Digital Information Behaviour and Social Media Use among Thai Health and Beauty SMEs: A Mixed-Method Study Using Rough Set e-Delphi and SEM

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Abstract

This research aimed to investigate the manner in which small and medium-sized enterprises (SMEs) operating within Thailand's health and beauty industry access and utilise digital information, with particular emphasis on the role of social media applications in fostering sustainable growth within the framework of the digital economy. By integrating perspectives from digital communication and information behaviour, the researchers developed and empirically validated a Structural Equation Model (SEM) to identify the key factors influencing the adoption and widespread use of social media among SMEs. A mixed-methods approach was employed. The qualitative phase utilised the Rough Set e-Delphi technique, wherein insights from 20 experts in digital business and information science were gathered to refine and reinforce the theoretical constructs under examination. The quantitative phase comprised a structured survey administered to 699 SME entrepreneurs, serving as empirical support for the proposed model. The findings revealed that SME engagement with digital information, particularly through social media platforms, is shaped predominantly by three perceptual dimensions: ease of use, perceived usefulness, and behavioural intention to adopt specific digital tools. These factors significantly contribute to the digital sustainability of SMEs by encouraging the integration of social media into their business practices. Beyond the implications for the targeted sector, the study offers valuable insights into the broader context of digital research. The conclusions drawn are applicable not only to the health and beauty domain but also to the wider discourse on digital transformation. Ultimately, the study underscores the essential role of social media in shaping information behaviour and in creating a dynamic and sustainable digital environment that supports the advancement of emerging market economies.

Keywords

Small and Medium-Sized Enterprises, Sustainable Growth, Health and Beauty Industry, Social Media Usage Behaviour, Intention to Use Social Media.

1. Introduction

SMEs play a fundamental role in fostering global economic development, job creation, and innovation. They represent nearly 90% of businesses worldwide and are responsible for generating over half of global employment opportunities (**Tongdaeng; Mahakanjana**, 2022). Despite their significance, SMEs frequently encounter difficulties in embracing technological innovations, which limits their capacity to achieve sustainable progress and maintain a competitive edge (**Bryła *et al.***, 2022). In Thailand, SMEs form the backbone of the national economy, accounting for approximately 99.5% of enterprises, engaging nearly 70% of the labour force, and contributing about 35% to the gross domestic product (**Trade Policy and Strategy Office**, 2023). Nevertheless, these businesses often struggle with technological limitations that constrain both their growth and competitiveness, particularly within sectors undergoing rapid digital transformation. One

such sector is health and beauty, which expanded substantially to a value of 258 billion baht in 2023, driven by growing awareness around wellness and a rebound in consumer expenditure. Additionally, the medical tourism segment, with an estimated value of USD 829 million, has further stimulated industry growth. Despite these opportunities, SMEs in this sector continue to face challenges in effectively integrating technology into operational processes, thereby hindering long-term growth prospects (**Pop *et al.***, 2020).

Earlier investigations grounded in the Technology Acceptance Model (TAM) (**Davis**, 1989; **Venkatesh**, 2000) have identified four critical constructs—perceived usefulness, perceived ease of use, intention to adopt, and actual usage behaviour. The Unified Theory of Acceptance and Use of Technology (UTAUT) (**Venkatesh *et al.***, 2003) expanded this framework by including social influence and exploring additional elements such as trust and compatibility. However, a unified model that integrates these variables in relation to social media usage and the sustainable development of SMEs within the health and beauty sector remains underdeveloped (**Satchapappichit; Ingard**, 2025). The present study addresses this gap by incorporating qualitative findings derived from interviews with 25 subject-matter experts, conducted using the Rough Set e-Delphi methodology. Quantitative validation was carried out through Confirmatory Factor Analysis (CFA) and SEM. The central aim of the research is to offer a strategic framework through which SMEs can effectively adopt digital media tools to achieve sustainable business outcomes. This paper seeks to construct a structural and empirical model linking social media engagement to sustainable development within Thailand's digital health and beauty landscape. The outcomes of the study are expected to yield both theoretical insight and practical recommendations, empowering small business owners and policymakers to optimise digital media applications. Ultimately, the research aspires to support the economic resilience and market competitiveness of SMEs in Thailand's health and beauty sector and similar developing economies navigating digital transition challenges.

2. Research Hypotheses

2.1. Theoretical Background

The utilisation of technology, particularly social media, has become increasingly significant among Thai SMEs operating within the digital health and beauty industry, where sustained business development is considered essential (**Banjongprasert**, 2024). Foundational theoretical models offering valuable perspectives on the adoption of technological innovations at both individual and organisational levels include the Technology Acceptance Model (TAM) by **Davis** (1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) by **Venkatesh *et al.*** (2003). These frameworks highlight key variables that influence decisions related to the implementation of social media tools, such as perceived ease of use, perceived usefulness, social influence, behavioural intention, and actual usage behaviour. Drawing upon TAM and UTAUT as the conceptual basis, the model proposed in this study was shaped through a review of relevant literature, expert opinions, and entrepreneurial insights. The theoretical design was further refined using recent applications of these models found in the works of **Effendi *et al.*** (2020) and **Patma *et al.*** (2021), which represent the most current developments in this field. Consequently, the conceptual framework developed in this research incorporates eight core constructs aimed at generating new knowledge: (1) Social Influence (SI), (2) Trust (TT), (3) Compatibility (COM), (4) Perceived Usefulness (PU), (5) Perceived Ease of Use (PEOU), (6) Intention to Use Social Media (ITUSM), (7) Social Media Usage Behaviour (SMUB), and (8) Sustainable Growth of SMEs (SSG), as illustrated in Figure 1.

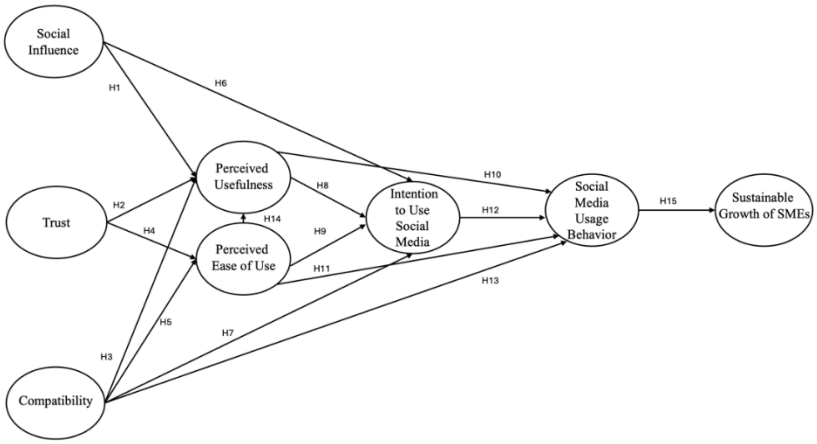

Figure 1: Schematic Representation of the Research Framework.

