



ORIGINAL CONTRIBUTION

Social Media Agility, Environmental Dynamics, and Sustainable Performance in SMEs: The Mediating Role of Innovation Capability and Moderating Role of the Circular Economy Business Model

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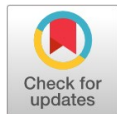
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Abstract— This research explores the complex relationships between institutional theory, social media agility, and environmental dynamics in establishing and influencing the sustainable performance of Small and Medium Sized Enterprises (SMEs) in Thailand. Specifically the research investigated innovation capability from a mediating perspective and the circular economy business model from a moderating perspective across these relationships. The survey data were collected from 330 senior and middle managers working in SMEs in Bangkok and Pattani, Thailand. The study subsequently employed Structural Equation Modeling (SEM) based on an analysis of the survey data and to test a theoretical model. The findings reveal that social media agility ($p < 0.001$) and environmental dynamics ($p < 0.001$) play an essential role in strengthening the ability to innovate. Innovation capability, in turn, serves as an essential channel for the indirect impact of social media agility ($p < 0.001$) and environmental dynamics ($p < 0.001$) on sustainable performance. Moreover, the circular economy business model has a moderating effect on the connection between innovation capability and sustainable performance ($p = 0.007$). In summary, the model helps to explain 67.1% of the variance in innovation capability and 65.0% of the variance in sustainable performance, while the results can be considered beneficial from the point of view of management and policy.

Index Terms— Social media agility, Environmental dynamics, Innovation capability, Circular economy business model, Sustainable performance

Received: 6 March 2026; **Accepted:** 25 April 2026; **Published:** 28 May 2026



Introduction

In today's modern, industrialized world, success is measured by how to continue adding value to performance, incorporating financial, social, and environmental objectives into essential business operations (Núñez-Ríos & Sánchez-García, 2024). As companies rethink their approaches to sustaining competitive advantage during a time of phenomenal digital change, restricting the impact of environment- and technology -driven

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improvement (Oduro, 2024), they are facing mounting pressure to demonstrate corporate social accountability, while at the same time trying to assess newly developed technology-enabled business environment. The global awareness of sustainability is driving increased stakeholder engagement in circular economy development (Arsawan et al., 2026). The Circular Economy (CE) is now recognized as a competitive approach for economic growth and improving sustainability competitiveness (Onngam & Charoensukmongkol, 2024). It also reflects a transformational shift towards sustainable development goals and a more sustainable living planet (Rathore et al., 2020). The CE offers new opportunities for cutting costs and development of new innovative business models that can provide significant savings to both companies and consumers through resource efficiency and access to new markets (Otasowie et al., 2025).

In spite of the numerous advantages of environmental sustainability, organization faces some internal and external challenges in embracing the CE. Internal barriers facing organisations include limited use of green technologies (Arranz & Arroyabe, 2023), slow path towards circularity (Puntillo, 2023) resource unpreparedness (Onngam & Charoensukmongkol, 2024), and limited senior management support (Arsawan et al., 2026). External factors hampering organization include environmental turbulence (Onngam & Charoensukmongkol, 2024; Puntillo, 2023), a lack of governmental incentives supporting green initiatives, and insufficient environmental policies (Rathore et al., 2020).

One aspect of business agility that has also become necessary in today's environment is the sophistication of businesses when integrating social media into their business models. As more customers transition from physical shopping locations to social media platforms, the use of social media by brands has become a requirement for companies in virtually every sector (Pitafi, 2025). Tehranian et al. (2024) prompted both businesses and consumers to become more socially-minded online and led to an impactful acceleration of in the use of social media for any number of purposes. Social media has created a new reality in regard to organization behaviour. Social media agility is a firm's ability to determine how to effectively and quickly utilize social media channels to sense change in the environment and respond with a deliberate strategy (Welch et al., 2024). Social media agility represents a relevant source of competitive advantage. It allows organizations to create real-time consumer insights, create collaborative innovation, and deliver value to their stakeholders in as close to real-time as possible. At the same time, Tehranian et al. (2024) showed their ability to succeed in an environment that is impossible to understand, with uncertainty, characterized by turbulent markets, various changing consumer behaviours, and a changing technological landscape.

Therefore, innovation capability is a strategically significant resource for business units to ensure dynamic, creative adaptability, and ultimately, survive and thrive. In essence, innovation capability encompasses the firm's systematic ability to continuously create, develop, and exploit new ideas, processes, or products (Tehranian et al., 2024). Ghouri et al. (2023) suggest that innovation capability is a critical mediating mechanism that enables organizations to translate social media agility and environmental dynamism into actual sustainable performance and productivity. An organization can be agile in its social media activities, and dynamic in its environmental responses; it is the internal systematic ability to innovate that converts these stimuli into improved financial, environmental, and social performance (Khan et al., 2024; Oduro, 2024).

By strengthening their internal organisational capacities, Xu et al. (2023) and expanding their response to environmental dynamism, Yu et al. (2025), organisations are embracing CEBM more and more. According to Arsawan et al. (2026), the main forces behind adaptability and innovation, which are essential for long-term success are internal competencies, especially social media agility. According to Onngam and Charoensukmongkol (2024), environmental dynamism is an external stimulant that affects market instability, technological adoption, and competitive strength. Although these two drivers are acknowledged as crucial elements in business change, little is known about how exactly they support CEBM (Xu et al., 2023). Because it enables businesses to recognise and take advantage of market possibilities while swiftly adjusting to changes in the market, social media agility is essential for competing in today's market (Puntillo, 2023).

