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Bricks to Clicks: Propelling the Online Business Adoption among Small Business Entrepreneurs

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Abstract

The growing significance of online business adoption among small business entrepreneurs has become increasingly evident in the digital era, where the ability to leverage online platforms can significantly enhance competitiveness and sustainability. This study aims to explore the interrelationships between psychological constructs, specifically self-efficacy, perceived competence, autonomy, and perceived behavioural control, and their impact on the adoption of online business practices. Utilizing a quantitative approach, primary data were collected via survey questionnaires distributed to a targeted sample of 470 small business entrepreneurs in Malaysia, with 359 valid responses for analysis. The data analysis was conducted using Structural Equation Modeling (SEM) to test various hypotheses. Results indicated significant pathways; for instance, self-efficacy was found to be a pivotal mediator influencing both perceived competence and online business adoption. However, some hypotheses, particularly concerning perceived autonomy's direct impact on adoption, were not supported. These findings suggest that further research is warranted to explore the evolving dynamics between these constructs over time and how contextual factors may influence adoption behaviours. Practical implications highlight the need for targeted

interventions to enhance self-efficacy and perceived competence among entrepreneurs, facilitating smoother transitions to online business environments. By providing training programs and resources, stakeholders can empower small businesses to adopt digital practices effectively, thus driving economic growth. Ultimately, this study contributes to a deeper theoretical understanding of the factors influencing online business adoption while offering actionable insights for practitioners aiming to support small enterprises in the digital landscape.
Keywords: Perceived Autonomy, Perceived Competence, Attitude, Perceived Behavioural Control, Self-Efficacy, Adoption

Introduction

The adoption of online business practices has become increasingly pivotal for small business entrepreneurs, driven by the need for competitive advantage and resilience in a rapidly evolving digital landscape (Taherdoost, 2023). Online business provides essential tools for reaching broader markets, enhancing customer engagement, and improving operational efficiency, making it a crucial component for entrepreneurial success (Yang et al., 2023). However, the transition to digital platforms is fraught with challenges, especially for small enterprises that often lack the resources to manage this transition smoothly (Ardiansyah, 2024). Globally, current trends highlight a significant shift towards digital adoption, accelerated by the COVID-19 pandemic, which underscored the critical role of technology in business continuity (Pira & Fleet, 2025). This period saw many small businesses either adopting new technologies or enhancing their existing digital infrastructure to survive (Lashitew, 2023). Despite these advances, there remain substantial gaps in understanding the specific factors that facilitate or hinder successful online business adoption, particularly in varied socio-economic contexts and different industry sectors (Duque & Díaz, 2024). Research indicates that digital readiness, self-efficacy, and innovation capability significantly influence business success and sustainability in online environments (Arifin et al., 2023; Chu, 2024). Nonetheless, more exploration is needed on how local cultural and economic factors impact digital adoption (Vélez-Muñoz et al., 2024). Moreover, understanding the role of entrepreneurs' risk preferences and their strategic management capabilities can reveal insights into tailored adoption strategies (Yang et al., 2023). Online business adoption in Malaysia is crucial for economic growth, especially for SMEs. Digital transformation is vital for SMEs to bolster the Malaysian economy (Tajudeen et al., 2025). Furthermore, web technologies and e-business adoption play a key role in gaining competitive advantages for travel agencies within Malaysian SMEs (Shaharuddin et al., 2023). These factors highlight the growing importance of online business adoption within the Malaysian business landscape.

This study holds substantial significance for policymakers, educators, and entrepreneurs. Policymakers can leverage findings to develop supportive frameworks and incentives that encourage digital adoption among small businesses, fostering economic growth and innovation (Praswati et al., 2024). In the educational realm, enhancing curricula with online business strategies can better prepare entrepreneurs for future challenges, particularly in flexible and distance learning environments, which are crucial for lifelong learning in this digital age (Sutrisno et al., 2024). Understanding the dynamics of online business adoption can lead to more informed decision-making and strategic planning for entrepreneurs, helping them capitalise on digital opportunities and mitigate associated risks (Martinović et al., 2024). By identifying and addressing barriers to adoption, small business owners can enhance their

competitiveness, ensure sustainability, and contribute to broader economic resilience (Siriwatpatara & Rojniruttikul, 2024). The shift to online business environments is not just a trend but a necessity for small businesses seeking growth and survival in a digital-first world. This research provides a critical foundation to navigate these changes effectively. The study aims to gauge the direct and indirect relationship between perceived autonomy, perceived competence, attitude, and perceived behavioural control towards the adoption of online business with self-efficacy as a mediator.

Literature Review

Underpinning Theory

This study integrates elements from Self-Determination Theory (SDT), the Theory of Planned Behavior (TPB), and Social Cognitive Theory (SCT) to explore online business adoption. SDT posits that autonomy and competence enhance intrinsic motivation, which can influence an individual's attitudes toward engaging in new behaviours (Deci & Ryan, 1985). Autonomy reflects one's desire for self-direction, while competence pertains to an individual's belief in their abilities. These factors are expected to shape positive attitudes toward online business adoption collectively. TPB further elucidates the mechanisms by which attitudes, subjective norms, and perceived behavioural control predict intention and, ultimately, behaviour (Ajzen, 1991). In this study, perceived control over the online business environment is critical, as it can directly affect an individual's willingness to adopt such technologies, reinforcing the influence of attitudes formed through competence and autonomy. Moreover, SCT highlights the role of self-efficacy, which is the belief in one's capabilities to execute behaviours required to produce specific performance attainments (Bandura, 1997). Self-efficacy serves as a mediator in this research model, suggesting that those with higher autonomy and competence are likely to develop stronger self-efficacy beliefs, which in turn facilitate online business adoption. Thus, by combining these theoretical frameworks, this study aims to provide a comprehensive understanding of the psychological factors influencing online business adoption, underscoring the significance of autonomy, competence, and perceived control in shaping self-efficacy and subsequent behavioural intentions.