Social Influence (SI): This concept pertains to the extent to which individuals are influenced by the opinions or expectations of significant others—such as friends, family members, or professional associates—regarding their adoption of a specific technology (**Kelly; Palaniappan**, 2023). Within the context of SMEs operating in the health and beauty sector, the adoption of digital technologies is frequently shaped by external factors. These include the

prevalence of online customer feedback, the growing impact of influencer-driven marketing, and the role of peer recommendations, all of which exert considerable influence on commercial decision-making. Prior research consistently highlights that social influence plays a critical role in shaping users' perceptions of a technology's usefulness, as well as their intention to adopt it. On the basis of these findings, the following hypothesis is proposed:

- **H1:** SI related positively to PU.
- **H6:** SI related positively to ITUSM.

Trust (TT): A critical factor in the adoption of digital technologies is the user's perception that a given platform is reliable, secure, and functions in alignment with its intended purpose (**Dhagarra *et al.***, 2020). In the realm of social media usage, trust significantly shapes users' confidence in the value of a technology, while also alleviating perceptions of complexity associated with its application. Contemporary research suggests that trust exerts a considerable effect on both the perceived usefulness and the perceived ease of use of digital tools (**Bustaman *et al.***, 2023; **Uche *et al.***, 2021). Based on these observations, the following hypotheses are proposed:

- **H2:** TT related positively to PU.
- **H4:** TT related positively to PEOU.

Compatibility (COM): This dimension assesses the extent to which a technology aligns with an individual's values, prior experiences, and capacity to meet specific needs. Among SMEs engaged in health and beauty services, the adoption of social media platforms is often influenced by how well these technologies integrate with contemporary business practices and customer engagement strategies. Furthermore, recent empirical findings demonstrate a strong association between compatibility and increased levels of PU, PEOU, and actual usage behaviour (**Ahmed *et al.***, 2025; **Al Halbusi *et al.***, 2022). Based on these insights, the following hypothesis is formulated:

- **H3**: COM is related positively to PU.
- **H5**: COM is related positively to PEOU.
- **H7**: COM is related positively to ITUSM.
- **H13**: COM related positively to SMUB.

Perceived Usefulness (PU): This construct pertains to the extent to which an individual perceives a technology as beneficial for enhancing productivity and efficiency in performing work-related tasks (**Al Halbusi *et al.***, 2022). For entrepreneurs operating within SMEs in the health and beauty sector, PU reflects the anticipated contribution of social media platforms to core business activities, such as streamlining marketing processes, facilitating customer communication, and supporting overall business development. Numerous empirical investigations have affirmed PU as a significant determinant not only of users' willingness to adopt digital tools but also of their behavioural intentions to engage with such technologies (**Ahmed *et al.***, 2025). In light of this theoretical foundation, the following hypotheses are proposed:

- **H8**: PU related positively to ITUSM.
- **H10**: PU related positively to SMUB.

Perceived Ease of Use (PEOU): PEOU refers to the extent to which individuals believe that engaging with a particular system requires minimal effort (**Nuseir; Elrefae**, 2022). The ease of navigating digital media platforms plays a critical role in their adoption, particularly among SMEs, where technical expertise may be limited. Recent research has shown that PEOU not only influences users' intention to adopt and actual usage of digital tools but also enhances PU (**Fathimah Az-zahra *et al.***, 2024; **Ramphele; Msosa**, 2022). Based on this theoretical context, the following hypotheses are presented:

- **H9**: PEOU related positively to ITUSM.
- **H11**: PEOU related positively to SMUB.
- **H14**: PEOU related positively to PU.

The Intention to Use Social Media (ITUSM): Recognised in contemporary technology acceptance frameworks, intention to use represents a key predictor of actual system adoption (**Dwivedi *et al.***, 2019). Among SMEs, the willingness to engage with social media reflects the commitment of business owners or managers to actively participate in digital marketing activities. This intention serves as a direct precursor to observable usage behaviours. Accordingly, the following hypotheses are proposed:

- **H12**: ITUSM related positively to SMUB.

Social Media Usage Behaviour (SMUB): This construct pertains to the extent, variety, and regularity with which SMEs engage with social media platforms, encompassing activities such as content publication, interaction with clients or patients, and monitoring platform engagement metrics (**Qalati *et al.***, 2022). Such usage behaviour mediates organisational outcomes by influencing cognitive perceptions, including PU and PEOU. Empirical findings suggest that effective engagement with digital platforms can lead to improved business performance (**Chatterjee *et al.***, 2021). Based on this premise, the following hypothesis is formulated:

- **H15**: SMUB related positively to SSG.

Sustainable Growth of SMEs (SSG): SSG encompasses elements such as financial resilience, customer loyalty, digital visibility, and operational efficiency. Existing research underscores the vital contribution of technology-driven solutions, particularly the strategic use of social media, to the sustainable development and competitive positioning of SMEs (**Chatterjee *et al.***, 2021; **Emmanuel *et al.***, 2022). Within this study, SMUB is identified as a key influencing factor in driving SSG in the Thai context.

3. Research Methodology

This research utilises a mixed-methods design, integrating both qualitative and quantitative techniques to examine the determinants of sustainable development among SMEs operating within Thailand's digital health and beauty industry (Figure 2). Ethical clearance was obtained from the Rangsit University Ethics Review Board, as confirmed by Certificate of Approval No. RSUERB2024-145, ensuring full compliance with recognised ethical standards.