Research on digital capabilities and organizational adaptability can be described as developing, with a noticeable dearth of literature regarding the transformation of digital responsiveness and external volatility into overall sustainable performance in the context of Small and Medium-Sized Enterprises (SMEs). Among the few studies available, one of the most recent publications is that of Onngam and Charoensukmongkol (2024); however, in their research, the authors only included the factors of size and environmental dynamism among other firm-level characteristics affecting general performance. In this research, we continue the line of inquiry pursued by these authors and link organizational capabilities and sustainability literature and analysis.

In addition, another novel aspect of this research is in creating and proving the concept of the circular economy business model as a significant strategic moderator. Previous studies using Institutional Theory suggest that normative, coercive, and mimetic pressures encourages companies to implement sustainable practices (Arranz & Arroyabe, 2023), while there have been no empirical studies revealing how Small and Medium-Sized Enterprises (SMEs) practically apply circularity principles to support their internal capabilities. This paper shows that the circular economy business model enhances the effect of innovation capabilities on sustainable performance, which supports the importance of the Circular Economy Business Model as a strategic instrument for companies operating in developing countries. The research shows that circular economy business model can create an additional strength of the positive influence of the innovation capability on sustainable development. Therefore, this study aims to answer the following research questions:

RQ1: Does social media agility have a direct impact on innovation capability?

RQ2: Do environmental dynamics have a direct impact on innovation capability?

RQ3: Does innovation capability play a mediating role in the relationship between social media agility and sustainable performance?

RQ4: Does the innovation capability play a mediating role in the relationship between environmental dynamics and sustainable performance?

RQ5: Does the circular economy business model moderate the relationship between innovation capability and sustainable performance?

The structure of this paper is as follows. In Section 2, is a review of the concepts and we introduce the hypotheses to be tested, and we then describe the research methods (the sample selection, data collection process, and data analysis). After reporting the outcomes from the data analysis, we will discuss the results and detail the implications for future research in the final section.

Theoretical Review and Hypothesis Development

Institutional Theory

Institutional theory provides a compelling way to consider these organizational responses. Under this theory, we can conclude that firms do not engage as purely rational economic actors, but instead are largely influenced by the social and cultural contexts in which they operate. To survive, firms seek legitimacy and, in doing so, will try to behave in accordance with the social norms, rules, and beliefs of their institutional environment (Arranz & Arroyabe, 2023). In behaving this way, firms avoid losing legitimacy and may be impacted by coercive isomorphism (pressure to comply with regulations or powerful actors), mimetic isomorphism (social pressures that come from the need to look like other successful firms in order to stave off uncertainty) and normative isomorphism (influence of obligations to follow professional standards and values) (Furusten, 2023). In this light, adopting social media platforms and taking on innovative practices can be thought of as a response to institutional pressures, as firms may feel organizationally they need to be seen as modern, responsible, and legitimate in the eyes of their key stakeholders, including customers or investors as well as regulators. The external environmental dynamics, it seems, provide coercive and mimetic pressure that spur firms to innovate to meet industry standards, or changing regulations (Glynn & D'anno, 2023). For example, maintaining a responsive social media presence often comes from a normative pressure on the part of both customers and industry peers. Together, as an institutional force, these variables create the sense of need for innovation capability development (Arranz & Arroyabe, 2023). Thus, we submit that innovation in and of itself, lies in the practice of a firm, is not only a proactive strategy but also a reactive necessity strongly intertwined with the institutional context as a result of being appropriate to the circumstances of the institution, which influences the firm's behaviour and decision-making processes.

Social media agility and innovation capability

Social media agility is the capability of businesses to use social media actively to respond to changing consumer preferences and market conditions (Alyahya et al., 2023). Ghouri et al. (2023) define social media agility as the ability of businesses to identify and act on changing customer preferences and to leverage and apply new features of social networking platforms for marketing. The relevance of social media agility for customer engagement and sustainability is being further developed with the growing prominence of social media in business (Bozkurt et al., 2024; Onngam & Charoensukmongkol, 2024). More specifically, social media agility allows for quick feedback from customer to adapt to a new environment (Tehrani et al., 2024). Social media agility and new technology have recently changed the way businesses communicate with their customers all over the world. Currently, social media is increasingly becoming an essential way for companies to communicate and connect with customers. One reason for the increased usage of social media in business communication is the rapid growth of the internet user community (Chhipa, 2025; Pitafi, 2025). With the growing use of social media, various people and organisations, including businesses and governments, are using social media as a form of communication (Onamusi, 2021). According to Ghouri et al. (2023), businesses can create connections with customers that respond to their needs through social media; this builds relationship value with consumers, and it allows businesses to strengthen their brand by understanding the market and their competitors.

