stories to shape perceptions and influence legitimacy.

5.2. Practical implications

The findings of our study have implications for practitioners and policymakers. First, entrepreneurs from emerging economies should enhance their home-country technological legitimacy when launching crowdfunding campaigns. Forming strategic alliances with reputable technology firms, obtaining certifications from recognised institutions, and highlighting national achievements in technological innovation can mitigate the perceived risks associated with campaigns from emerging economies. Cuervo-Cazurra (2011) emphasised the importance of technological capabilities in international business, underscoring the value of this approach.

Second, the role of positive language in expressing optimism, tenacity, and persistence in crowdfunding success suggests that entrepreneurs should be trained to craft compelling narratives. Anglin et al. (2018a) demonstrated that positive psychological capital improves crowdfunding performance. Therefore, training programs and workshops on effective communication and storytelling could help entrepreneurs better articulate their vision and commitment, enhancing their campaigns' appeal to potential backers.

Third, given the varying levels of technological legitimacy across countries, entrepreneurs should tailor their marketing strategies to emphasise their home-country technological strengths. For instance, Taeuscher et al. (2021) found that distinctiveness and legitimacy are critical for the success of crowdfunding platforms. Therefore, entrepreneurs in emerging economies could highlight successful technological ventures or innovations from their country during crowdfunding campaigns to reduce the perceived psychic distance and institutional divide that exist between their home-country and international backers.

Fourth, building networks with local and international stakeholders can enhance the perceived legitimacy of a crowdfunding campaign. Kuilman and Li (2009) highlighted the importance of legitimacy in foreign investments. Therefore, entrepreneurs should engage with industry experts, investors, and mentors who can vouch for their technological capabilities and business potential. Networking events, industry conferences, and online forums can facilitate these engagements.

5.3. Policy implications

We present four implications for government policy. First, governments in emerging economies should invest in technological infrastructure and innovation. Policies supporting research and development, providing grants and subsidies for technological projects, and creating technology parks and incubators can enhance the country's technological legitimacy. These initiatives benefit local entrepreneurs and improve the country's global image, attracting international investment. This recommendation is reinforced by revisiting the work of Suddaby et al. (2017) who emphasised the role of institutional support in building legitimacy.

Second, policymakers should create a supportive entrepreneurial ecosystem that encourages innovation and reduces barriers for startups. Simplifying regulatory procedures, providing tax incentives, and ensuring access to funding for early-stage ventures can foster an environment conducive to entrepreneurship. Drori et al. (2009) examined the challenges and strategies of new ventures in gaining legitimacy, highlighting the need for supportive policies.

Third, encouraging collaborations between local startups and international firms can boost the technological legitimacy of emerging economies. In line with the work of Fisher et al. (2017) who explored the role of strategic alliances in legitimacy building, governments can facilitate these collaborations through bilateral agreements, trade missions, and participation in international technology fairs. These collaborations could enhance local firms' technological capabilities and increase their visibility and credibility on global crowdfunding platforms.

Fourth, investing in educational and training programs focused on entrepreneurship, digital marketing, and communication can equip entrepreneurs with the necessary skills for crowdfunding success. Partnerships with academic institutions and industry experts can ensure these programs are comprehensive and aligned with current market trends. Wu et al. (2007) highlighted the importance of entrepreneurial education and persistence in business success. Therefore, building a knowledgeable entrepreneurial workforce can enhance the success rates of local crowdfunding campaigns. Finally, implementing a system for monitoring and evaluating the effectiveness of policies related to technological innovation and entrepreneurship can help governments make informed decisions. Kostova and Zaheer (1999) discussed the importance of continuous evaluation in maintaining organisational legitimacy. Consequently, undertaking regular assessments and feedback mechanisms can ensure that policies remain relevant and adaptable to the evolving needs of the entrepreneurial ecosystem. This proactive approach enhances the overall impact of government initiatives on the success of crowdfunding campaigns.

5.4. Limitations and areas for future research

This study offers valuable insights into how the technological legitimacy of a company's home-country and positive psychological capital language impact the success of crowdfunding campaigns for SMEs in emerging economies. However, there are three main limitations to consider. First, the study is based on a dataset of only 758 technology-focused crowdfunding campaigns from Kickstarter, which may not fully represent the diverse crowdfunding landscape, especially in emerging economies where other platforms are more popular. Therefore, the findings may not be universally applicable across all crowdfunding contexts. Secondly, the study uses the Global Innovation Index (GII) to measure a home-country technological legitimacy. While the GII is a reliable metric, it may not encompass all aspects of technological legitimacy that influence crowdfunding success, such as government innovation policies, intellectual property protection, and the availability of venture capital. Thirdly, the study analyses positive psychological capital language like insistence, tenacity, and optimism through text analysis of campaign descriptions and updates. While this method is informative, it may not fully capture the complexities of entrepreneurial behaviour and personality traits.

To overcome these limitations, future research should broaden the dataset to include campaigns from various crowdfunding platforms, enhance measures of technological legitimacy, and employ direct methods to evaluate positive psychological capital language. Additionally, exploring how successful crowdfunding campaigns can influence a country's perceived technological capabilities and entrepreneurship ecosystem could provide further insights into the broader implications of crowdfunding success on national innovation and entrepreneurship.

In conclusion, the study's implications highlight the role of technological legitimacy and positive communication in the success of crowdfunding campaigns from emerging economies. By addressing these areas, entrepreneurs can improve their chances of attracting international backers, while policymakers can create supportive environments fostering entrepreneurial growth and innovation.

CRediT authorship contribution statement

Honglan Yu: Writing – review & editing, Writing – original draft, Validation, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Rexford Attah-Boakye:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Yameng Zhang:** Writing – review & editing, Writing – original draft, Software, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Kweku Adams:** Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Diana Owusu-Yirenkyi:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Conceptualization.

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Data availability

Data will be made available on request.

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