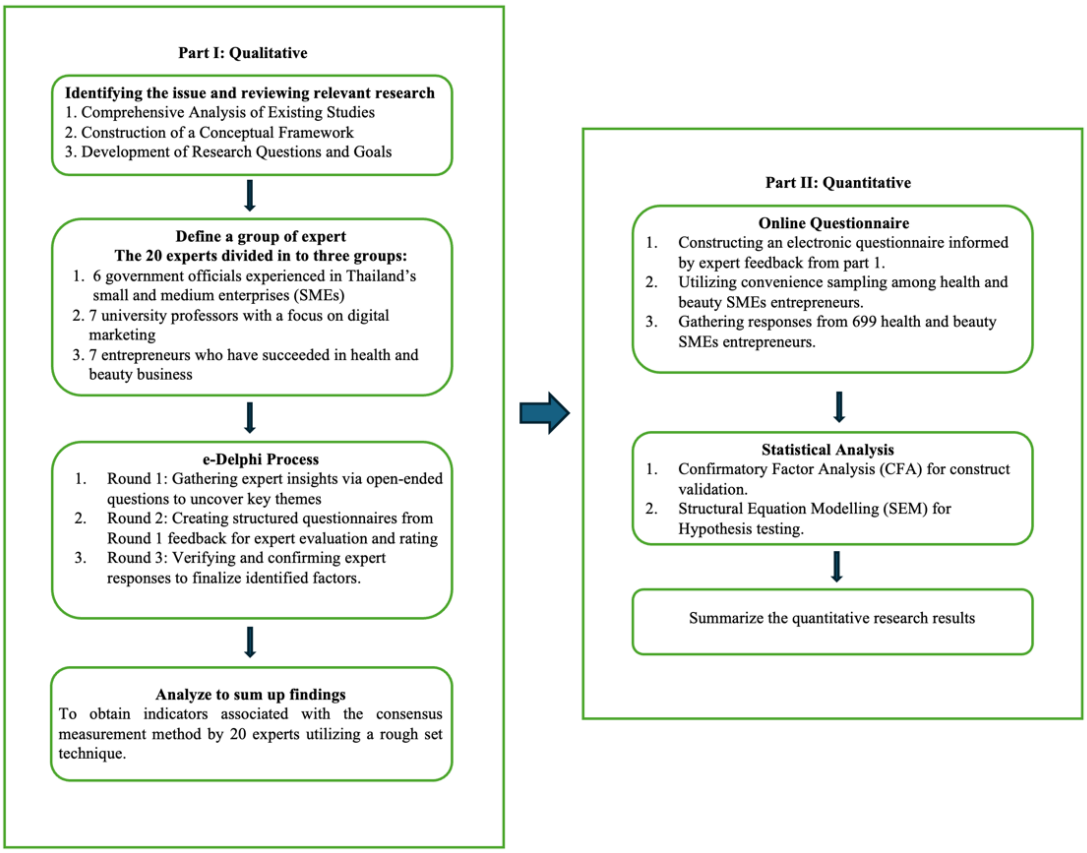

Figure 2: Mixed Method Research Design.

3.1. Qualitative Research: Rough Set e-Delphi Technique

3.1.1. Sample and Data Collection

The study employed purposeful sampling to select 20 subject-matter experts possessing both theoretical understanding and practical experience in the application of digital media within SMEs in Thailand's health and beauty sector. The participants were categorised into three distinct groups. The first group comprised six government officials, each with a minimum of two years' direct involvement with SMEs. The second group included six academic professionals, such as university lecturers specialising in SME development or social media application, all of whom had at least two years of experience in their respective domains. The third group consisted of seven entrepreneurs operating within the health and beauty industry, each with over three years of experience managing their businesses. Data collection was conducted through online questionnaires, administered across three iterative rounds between November 2024 and February 2025.

Round 1: Involved open-ended questions to gather experts' initial opinions on factors influencing the Sustainable Growth of the health and beauty industry. **Round 2 and Round 3:** Structured questionnaires with a 7-point Likert scale to refine and validate these factors based on the feedback collected from each round.

3.2. Research Instruments

This study implemented a three-phase data collection process to explore the variables influencing sustainable growth

within Thailand's health and beauty sector among SMEs. The investigation was carried out through the distribution of online questionnaires designed to capture relevant insights from participants.

Round 1: To obtain expert insights on eight core constructs—SI, TT, COM, PU, PEOU, ITUSM, SMUB, and SSG—open-ended questions were administered as part of the data collection process.

Round 2: A structured questionnaire incorporating a 7-point Likert scale was used to assess the significance and applicability of the identified factors, which were later adjusted in accordance with the feedback received during the initial round of responses.

Round 3: The same indicators were retained; however, statistical feedback from the preceding round was integrated, enabling experts to reassess and validate their responses. This iterative process progressively refined their viewpoints and facilitated the development of a consensus regarding the key factors influencing the sustainable growth of SMEs through social media engagement.

3.3. Data Analysis

To achieve expert consensus, the study combined rough set theory with the e-Delphi approach, as illustrated in Figure 3. The analysis utilised two key attributes, illustrated in Figure 3: a_1 representing Appropriateness, and a_2 denoting Feasibility. Both attributes were measured using a 7-point Likert scale and categorised into three distinct decision conditions. Agreement (d = 1) was assigned when both a_1 and a_2 received scores between 5 and 7, reflecting expert consensus, corresponding to the Lower Approximation, which represents clear classification. Disagreement (d = 0) was applied when both indicators were rated between 1 and 4, signifying a lack of consensus, and categorised under the Upper Approximation. Unresolved (d = 2) was designated when one attribute fell within the agreement range (5–7) and the other within the disagreement range (1–4), indicating ambiguity and also classified under the Upper Approximation due to the absence of consensus. To assess the accuracy of consensus, the Quality of Lower Approximation (QL) was computed. A QL value of ≥ 0.75 indicated a high level of consensus, demonstrating that at least 75% of cases were conclusively assigned to the Lower Approximation. Values below this threshold were considered inconclusive, necessitating additional expert consultation rounds. This two-tier boundary methodology offers a structured mathematical framework for interpreting expert evaluations and enhancing agreement in settings marked by uncertainty.

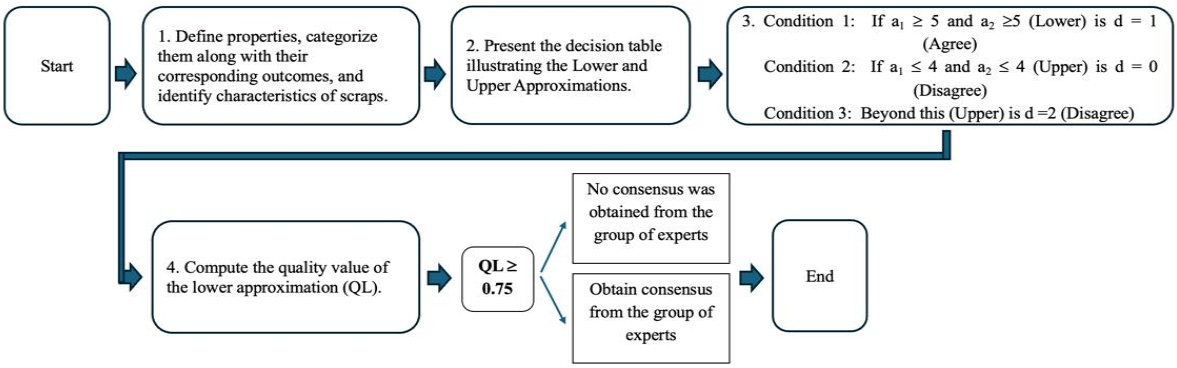

Figure 3: The Rough Set e-Delphi Analytical Procedures.

3.4. Quantitative Research: Structural Equation Modelling (SEM)

3.4.1. Sample and Data Collection

The target population for this study consisted of SMEs engaged in Thailand's health and beauty sector. Eligible participants included business owners, co-founders, and senior executives, with the condition that their enterprises had demonstrated consistent profit growth over the preceding three years. A convenience sampling strategy was adopted to ensure respondent diversity. In determining an appropriate sample size for structural equation modelling involving latent constructs, prior research recommends a ratio of 10 to 20 participants per observed variable. According to **Hoelter** (1983), a sample size exceeding 200 is adequate to achieve a satisfactory fit between the structural model and empirical data. With 49 observed indicators included in the model, a minimum of 490 participants was deemed necessary. Ultimately, 699 valid responses were obtained, exceeding the recommended threshold and thereby enhancing the robustness of the statistical analysis. Data collection was carried out using an online questionnaire, disseminated through multiple channels such as SME networks, professional associations, and social media groups related to the health and beauty industry. The survey remained open for a two-month period from February to March 2025.