Empirical literature confirms that organizations systematically leverage social networking platforms to build customer relationships, identify new business ventures, engage in direct interactive communication, disseminate value-added content, gather continuous feedback, and strengthen overall brand equity (Xu et al., 2023). Consequently, while fast-paced market shifts present operational challenges, enterprises that integrate emerging digital technologies with agile management practices successfully transform these market disruptions into competitive advantages (Khan et al., 2024). In particular, recent empirical evidence demonstrates that social media agility serves as a vital dynamic capability that significantly enhances firm-level innovation capabilities (Oduro, 2024), providing the structural foundation for downstream performance improvements. Based on these theoretical insights and empirical foundations, we propose the following hypothesis:

H1: Social media agility has a positive direct impact on innovation capability.

Environmental dynamics and innovation capability

Environmental dynamics drive sustainability practices (Arranz & Arroyabe, 2023), while innovation is shaped by even more complicated internal and external dynamics (Onngam & Charoensukmongkol, 2024). With complex products, constantly changing customer preferences, and shifting needs, organisations today need to navigate a non-stop competitive landscape (Arsawan et al., 2026). Therefore, to achieve competitive advantage, they will need to rapidly adapt and apply effective solutions to address environmental issues and assess market potential (Yu et al., 2025). As a dynamic market environment creates more causal ambiguity, it thus provides opportunities for competitive advantage (Catapan, 2026; Xu et al., 2023). In these environments, organizations often struggle to access accurate and reliable information regarding changing market demand, making it difficult to engage in accurate forecasting and respond quickly. Continuous improvement in a firm's dynamic capabilities is needed to

exploit market opportunities and avoid facing crises. Firms need to adapt to the external environment and improve their dynamic capabilities to maintain a competitive advantage. In addition, environmental factors can influence how dynamic capabilities lead to competitive advantage (Onngam & Charoensukmongkol, 2024).

For instance, Ghouri et al. (2023) found that the beneficial effect of dynamic capabilities on new venture performance is moderated by environmental dynamism. The dynamic capabilities theory, for example, states that to adapt to a rapidly changing, novel, and dynamic environment, a firm must develop its ability to sense, seize, and reconfigure resources, with innovation being an eventual outcome (Somwethee et al., 2023). Empirical studies suggest that high-velocity environments considerably accelerate organizational processes such as product and process innovation, as firms are forced to innovate faster than their rivals to remain competitive and to avoid obsolescence. However, adaptation to environmental changes is not an isolated action; rather, firms that holistically develop and build their innovation capability in a responsive manner are best positioned to respond to environmental challenges, as well as exploit new opportunities (Khan et al., 2024). As a result, we suggest the following:

H2: Environmental dynamics have a positive direct impact on innovation capability.

The mediating role of innovation capability

Firms can build innovative capacities will be fundamental to enhancing their competitive advantage in the 21st century (Rathore et al., 2020). Firms that understand the value added by innovation are more likely to know how to innovate increasingly over time. The rate of change of raw data into information or knowledge into technology or information into knowledge, only adds weight to how crucial innovation and creativity are, to the survival of both firms and nations. This is certainly backed up by empirical research (Ghouri et al., 2023; Somwethee et al., 2023; Xu et al., 2023). In the highly competitive corporate world of today, one thing that we can be certain of is change. The rapid technological advancements in broad categories of industry, along with shorter product and service life cycles and fierce competition, have highlighted the significance of innovation in organizations (Oduro, 2024). Change is a way of life today, new ideas, and new ways to do things are replacing old ones at unprecedented speeds. Businesses are required rapid and ongoing innovation of goods, services, technology, and processes to survive. Current competition and change require businesses to be innovative. Businesses that are unable to consistently offer new and innovative goods and services will fail. As a result, firms must be able to consistently reinvent their goods, services, and operational procedures. Consequently, during the past 20 years, "innovation" has gained more attention as a research issue.

For example, social media agility itself does not equal performance sustainability, but it provides an unmediated customer feedback, market opportunity trends, and competitor analysis which informs a firm's innovation pipeline (Onngam & Charoensukmongkol, 2024). With real-time data, companies can create innovative products, services, and business models that are more sensitive to customer needs and environmental issues. Various studies have analyzed how high-performing companies are able to effectively convert their social media responsiveness into innovation via co-creation and data analysis (Puntillo, 2023; Xu et al., 2023). Thus, the relationship between SM agility, and sustainable performance is not a direct relationship but rather a mediated relationship that bridges the barrier between social media into the practical potential of innovation to solve a firm's sustainable performance challenges (Tehrani et al., 2024; Welch et al., 2024). As a result, the following hypothesis are proposed:

H3: Innovation capability positively mediates the relationship between social media agility and sustainable performance.

H4: Innovation capability positively mediates the relationship between environmental dynamics and sustainable performance.

The moderating role of circular economy business model

Reorienting entails shifting focus to apply eco-design principles, sustainable manufacturing techniques, and efficient recycling (Arsawan et al., 2026). One long-term strategy to boost value chain efficiency and competitiveness is to redefine the company model (Arranz & Arroyabe, 2023). The direct connection between the circular economy business model and sustainable performance is still not well understood, despite its significance (Puntillo, 2023). Nonetheless, it is acknowledged as the cornerstone for putting circular practices into effect (Puntillo, 2023). The circular economy business model are impacted by both internal and external factors that impact an organization's business direction and strategic plan. Organisations must promote eco-friendly practices, cultivate a green culture, and support green innovation at all levels when implementing a pro-environmental strategy (Onngam & Charoensukmongkol, 2024). Increased environmental value, eco-design, and environmentally conscious product innovation are the results of this shift (Otasowie et al., 2025). Furthermore, when circularity is ingrained in the pro-environmental culture, it becomes a crucial component of day-to-day operations (Arsawan et al., 2026).