3.5. Research Instruments

This study employed a targeted online survey to collect data for the development of an SEM aimed at examining the influence of social media usage behaviour on the sustainable advancement of SMEs within Thailand's digital health and beauty sector.

3.6. Data Analysis

The principal analytical method employed in this study was SEM, which enables the simultaneous testing of complex interrelationships among multiple variables while accounting for measurement errors. The analysis followed the two-step procedure recommended by **Anderson and Gerbing** (1988), beginning with CFA to assess the validity of the measurement model by evaluating factor loadings, construct validity, and overall model fit. SEM was then used to test the proposed relationships among the study variables. Model fit was assessed using a comprehensive set of indices, including CMIN/df (≤ 3.00), GFI (≥ 0.90), AGFI (≥ 0.90), TLI (≥ 0.90), CFI (≥ 0.90), IFI (≥ 0.90), RMSEA (< 0.08), and RMR (< 0.08). These indices were selected to ensure a robust evaluation of model adequacy. The results showed that all fit indicators met or surpassed the recommended thresholds, confirming an excellent fit between the model and the observed data.

4. Results

4.1. Qualitative Results

The study employed the rough set e-Delphi technique, conducted over three iterative rounds, involving a panel of 20 participants comprising scholars, practitioners, and policymakers to achieve consensus on key indicators. The acceptance threshold was set using a QL value greater than 0.75. This process involved identifying initial indicators, gathering expert feedback, and refining responses in subsequent rounds to minimise inconsistency and enhance stability in expert judgement. The findings revealed that the QL values for all indicators ranged from 0.85 to 1.00, signifying a high level of consensus among experts. Furthermore, the rough set analysis successfully validated all observed variables and confirmed the acceptance of 49 indicators, thereby affirming their strength and relevance. These outcomes are summarised in Table 1.

Table 1: Expert Consensus Result.

No.	Item	QL > 0.75	Result
SI1	Family members influence your business's decision to use social media.	0.85	Confirmed
SI2	Friends determine whether your business uses social media or not.	0.95	Confirmed
SI3	People around you affect the choice of your business to adopt social media.	0.90	Confirmed
SI4	Business partners play a role on whether your business adopts social media or not.	1.00	Confirmed
SI5	Competitors also have an effect in the decision of your business to take social media.	1.00	Confirmed
SI6	Your business chooses to use social media under the influence of customers.	1.00	Confirmed
SI7	Using social media helps collect more customer information.	1.00	Confirmed
TT1	You believe the efficiency of the social media in conducting your business.	0.95	Confirmed
TT2	You trust in promoting your business through social media.	0.90	Confirmed
TT3	You believe in the application of social media as a mode of advertising your business.	0.95	Confirmed
TT4	You rely on the power to communicate to customers via the social media.	0.95	Confirmed
TT5	You trust that social media helps your business respond to customer needs effectively.	0.90	Confirmed
COM1	Using social media is appropriate for your business operations at present.	1.00	Confirmed
COM2	Using social media is appropriate for your business.	1.00	Confirmed
COM3	Using social media fits with the structure of your business.	0.90	Confirmed
COM4	Using social media aligns with your business strategies.	1.00	Confirmed
COM5	Using social media supports your business.	1.00	Confirmed
COM6	Using social media fits with your customers' behaviour.	1.00	Confirmed
PU1	Social media is beneficial for your business operations.	1.00	Confirmed
PU2	Social media makes your business more convenient in its operation.	1.00	Confirmed
PU3	Social media aids your business to run faster.	1.00	Confirmed
PU4	Social media helps reduce business operation costs effectively.	0.95	Confirmed
PU5	Social media helps build better relationships with customers.	1.00	Confirmed
PU6	Social media helps your business operate more systematically.	0.90	Confirmed
PU7	Social media helps analyse customer behaviour.	0.90	Confirmed
PEOU1	Using social media is easy for your business operations.	1.00	Confirmed
PEOU2	Using social media helps reduce the business operation steps.	0.95	Confirmed
PEOU3	Using social media is easy to learn for business purposes.	0.95	Confirmed
PEOU4	Using social media increases flexibility in your business operations.	0.95	Confirmed
PEOU5	Using social media allows you to respond to customer inquiries quickly.	1.00	Confirmed
PEOU6	Using social media allows you to respond to customers at any time.	1.00	Confirmed
ITUSM1	In the future, you plan to work with the social media in your business activities.	0.95	Confirmed
ITUSM2	You will leverage the social media to drive quality service continuously.	1.00	Confirmed
ITUSM3	You will use the social media to target the customers on a regular basis.	1.00	Confirmed
ITUSM4	You also plan to adopt social media as a way of increasing your customer base at all times.	1.00	Confirmed
ITUSM5	You want to communicate with customers through the use of social media in a continuous manner.	1.00	Confirmed
ITUSM6	You plan to adopt social media in a constant PR campaign.	1.00	Confirmed
SMUB1	You consistently use social media to build credibility for your business.	0.95	Confirmed
SMUB2	You constantly exploit the use of social media to advertise your products or services.	0.95	Confirmed
SMUB3	You continuously use social media to support sales in your business.	0.95	Confirmed
SMUB4	You use social media to enhance customer experience.	1.00	Confirmed
SMUB5	You use social media to increase communication channels with a wider variety of customers.	1.00	Confirmed
SMUB6	You use social media to build a positive image for your organization.	1.00	Confirmed
SSG1	Your business has continuously increased in sales.	0.90	Confirmed
SSG2	Your business has continuously increased in profits.	0.95	Confirmed
SSG3	Your business has continuously increased its market share.	0.85	Confirmed
SSG4	Your business has continuously increased in the number of products.	0.85	Confirmed
SSG5	Your business has continuously increased its customer base.	0.90	Confirmed
SSG6	Your business has continuously retained returning customers.	1.00	Confirmed

The consensus established among experts across four core dimensions influencing the adoption of social media in business is illustrated systematically in Figure 4. Figure 4a presents the SI dimension, highlighting the role of family, friends, acquaintances, business partners, competitors, and customers as significant influencers in social media-related decision-making. The QL values for these elements ranged between 0.85 and 1.00, reflecting strong agreement. Figure 4b displays the TT and COM dimensions, where expert assessments emphasised the importance of trust in the effectiveness of social media and organisational compatibility with structural and strategic goals. All items within this dimension received QL scores exceeding 0.90. Figure 4c focuses on PU and PEOU, where expert agreement was uniformly high, with each item achieving a QL value of 0.90 or greater. Figure 4d illustrates the ITUSM, SMUB, and SSG dimension, which also demonstrated strong support from experts, with QL values consistently surpassing the 0.75 benchmark. Collectively, these findings underscore a comprehensive expert consensus, affirming the strategic integration of digital media tools within business operations.