The relationship between social media agility and sustainable performance is not a direct cause-effect relationship, but rather, it is mediated by the firm's capacity to innovate and, thus, apply the knowledge and insights from social media to actualizing sustainable solutions. Finally, the circular economy business model acts as a fundamental moderating variable in the relationship between a firm's innovation capability and sustainable performance (Otasowie et al., 2025). This structure does not only affect the direction and usability of innovation but can also transform the act of innovation to drive down waste and resource consumption. In reality, the circular economy business model serves as an immense facilitator; it tells the sustainable innovator the 'why' and the 'how' of innovation, thus strengthening the positive link to sustainable performance by positioning sustainability as a core aim of the business model, as opposed to an adjunct (As'ad et al., 2024; Xu et al., 2023).

H5: Circular economy business model positively moderates the relationship between innovation capability and sustainable performance.

Research Methodology

The study uses a quantitative method that utilizes surveys, statistical analysis, and structural modeling to test the proposed hypotheses and models. The intention of the study is to examine direct and mediated relationships between variables (Cepeda et al., 2024). This type of approach is common in the social sciences more generally, but it will most often be found in business and management fields as is a useful way to achieve research aims by investigating hypotheses and models based on structural equations (Hair et al., 2024).

Data collection and sampling method

The target group consisted of SMEs that were working in the B2C sector in Thailand. B2C businesses were targeted because social media agility and customer-oriented circular economy practices have direct impacts on brand image, customer relationships and market responsiveness (Xu et al., 2023). The sampling frame was obtained from the official database of the Department of Business Development (DBD) of the Ministry of Commerce of Thailand. To achieve geographic and economic diversity in the sample, sampling was conducted in two key provinces: Bangkok as a representative for metropolitan, competitive commercial capital, and Pattani to show a southern regional economy with unique market dynamics. The eligibility of SMEs was defined according to the legal criteria provided in the Small and Medium Enterprises Promotion Act (OSMEP).

Industry Specifications: < 200 employees or annual turnover ≤ 500 million THB. Trade or Service Industry: < 100 employees or annual turnover ≤ 300 million THB. The acceptable sampling method for the study was the list sampling, whereby 1,000 B2C SMEs from DBD registrations situated in Bangkok and Pattani were selected randomly. Data were gathered through an online self-administered questionnaire distributed to the organizational email of the companies from January 2025 to March 2025. The questionnaire was sent with an introductory letter detailing the research objectives and making it clear that participants was voluntary.

Table I
Sample characteristics

Characteristics	Descriptive Statistics	
	Mean	SD
Firm Size	33.76	15.28
Firm Age	30.65	12.54
Employee Experience	11.32	9.10

Sample size

To ascertain the minimum sample size per statistical methods as proposed by G*Power 3.1, power analysis was performed. The calculation revealed that minimum sample size should be $N=138$. Subsequently, Hair et al. (2024) suggestion for PLS-SEM (simple rule of thumb estimated by taking into account 10 times the maximum number of structural paths directed to the endogenous construct) indicates that a sample size of 50 should be sufficient. As a result, out of the 1,000 companies that received the request to complete the survey, only 355 managed to return filled questionnaires, which corresponds to 35.5% response rate. Following the initial analysis, 25 respondents who either failed to answer all or showed no interest in answering the questionnaires were eliminated and finally, the usable sample consisted of 330 companies (surveys retention rate of 93.0%). To ensure that respondents were qualified to answer the survey questionnaire, only respondents from executive management or owners who were in charge of company performance and strategy and digital sustainability areas were selected.

Research instruments

All the constructs were taken from empirical research that has already substantiated those scales as valid constructs. A 7-point Likert scale of agreement is the method used to evaluate those constructs, with rating points from 1, standing for "Strongly Disagree," to 7, standing for "Strongly Agree." (Appendix A).

Social Media Agility (SMA): Operationalisation in this scenario reflects an organisation-wide dynamic capability concept through the use of an 8-item scale, which was borrowed from Welch et al. (2024). This scale reflects organisational ability to operate and adjust in terms of speed, flexibility, cost efficiency, and responsiveness within the area of products and customers.

Environmental Dynamics (ED): The use of a 4-item scale developed by Arsawan et al. (2026) allows evaluating the process of replacing goods, bringing new products and processes into the market, and the pace of changes in customers' preferences.

Innovation Capability (IC): This construct was measured using a six-item scale based on Tehranian et al. (2024) that focuses on the innovation capabilities in technology, systems, and marketing programs.

Circular Economy Business Model (CEBM): This construct was measured using a nine-item scale based on Arsawan et al. (2026) that focuses on value creation through closed-loop material cycles, value chain circularity, and efficiency of resources.

Sustainable Performance (SP): This construct was conceptualized as a reflective-reflective second-order construct made up of three elements based on Basit et al. (2024): Environmental Performance (toxics, recycling, energy costs; items SP1–SP5), Social Performance (community implications, moral marketing communications; items SP6–SP7), and Economic/Operational Efficiency.