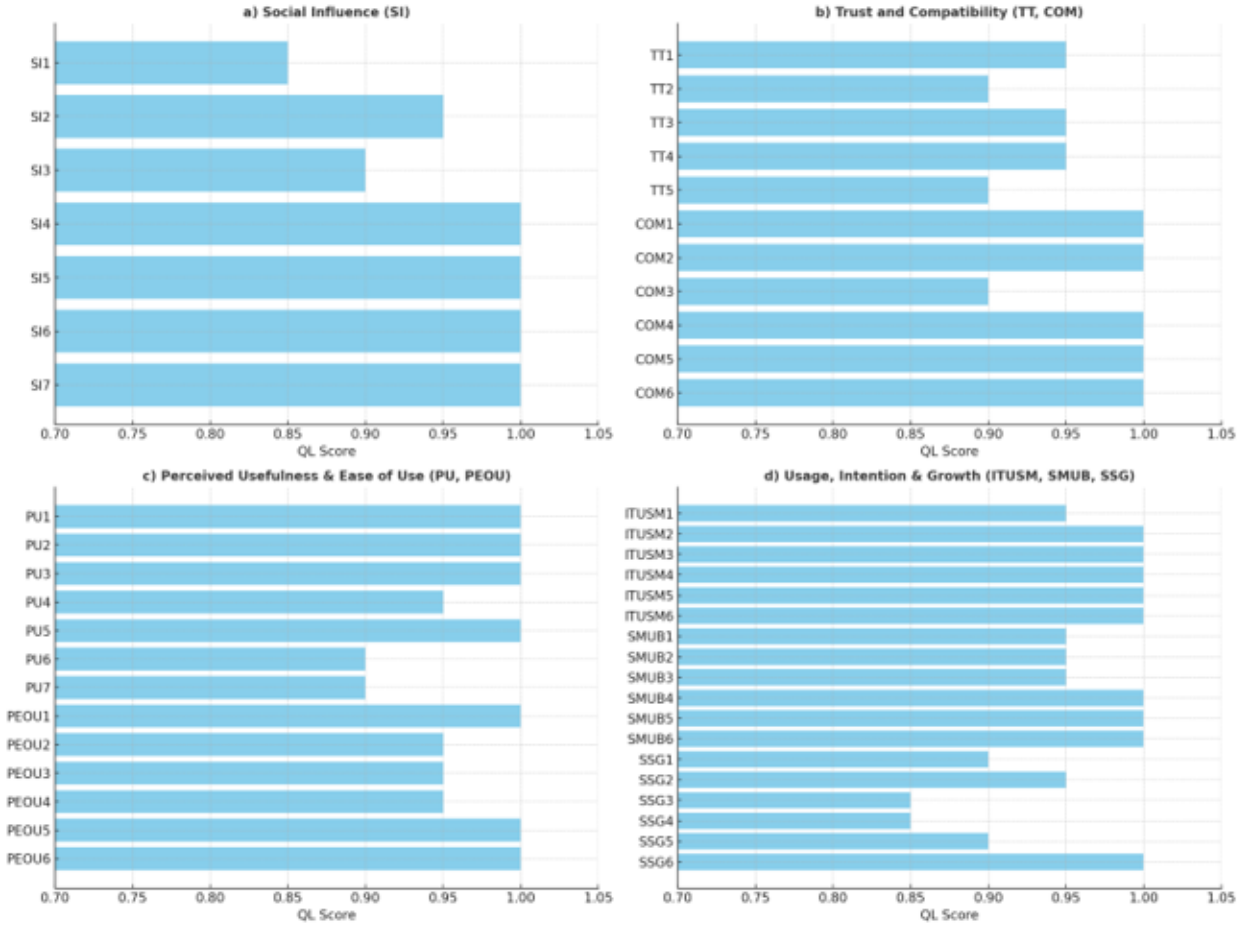

Figure 4: Expert Consensus QL Scores Across Categories (a-d).

4.2. Quantitative Results

The majority of respondents were located in Thailand's central region, accounting for 28.30% of the sample. In terms of gender distribution, 49.20% identified as male. Regarding age, 45.50% of participants fell within the 31 to 40-year age range. A review of relationship status revealed that 57.40% were single. In terms of educational attainment, the highest proportion (55.20%) held a bachelor's degree. With respect to occupational roles, 52.90% of the participants identified as business owners. Service-based enterprises constituted the largest business type represented, comprising 89.40% of the sample. When analysing annual revenue, 46.40% of respondents reported earnings below 50 million baht.

Additionally, 41.20% of participants owned businesses employing between 6 and 50 individuals. The dataset also enabled in-depth analysis of the principal observed constructs, namely SI, TT, COM, PU, PEOU, ITUSM, and SMUB, within the overarching framework of SSG in Thailand's health and beauty sector. To assess the reliability of the measurement model, composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha were calculated. The findings demonstrated acceptable levels for all constructs. CR values exceeded 0.70, AVE values were above 0.50, and Cronbach's alpha scores were no less than 0.70. These results confirmed the internal consistency and reliability of the measurement indicators, as presented in Table 2. The results of the CFA provide a robust basis for the measurement model, confirming the reliability and validity of all constructs used to examine the interrelationships within the research framework concerning the sustained development of SMEs in Thailand's digital health and beauty sector through social media usage behaviour.

Table 2: Measurement Model for Sustainable Growth of SMEs in the Health and Beauty Industry.

Measurement Items	Factor Loading	R^2	Cronbach's Alpha > 0.7	CR > 0.7	AVE > 0.5
Social Influence (SI)					
SI1	0.79	0.62			
SI2	0.79	0.62			
SI3	0.81	0.66			
SI4	0.75	0.56	**0.91**	**0.91**	**0.59**
SI5	0.76	0.58			
SI6	0.75	0.56			
SI7	0.74	0.55			
CMIN/df=1.99, AGFI=0.98, GFI=0.99, CFI=1.00, IFI=1.00, TLI=0.99, RMSEA=0.04, RMR=0.02					
Trust (TT)					
TT1	0.81	0.66			
TT2	0.75	0.56			
TT3	0.76	0.57	**0.88**	**0.88**	**0.59**
TT4	0.77	0.59			
TT5	0.73	0.53			
CMIN/df=1.48, AGFI=0.99, GFI=1.00, CFI=1.00, IFI=1.00, TLI=1.00, RMSEA=0.03, RMR=0.01					
Compatibility (COM)					
COM1	0.80	0.64			
COM2	0.80	0.64			
COM3	0.78	0.61	**0.88**	**0.89**	**0.61**
COM4	0.72	0.52			
COM5	0.77	0.59			
"CMIN/df=1.41, AGFI=0.99, GFI=1.00, CFI=1.00, IFI=1.00, TLI=0.99, RMSEA=0.02, RMR=0.01"					
Perceived Usefulness (PU)					
PU1	0.81	0.66			
PU2	0.84	0.70			
PU3	0.78	0.61			
PU4	0.75	0.56	**0.91**	**0.91**	**0.6**
PU5	0.74	0.55			
PU6	0.77	0.59			
PU7	0.75	0.56			
CMIN/df=1.57, AGFI=0.98, GFI=0.99, CFI=1.00, IFI=1.00, TLI=0.99, RMSEA=0.03, RMR=0.02					
Perceived Ease of Use (PEOU)					
PEOU1	0.78	0.61			
PEOU2	0.78	0.61			
PEOU3	0.76	0.58			
PEOU4	0.76	0.58	**0.90**	**0.90**	**0.60**
PEOU5	0.77	0.59			
PEOU6	0.78	0.61			
CMIN/df=0.80, AGFI=0.99, GFI=1.00, CFI=1.00, IFI=1.00, TLI=0.99, RMSEA=0.00, RMR=0.01					
Intention to Use social media (ITUSM)					
ITUSM1	0.81	0.65			
ITUSM2	0.80	0.64			
ITUSM3	0.79	0.62			
ITUSM4	0.75	0.56	**0.90**	**0.90**	**0.60**
ITUSM5	0.77	0.59			
ITUSM6	0.76	0.57			
CMIN/df=1.60, AGFI=0.98, GFI=0.99, CFI=1.00, IFI=1.00, TLI=0.99, RMSEA=0.03, RMR=0.01					
Social Media Usage Behavior (SMUB)					
SMUB1	0.80	0.63			
SMUB2	0.78	0.60			
SMUB3	0.81	0.66			
SMUB4	0.74	0.55	**0.90**	**0.9**	**0.61**
SMUB5	0.80	0.64			
SMUB6	0.78	0.60			
CMIN/df=2.19, AGFI=0.98, GFI=0.99, CFI=1.00, IFI=1.00, TLI=0.99, RMSEA=0.04, RMR=0.02					
Sustainable Growth of SMEs (SSG)					
SSG1	0.82	0.68			
SSG2	0.83	0.68			
SSG3	0.82	0.66			
SSG4	0.80	0.63	**0.91**	**0.91**	**0.64**
SSG5	0.79	0.63			
SSG6	0.74	0.55			
CMIN/df=1.37, AGFI=0.99, GFI=0.99, CFI=1.00, IFI=1.00, TLI=0.99, RMSEA=0.02, RMR=0.01					

Figure 5 illustrates the factor loadings, which represent the relationships among the measurement items associated with the eight constructs within the model addressing the sustained progress of SMEs in Thailand's health and beauty sector.

The constructs—SI, TT, COM, PU, PEOU, ITUSM, SMUB, and Sustainable Growth—are colour-coded for clarity, with each group assigned a distinct hue to facilitate visual differentiation. All items reported loading values ranging from 0.72 to 0.84, reflecting strong indicator reliability and internal consistency. The model's strength lies in its graphical clarity, with construct performance exceeding expectations in terms of measurement accuracy and structural stability. Further reliability validation was confirmed through high values of CR, Cronbach's alpha, and AVE. These findings affirm the model's robustness and compatibility with SEM statistical standards. The complete results are detailed in Table 3.

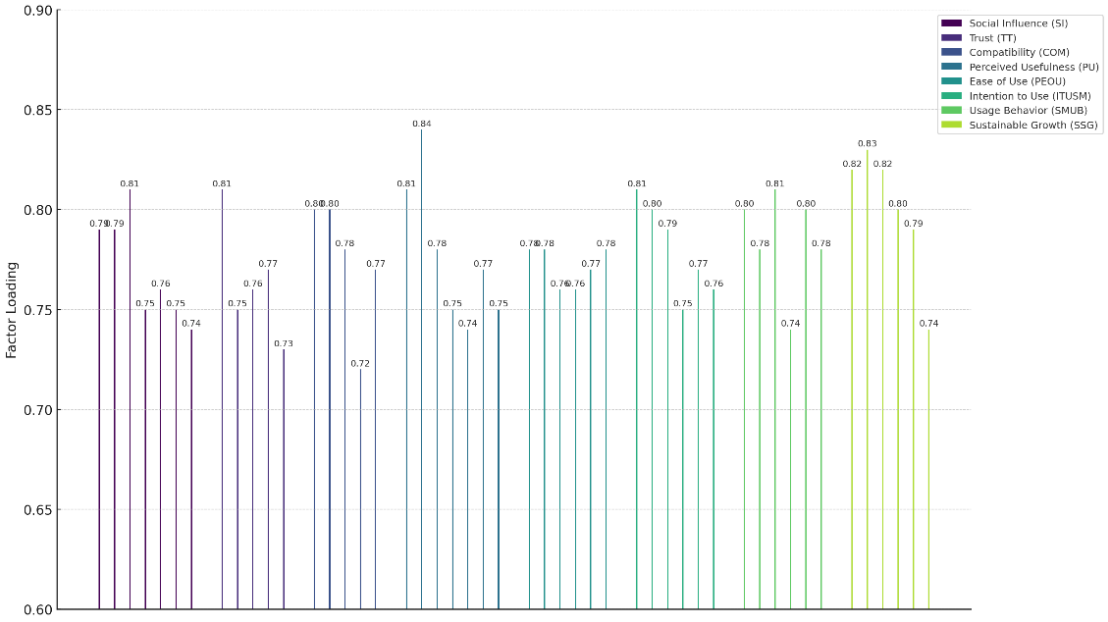

Figure 5: Factor Loadings of Measurement Model for Sustainable Growth of SMEs.

Table 3: Statistical Testing Result of Goodness of Fit (GoF).

Criteria	χ2	CMIN /df	AGFI	GFI	CFI	IFI	TLI	RMSEA	RMR
Estimate	-	< 3.00	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90	< 0.08	< 0.08
Result	1226.29	1.16	0.93	0.93	0.99	0.99	0.99	0.02	0.04
Decision	Fit	Fit	Fit	Fit	Fit	Fit	Fit	Fit	Fit

Figure 6 presents the outcomes of the GoF evaluation for the confirmatory factor analysis model, with each bar reflecting a specific fit index, including CMIN/df, AGFI, GFI, CFI, IFI, TLI, RMSEA, and RMR. The analysis confirmed that the model satisfied all established benchmarks, indicating an overall satisfactory fit. Specifically, the CMIN/df ratio was 1.16, well below the threshold of 3.00. AGFI and GFI each recorded values of 0.93, while CFI, IFI, and TLI all reached 0.99, surpassing the conventional standard of 0.90. Moreover, RMSEA and RMR values were 0.02 and 0.04 respectively, both within the acceptable limit of 0.108, further validating the model's adequacy. Figure 7 illustrates the results of the SEM conducted to assess sustainable growth driven by social media usage behaviour among SMEs operating in Thailand's digital health and beauty industry.