Since the initial survey statements were in English, a thorough back-translation process was used (Brislin, 1970). Two academic experts were engaged to translate the scale from English to Thai, and two native English speakers were commissioned to translate the scale back to English to ensure that the constructions were semantically equivalent.

Content validity was assessed by a panel of three professors of management and two senior managers of SMEs in Thailand. The pilot study involved taking responses from 35 B2C management managers who were not included in the resultant sample. All the different constructs were noted to have attained a Cronbach's alpha of more than 0.80.

Common bias method

To ensure that Common Method Bias (CMB) was addressed, procedural and statistical controls were applied, since data were collected using a self-reported, single-source tool at one point in time (Podsakoff et al., 2003). Survey instructions assured the anonymity of the respondents, stating that there would be no correct or incorrect responses, and that item order would be counterbalanced in various sections of the study. Following Kock (2015), full collinearity tests were performed using SmartPLS 4. Standardized latent scores for the different variables were obtained, as well as Variance Inflation Factors (VIF). All the VIF values for the latent variables were between 1.42 and 2.31, which is lower than 3.30. In addition, using the technique developed by Harman to test common method bias, it was found that the first unrotated component explained only 31.4% of the total variance, which is below the 50% cutoff, which means that CMB did not impact on the validity of the data.

Results and Analysis

Assessment of measurement model

In validating and checking the reliability of the constructs, we followed the following process. First, we examined the validity of the construct values (the factor loadings) as a measure of convergent validity. In our data analysis from Table II, all of the factor loadings well over the 0.7 appropriate cutoff to determine that the constructs had acceptable convergent validity. After that, we justified discriminant validity checks based on the Average Variance Extracted (AVE). More specifically, Hair et al. (2024) recommended that the discriminant validity quality of the latent constructs could be established if the square root of the AVE for each latent variable was greater than the correlations that the latent variables had to other variables in the correlation matrix. In following construct validity, we derive the construct reliability using the Cronbach's alpha coefficient. According to Hair et al. (2024), a Cronbach's alpha coefficient of 0.7 or more is regarded as satisfactory reliability. Table 2 shows that all the latent variables have Cronbach's alpha coefficient that are appropriately above the 0.7 guideline.

Table II
Validity, reliability and AVE

Variables	Items	Loadings	Cronbach's alpha	CR	AVE
Social Media Agility	SMA1	0.766	0.888	0.911	0.564
	SMA2	0.833			
	SMA3	0.807			
	SMA4	0.748			
	SMA5	0.797			
	SMA6	0.779			
	SMA7	0.752			
	SMA8	0.707			
Environmental Dynamics	ED1	0.823	0.789	0.864	0.614
	ED2	0.766			
	ED3	0.784			
	ED4	0.834			
Innovation Capability	IC1	0.740	0.849	0.890	0.578
	IC2	0.812			
	IC3	0.861			
	IC4	0.763			
	IC5	0.806			
	IC6	0.784			

Cont.....

Variables	Items	Loadings	Cronbach's alpha	CR	AVE
Circular Economy Business Model	CEBM1	0.811	0.926	0.938	0.629
	CEBM2	0.790			
	CEBM3	0.744			
	CEBM4	0.779			
	CEBM5	0.791			
	CEBM6	0.813			
	CEBM7	0.827			
	CEBM8	0.719			
	CEBM9	0.856			
Sustainable Performance	SP1	0.768	0.874	0.903	0.571
	SP2	0.820			
	SP3	0.788			
	SP4	0.719			
	SP5	0.772			
	SP6	0.756			
	SP7	0.758			

To assess discriminant validity, both the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio of Correlations (HTMT) were used, as recommended by Hair et al. (2024). As can be found in Table 3, where it can be noted that the square root of Average Variance Extracted (AVE) for all constructs (the bold diagonal values) is greater than the pairwise correlations for the relevant construct with the other latent variables, which indicates that the Fornell-Larcker criterion is fulfilled. In addition to that, as indicated in Table IV, it can be noted that all of the HTMT values are below the liberal threshold of 0.90 as well as the conservative threshold of 0.85 Hair et al. (2024), which means that high discriminant validity has been proven for all reflective constructs in the measurement model.

Table III
Discriminant validity

	1	2	3	4	5
Circular Economy Business Model	0.793	–	–	–	–
Environmental Dynamics	0.504	0.784	–	–	–
Innovation Capability	0.655	0.726	0.760	–	–
Social Media Agility	0.719	0.649	0.760	0.751	–
Sustainable Performance	0.713	0.629	0.751	0.918	0.756

Table IV
HTMT

	1	2	3	4	5
Circular Economy Business Model	–	–	–	–	–
Environmental Dynamics	0.581	–	–	–	–
Innovation Capability	0.721	0.773	–	–	–
Social Media Agility	0.784	0.767	0.764	–	–
Sustainable Performance	0.783	0.753	0.764	0.799	–

The determination coefficient (R^2) suggests that the endogenous constructs in the structural model have great explanatory ability. In this case, Innovation Capability (IC) obtains an R^2 that equals 0.671, which means that 67.1 of the different determinants of innovation capability can be explained with the help of its predictor concepts: environmental dynamics and social media agility. Sustainable Performance (SP) gives an (R^2) of 0.650, which means that 65.0% of the variation in SP can be explained by innovation capability, environmental dynamics, social media agility, and the moderating effect of the circular economy business model. In addition, (Hair et al., 2024) argue that R^2 values over 0.50 are often considered moderate or substantial, suggesting that the structure model can be regarded as very accurate and it has good explanatory ability.

Table V
R-Square values

	R Square
Innovation Capability	.671
Sustainable Performance	.650

The evaluation of certain indirect influences studies how the initial circumstances are involved in the processes flow of the causes in the structural model. Thus, when we consider the indirect influence of circular economy business models on sustainable performance with the involvement of innovation capability, we observe that path coefficients illustrating the impact of innovation capability in connection with a positive influence of the circular economy are equal to 0.246. Environmental dynamics also is evaluated as an indirect factor influencing sustainable performance via social media agility in the degree equal to .283, which indicates that companies use social media agility to transform external environmental effects into the sustainable results. Moreover, the indirect influence of innovation capability shows .404 values as well. Finally, the influence of social media agility here is of the greatest value equal to .438 showing that social media agility is an efficient instrument to promote sustainable performance with the help of companies' innovation capabilities.

Table VI
F-Square values

Specific Indirect Path	Path Coefficient (θ)
CEBM $\rightarrow$ IC $\rightarrow$ SP	0.246
ED $\rightarrow$ SMA $\rightarrow$ SP	0.283
IC $\rightarrow$ SMA $\rightarrow$ SP	0.404
SMA $\rightarrow$ IC $\rightarrow$ SP	0.438

Assessment of structural model

The outcomes of the model estimation were represented in a conceptual model (Figure 2). The hypotheses were examined using a bias-corrected and accelerated bootstrap 95% confidence interval, with a sub-sample of 10,000, as recommended by Hair et al. (2024). The aim of the PLS-SEM bootstrapping method is to evaluate the potential predictive influences of the exogenous constructs on the endogenous constructs (Hair et al., 2024). T -values >1.96 and p -values <0.05 were considered significant. In order to test our research hypotheses, we provide a full account of the relationship among social media agility and innovation capability, in Table 7, which gives empirical evidence that supports our initial claim that social media agility has a positive relationship with innovation capability ($\theta=0.499$, $p<0.000$), therefore supporting H1. Environmental dynamism has a positive relationship with innovation capability ($\theta=0.401$, $p<0.000$), therefore supporting H2. In particular, innovation capability mediates the relationship between social media agility and sustainable performance, and had statistically relevant affect for innovation (H3: $\theta = 0.248$, $p < 0.000$); innovation capability mediates the relationship between environmental dynamics, and sustainable performance (H4: $\theta = 0.200$, $p < 0.000$). In particular, the circular economy business model moderates the relationship between innovation capability and sustainable performance (H5: $\theta = 0.125$, $p < 0.007$).

Table VII
Direct and indirect effects

Relationships	Path Coefficient	Mean (M)	Standard Deviation (SD)	T Values	p Values
H1: SMA $\rightarrow$ IC	0.499	0.504	0.049	10.246	0.000
H2: ED $\rightarrow$ IC	0.401	0.398	0.052	7.666	0.000
H3: SMA $\rightarrow$ IC $\rightarrow$ SP	0.248	0.252	0.043	5.750	0.000
H4: ED $\rightarrow$ IC $\rightarrow$ SP	0.200	0.198	0.031	6.347	0.000
H5: CEBM* IC $\rightarrow$ SP	0.125	0.122	0.046	2.726	0.007

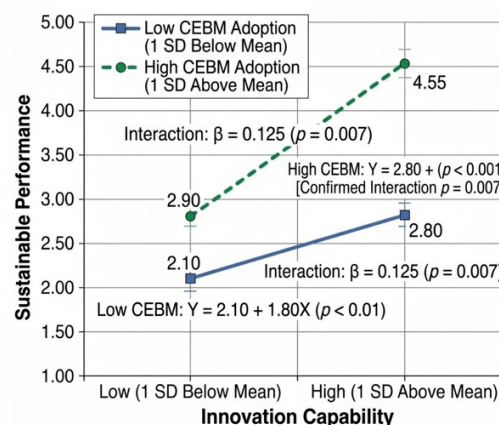


Fig. 1 Moderation analysis

Discussion

The empirical findings of our PLS-SEM analysis provided significant statistical evidence, supporting all five hypothesized links (H1-H5). The statistical analysis revealed a strong, positive, and direct connection between social media agility and innovation capability ($\beta = 0.499$, $t = 10.246$, $p < 0.001$), confirming Hypothesis 1. Using an institutional theory perspective, social media agility acts as an important sensing and seizing capability that helps SMEs to collect market intelligence and reorganize internal resources quickly. With the capability of sensing changes in consumer behaviors and competitions through digital channels, SMEs improve their ability to solve problems internally and enhance their flexibility in terms of processes. This result corresponds with previous studies explaining the importance of digital communication agility in driving process and product innovation (Pitafi, 2025; Yu et al., 2025).