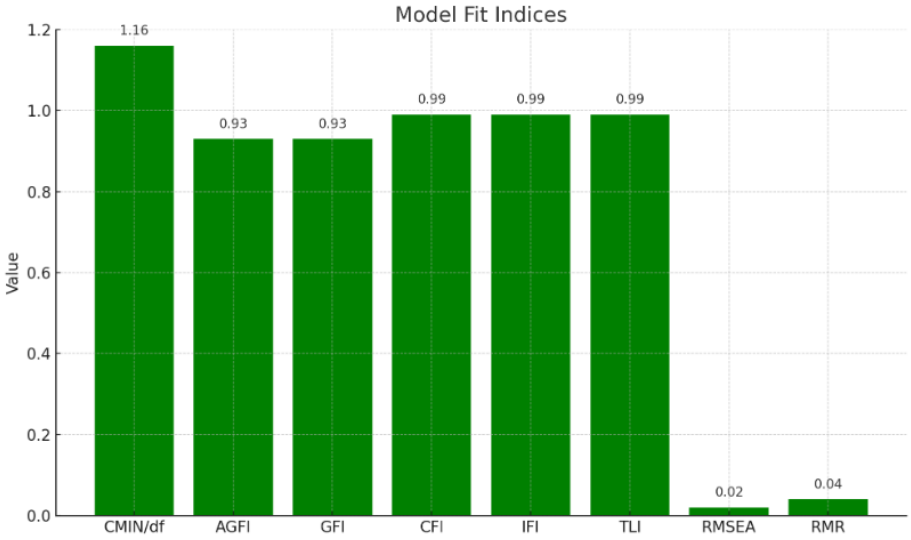

Figure 6: Results of Goodness of Fit (GoF).

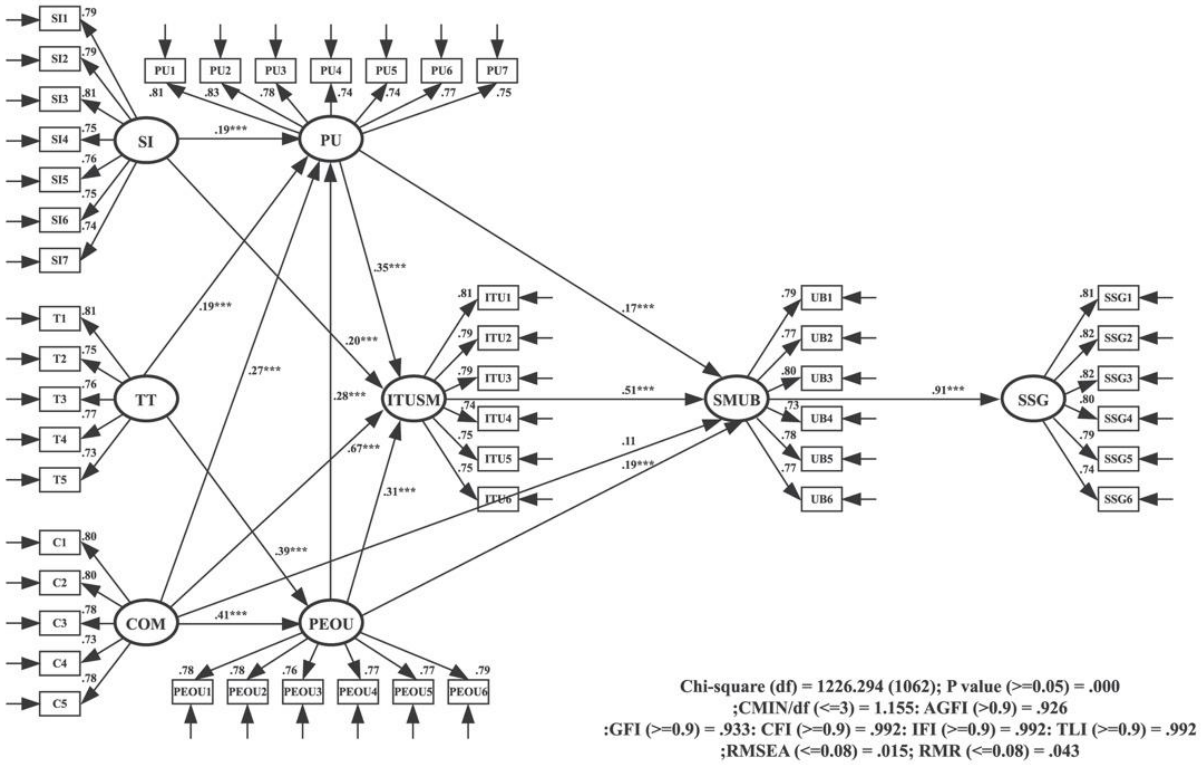

Figure 7: The Structural Equation Model.

Table 4: Hypothesis Test Results.

Hypothesis				β	S.E.	C.R.	P	Result
H1	PU	<---	SI	0.19	0.04	5.05	***	Acceptable
H2	PU	<---	TT	0.19	0.05	4.36	***	Acceptable
H3	PU	<---	COM	0.27	0.05	6.13	***	Acceptable
H4	PEOU	<---	TT	0.39	0.05	8.88	***	Acceptable
H5	PEOU	<---	COM	0.41	0.04	9.45	***	Acceptable
H6	ITUSM	<---	SI	0.20	0.04	5.28	***	Acceptable
H7	ITUSM	<---	COM	0.07	0.05	1.63	0.1	Not Acceptable
H8	ITUSM	<---	PU	0.35	0.05	7.16	***	Acceptable
H9	ITUSM	<---	PEOU	0.32	0.04	7.00	***	Acceptable
H10	UBSM	<---	PU	0.17	0.04	4.04	***	Acceptable
H11	UBSM	<---	PEOU	0.19	0.04	4.66	***	Acceptable
H12	UBSM	<---	ITUSM	0.51	0.05	10.96	***	Acceptable
H13	UBSM	<---	COM	0.11	0.04	2.99	***	Acceptable
H14	PU	<---	PEOU	0.28	0.05	6.18	***	Acceptable
H15	SSG	<---	UBSM	0.91	0.04	21.65	***	Acceptable