Hypothesis 2 is supported by evidence from environmental dynamics to yield statistically significant positive direct influence on innovation capacity ($\beta = 0.401$; $t = 7.666$; $p < 0.001$). Through institutional theory and contingency approaches, a turbulent external environment brings coercive and normative pressures on firms in their need to adapt to external factors, notably fast-paced technological advancement and changing demands of the markets. Environmental turbulence will not act hindering performance of the organization. It should be noted that environmental dynamics serve as a critical external motivator for SMEs in their search for dynamic approach towards building their innovation capabilities (Xu et al., 2023).

The outcomes confirmed H3, which indicated that innovation capability plays an important mediating role between social media agility and sustainable performance ($\beta = 0.248$, $t = 5.750$, $p < 0.001$). As indicated by the literature, social media agility is a higher-level dynamic capability that needs to be translated into specific lower-level operational routines, namely, innovation capability to be effectively linked to sustainable performance. By using social media responsiveness as a source of internal green innovation processes, the company is able to transfer its digital capability into measurable results. This finding also supports the previous research proving that internal innovation capabilities serve as crucial structural mechanisms in connecting market dynamic capabilities with sustainability objectives (Alyahya et al., 2023; Somwethee et al., 2023).

As stated in H4, it was proven that the mediation role of innovation capacity in the process of indirect relationships between the environment dynamics and sustainable performance was quite considerable ($\beta = 0.200$, $t = 6.347$, $p < 0.001$). From the viewpoint of institutional theory, it is clear that greater volatility in external environments makes companies deal with strong sustainability demands from institutional stakeholders. On the other hand, SMEs can deal successfully with those institutional pressures and develop economic, social, and environmental performance only if they surface existing external stimuli in terms of their innovation capacity. This conclusion can be supported by some prior empirical studies proving that environmental dynamics influence sustainable performance indirectly through the need in pro-environmental strategic and internal capacity restructuring in SMEs (Khan et al., 2024; Oduro, 2024).

Finally, H5 was supported, showing the significance of the direct moderation effect of the circular economy business model in the association between innovation capability and sustainability ($\beta = 0.125$, $t = 2.726$, $p = 0.007$). It has been mentioned that upon combining institutional theory with business model literature, organizations may be in possession of a great innovation capability, but failure to choose an adequate strategy can make these innovations unable to maximize environmental benefits. The circular economy business model turns out to be a strategic limiting factor and an organizational mechanism enabling green product and process innovations to steer towards closed-loop material cycles, resource efficiency, and waste management. This confirms broader theoretical and empirical studies suggesting that circular economy business model can function as effective structural mechanisms which line up the results of innovations with related sustainability outcomes (Puntillo, 2023).

Theoretical implications

This research has made valuable theoretical contributions to understanding the drivers of sustainable performance in SMEs. First, this study has integrated institutional theory (Arranz & Arroyabe, 2023) to present a new, broad model, with previously untested hypotheses for understanding sustainable performance implementation in the context of SMEs. Specifically, we presented evidence that social media agility might be an important capability of firms that enables firms to adapt effectively and improve sustainable performance. Furthermore, our finding regarding the positive and highly significant social media agility effect specifically for smaller firms further enhance the institutional theory perspective that highlights the significance of resource composition that may improve firms' capacity to enhance sustainable performance. We provided evidence that source of smaller firms' advantage, as it relates to flexibility, could be the most important characteristic that makes it easier for them to leverage social media agility immeasurably better than larger firms, namely the capabilities of social media agility and flexibility that smaller firms already have may mean that they receive more benefit than larger firms when they act on/leveraging social media agility. Conversely, our findings also included evidence of the moderating role of environmental dynamism that weakened the positive effect of social media agility on sustainable performance, which identifies that market actors of the market (The market environment) could be a constraining force limiting potential for firms to efficiently leverage or take advantage of the resources and capabilities, in our case the capabilities or actions of social media agility (Somwethee et al., 2023; Xu et al., 2023).

Also, our research contributes knowledge contributions to the current literature. Given the small empirical evidence on the roles of social media agility on firms performance, the results from our Research from the Context that had not been previously probed may help to fill a void in

the literature. In particular, of course, with our evidence that supported the positive relationship between social media agility and the business performance of SMEs from senior and middle managers working in Thai SMEs located in Bangkok and Pattani Thailand, provided some more evidence of supports the degree firms could receive in terms of benefits from social media agility. And in addition to this contribution, our research also provided even more important evidence that does indeed increase the existing knowledge from prior research on social media agility. More specifically, we also found new evidence that showed the degree that a firm's social media agility impacted their business performance also did depend on relationships with a number of firm characteristics - including the size of the firms, and one environmental factor - namely, environmental dynamism. These findings contribute to the existing literature that lacked evidence of the firm characteristics that moderated the positive or negative benefits of firms benefitting from social media agility. In light of these findings, we argue that it is critical for researchers to consider the characteristics of firms and the environments in which they operate when exploring the advantages firms realize from social media agility.

Practical implications

The practical implications of the current study are relevant to SME owners, corporate managers, and policymakers in developing countries such as Thailand. The findings suggest that SME managers should think about social media not only as a passive promotional tool but also as the strategic tool. Developing agility in social media helps organizations in collecting real-time customer data, forecasting changes in the market, and reconfiguring internal resources in an effective manner in order to support ongoing innovation. Moreover, to be successful, managers must understand that developing capabilities for innovation is necessary for transforming agility and environmental responsiveness into actual sustainability outcomes.

Moreover, our results emphasize the strategic significance of adopting a circular economy business model. Managers ought to integrate concepts of circularity, such as resource exhaustion and waste reduction, into their basic business models in order to ensure that innovation is geared toward sustainable outcomes. From a policy perspective, Thai institutions that are responsible for the development of SMEs (e.g., the Ministry of Commerce and Office of Small and Medium Enterprises Promotion) ought to develop specific training schemes. These initiatives aim to equip SMEs with skills in utilizing social networks and employing circular economy principles in their operations.

Limitations and future research

Although our research provides valuable contributions, it is necessary to recognize we still faced limitations that we need to recognize. The primary limitation relates to our data collection process, with our data collection process including cross-sectional data collections, utilizing a self-report questionnaire survey, and employing a subjective measures of sustainability performance. Specifically with if we consider the cross-sectional data collection, we cannot conclude causality with our findings. Additionally, while we attempted to minimize sampling bias in our probability sampling from the business directory and subsequently provide probability that the firms in our sample generally reflect other firms in the population, the final small sample size we ended up with, as to be representative and generalizable to all firms in the population, is likely a stretch. Lastly, the selection of firms based on employee count identified some critical businesses that were omitted from the results. Given the research on the benefits of social media agility is still an emerging area with limited existing evidence, there are numerous areas for future research to expand knowledge in this area. Given the limited amount of empirical research on the role of social media agility, it is necessary to have more empirical research both in terms of testing and measuring the impacts of social media agility in differing countries/contexts, to enable further substantiation. Furthermore, future research can look at a number of other moderating factors that may also have the potential to influence some of the benefits that businesses gain from using social media agility.

Conclusion

The aim of this study is to examine the structural mechanisms that facilitate the relationship between social media agility and its environmental influences in relation to the sustainable performance of Small and Medium Enterprises (SMEs) in Thailand. Based on the institutional theory, the analysis validates that both social media agility and environmental dynamics have a strong positive impact on innovation capability of a firm (H1 and H2). Additionally, results from the path analysis show that innovation capability plays a significant mediating role, translating upstream digital agility (H3) and external environment volatility into sustainable performance. At the same time, this study shows that the impact of innovation capability on performance becomes stronger when SMEs are operating under circular economy business model (H5). Ultimately, this research highlights that being digitally responsive and adaptable to one's environment is not just a means of reacting to circumstances; it is a fundamental component of the strategy of modern SMEs. To be successful in the pursuit of sustainable performance within the dynamics of the markets, companies must develop an innovative internal mechanism that complements the digital communication capabilities employed to meet the demands of their markets.

Declarations

Ethical compliance statement

This research project has been reviewed and approved by the Research Ethics Committee, Hailey College of Commerce, University of the Punjab. The proposed study adheres strictly to the institutional ethical guidelines regarding data privacy, informed consent, confidentiality, and voluntary participant involvement.

Funding statement

The authors received no financial support or funding from any public, commercial, or non-profit organization for the research, authorship, or publication of this article.

Generative AI use statement

No Generative Artificial Intelligence (GenAI) tools were used in the research, analysis, and preparation of this manuscript.

Conflict of interest statement

The authors declare that they have no conflicts of interest related to the research, and publication of this article.

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Appendix

Table VIII

Variables	Items
Social Media Agility	1. Since our company started using social media, the reliability of our company's offer of products and services has increased 2. Since our company started using social media, its day-to-day operations have been flexible for customized demand 3. Since our company started using social media, its offerings (i.e. products and services) have been more cost efficient than those of our competitors 4. Since our company started using social media, our company has delivered our offerings (i.e. products and services) more quickly 5. Since our company started using social media, it has responded very reliably to market changes 6. Since our company started using social media, it has had greater flexibility in our offerings to adapt to market changes 7. Since our company started using social media, it has efficiently redesigned our offerings to adapt to market changes 8. Since our company started using social media, it has been very quick to adapt to market
Environmental Dynamics	1. Rate at which products and services become outdated 2. Rate of introduction of new products and services 3. Rate of change in tastes and preferences of customers in your industry 4. Rate of introduction of new operating processes
Innovation Capability	1. Present our clients with unique solutions they may not have considered 2. Present innovative solutions to our clients 3. Introduce new integrated systems and technology 4. Innovate with our marketing programs to keep ahead of the market 5. Implement innovative marketing programs 6. Innovate with our software/technology to keep ahead of the market
Circular Economy Business Model	1. We are actively transitioning towards a circular company 2. We strive to create value through circular economy principles in our operation 3. We encourage collaboration to close material loops 4. We encourage a circular strategy across our entire value chain 5. We encourage the co-development of innovative circular goods and services 6. We encourage collaboration with both governmental and private entities 7. We monitor and manage material flows in our value chains to ensure availability and dependability 8. We work with suppliers and customers to improve resource efficiency throughout our supply chain 9. We adapt our capabilities and resources to become more circular
Sustainable Performance	1. Direct and indirect toxic emissions are reduced 2. Increase the volume of recycled materials and reduce waste. 3. Commitment to the system of separating medical waste from the public sewage system. 4. Reduce the cost of energy use 5. Reduce processing fees and waste disposal 6. Reducing the impact of the organization's waste on the community. 7. Improving the quality of service provided, and commitment to the code of ethics.