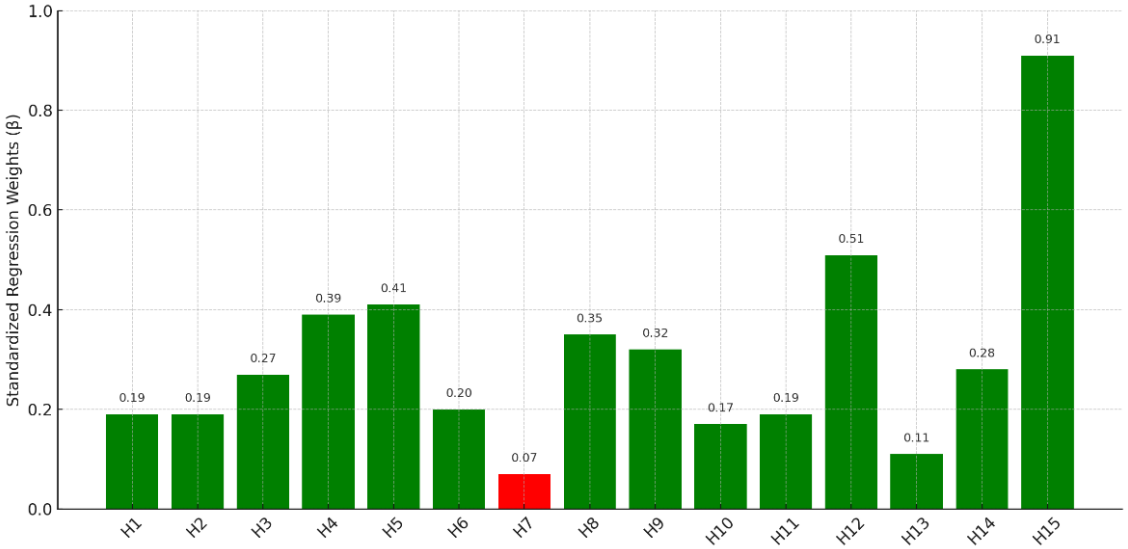

Figure 8: Standardized Regression Weights (β) for Hypothesized Relationships in the Structural Model.

This study highlights the suitability of SEM for hypothesis testing, particularly in evaluating the statistical significance of relationships among the examined constructs. The primary objective was to determine whether these associations were significant at the $p < 0.001$ level. As indicated in Table 4, most of the hypothesised paths yielded statistically significant coefficients. However, certain paths, such as H7, did not demonstrate significance. These results offer insights into the potential predictors of social media usage behaviour and the sustainable development of SMEs.

Figure 8 presents the standardised regression weights used to evaluate the correlations between variables within the structural model. Each bar corresponds to a specific hypothesis, offering a visual interpretation of both the strength and direction of relationships between paired constructs. The use of different colours distinguishes hypotheses that were statistically supported from those that were not, based on the empirical findings. Most of the proposed associations were confirmed as statistically significant, thereby reinforcing the validity of the relationships embedded in the model. Nonetheless, one hypothesis failed to demonstrate statistical significance, suggesting a weak or negligible connection. Collectively, the results offer a conceptual representation of the model's structural integrity and the reliability of the interrelationships among variables.

5. Discussion

The SEM findings affirm the robustness of the hypothesised relationships and offer meaningful insights into the influence of SMUB on SSG within Thailand's health and beauty sector. The results reinforce the theoretical assumptions of TAM and UTAUT, particularly by confirming the critical roles of PU, PEOU, and ITUSM in shaping SMUB. Among these, PU (H10) and PEOU (H11) exhibited significant effects, while ITUSM (H12) emerged as the most influential predictor. These findings are consistent with earlier research (**Emmanuel *et al.***, 2022; **Patma *et al.***, 2021), which suggests that actual engagement with digital tools, rather than merely intending to adopt them, is a more effective driver of digital involvement.

SI was found to have a notable impact on both PU (H1) and ITUSM (H6), reflecting how peer, partner, and customer expectations shape digital adoption strategies within SMEs (**Tannady *et al.***, 2024). Similarly, TT significantly influenced PU (H2) and PEOU (H4), highlighting the importance of perceived reliability and platform security in fostering user confidence (**Effendi *et al.***, 2020). The effect of COM was substantial on PU (H3), PEOU (H5), and SMUB (H13), but not on ITUSM (H7), suggesting that while SMEs perceive digital tools as compatible with their operations, this perception does not always directly translate into intention to adopt, possibly due to psychological or organisational constraints requiring further qualitative inquiry (**Schierz *et al.***, 2010). Moreover, SMUB was identified as a strong predictor of SSG (H15, $\beta = 0.91$), indicating that consistent digital activity—such as regular posting, customer engagement, and content responsiveness—is pivotal to sustained business development (**du Plessis**, 2022). These findings align with **Chatterjee *et al.*** (2021), who assert that, within SMEs, a digital presence is essential for competitiveness, client retention, and scalability (**Maldonado-Canca *et al.***, 2024). Collectively, the results validate the conceptual framework and enhance the theoretical understanding of digital transformation processes in SMEs, while also offering actionable insights for business practitioners, digital planners, and policy developers aiming to promote inclusive and sustainable advancement through technological integration (**Singh *et al.***, 2024).

This research presents a focused investigation into digital initiatives adopted by SMEs within the health and beauty domain. Employing a refined mixed-methods design, it incorporated qualitative insights from twenty experts in digital business and information science, as well as quantitative data from SME representatives gathered via online surveys. Despite its conceptual rigour, the study acknowledges certain limitations. Firstly, the qualitative component's limited sample size restricts the broader applicability of its insights, raising concerns over potential sampling bias. Secondly, reliance on self-reported survey responses introduces the possibility of response bias, as participants may have offered socially desirable answers regarding their digital media practices. Thirdly, the geographic focus on Thai SMEs constrains the generalisability of the findings, given that different cultural or economic contexts may present alternative digital adoption challenges.

This research contributes significantly to the understanding of how digital technologies support the sustainable development of SMEs within the health and beauty industry. By integrating qualitative and quantitative perspectives, it offers a detailed examination of how factors such as PEOU and PU influence social media adoption. The results indicate the necessity for tailored digital engagement strategies for SMEs. Future studies could broaden the sample across other industries, assess the impact of specific digital platforms on performance, investigate cultural determinants of digital behaviour, and explore broader dimensions of digital transformation in emerging economies.

6. Conclusion

This study underscores the critical role of digital media in advancing the sustainable growth of SMEs operating within Thailand's health and beauty sector. The proposed research model offers valuable insights for business proprietors, policymakers, and digital platform developers by integrating key determinants such as technological trust, communication,

perceived ease of use, perceived usefulness, and social influence. The findings enhance the current understanding of how digital tools contribute to the sustainability of small enterprises, particularly within resource-limited environments. Furthermore, the study provides practical guidance on how SMEs can strategically utilise digital technologies to support business expansion. Nevertheless, the applicability of these findings is confined to SMEs within the Thai health and beauty industry. Caution should therefore be exercised when attempting to generalise the results to other sectors, as industry-specific conditions may necessitate distinct approaches. Notably, the lack of a statistically significant relationship between communication and the intention to adopt social media points to the need for further qualitative inquiry into the decision-making processes of SME owners regarding digital adoption. Addressing these limitations in future research will enhance the reliability and generalisability of the findings across broader industrial contexts.

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