Relationship between Attitude, Self-Efficacy & Adoption

The relationship between attitude, self-efficacy, and the adoption of online business practices is a critical area of study, as these components significantly influence the digital transformation process for entrepreneurs (Intaratat et al., 2024). Attitude towards online business reflects the positive or negative evaluation of engaging in online-related activities (Khoa, 2023). A favourable attitude, fueled by perceived benefits such as market expansion and efficiency, often leads to an increased likelihood of adopting digital tools and technologies (Taherdoost, 2023). Self-efficacy, the belief in one's ability to execute tasks and achieve goals, plays a pivotal role in this context (Kukanja, 2024). Entrepreneurs with high self-efficacy are more inclined to explore and implement online business solutions as they feel confident in their capacity to overcome challenges and leverage digital opportunities (Arifin et al., 2023). Self-efficacy not only enhances motivation but also equips entrepreneurs to effectively manage and utilize digital tools, thereby facilitating smoother adoption processes (Peng et al., 2024). Together, a positive attitude towards online business and strong self-efficacy create a synergistic effect that promotes the adoption and optimization of digital strategies (Sutrisno et al., 2024). This relationship underscores the need for targeted interventions that enhance both attitudes and self-efficacy among small business owners to foster robust online business

adoption and integration (Gupta & Nagar, 2025). *Therefore, the following hypotheses were proposed for this study:*

H1: There is a relationship between attitude and the adoption of an online business among small business entrepreneurs

H2: There is a relationship between attitude and self-efficacy towards the adoption of online business among small business entrepreneurs

H3: There is a mediating effect of self-efficacy on the relationship between attitude and the adoption of online business among small business entrepreneurs

Relationship between Autonomy, Self-Efficacy & Adoption

The interplay between perceived autonomy, self-efficacy, and the adoption of online business practices is crucial for understanding how entrepreneurs navigate digital transformations (Kebah et al., 2019). Perceived autonomy, the degree to which individuals feel they have control over their actions and decisions, greatly influences entrepreneurial behaviour in digital contexts (Liao et al., 2023). When entrepreneurs perceive high autonomy, they are more likely to explore innovative solutions and implement online business strategies tailored to their specific needs and preferences (Ardiansyah, 2024). Self-efficacy, or the belief in one's capability to execute the necessary actions to achieve desired outcomes, reinforces this dynamic by empowering entrepreneurs to engage effectively with digital technologies (Bandura, 1997). High self-efficacy boosts confidence and resilience, enabling entrepreneurs to tackle the challenges associated with digital adoption, such as learning new platforms or integrating online operations with existing business processes (Arifin et al., 2023). The combined effect of perceived autonomy and self-efficacy creates a conducive environment for adopting online business practices (Intaratat et al., 2024). Entrepreneurs who feel autonomous and capable are more likely to take calculated risks, experiment with new digital tools, and adjust their strategies based on feedback and results, thereby enhancing their business's digital presence and performance (Jia et al., 2025). This relationship highlights the importance of fostering both autonomy and self-efficacy to drive successful digital adoption among small businesses (Kebah et al., 2019). *Thus, the following hypotheses were proposed for this study:*

H4: There is a relationship between autonomy and the adoption of online business among small business entrepreneurs

H5: There is a relationship between autonomy and self-efficacy toward the adoption of online business among small business entrepreneurs

H6: There is a mediating effect of self-efficacy on the relationship between autonomy and the adoption of online business among small business entrepreneurs

Relationship between Perceived Behavioral Control, Self-Efficacy, Adoption

The relationship between perceived behavioural control, self-efficacy, and the adoption of online business practices is pivotal in understanding how entrepreneurs manage digital transitions (Li et al., 2020). Perceived behavioural control refers to the extent to which individuals believe they have the power to influence their circumstances and actions in achieving specific goals (Yu et al., 2025). This perception directly affects their willingness to adopt new technologies as it impacts their confidence in managing the demands of online business (Kebah et al., 2019). Self-efficacy, which involves the belief in one's capability to perform tasks necessary for implementing online business strategies, plays a crucial

complementary role (Cai et al., 2025). Entrepreneurs with heightened self-efficacy are more likely to perceive fewer obstacles and engage proactively with digital tools, enhancing their ability to adapt to new business models (Raut & Kumar, 2024). The synergy between perceived behavioural control and self-efficacy fosters a conducive environment for digital adoption (Li et al., 2020). Entrepreneurs with strong self-efficacy who also perceive high control over their actions are more adept at navigating the complexities of online platforms (Kebah et al., 2019). This relationship emphasizes the need for interventions that enhance both self-efficacy and perceived control to facilitate smoother transitions into digital entrepreneurship (Santoso et al., 2022; Arora & Varah, 2025). Ultimately, strengthening these factors can lead to more effective and sustained online business adoption (Nguyen et al., 2025). *Therefore, the following hypotheses were proposed for this study:*

H7: There is a relationship between perceived behavioural control and the adoption of online business among small business entrepreneurs
H8: There is a relationship between perceived behavioural control and self-efficacy toward the adoption of online business among small business entrepreneurs
H9: There is a mediating effect of self-efficacy on the relationship between perceived Behavioural control and adoption of online business among small businesses entrepreneurs

Relationship between Perceived Competence, Self-Efficacy, Adoption

The relationship between perceived competence, self-efficacy, and the adoption of online business practices is essential for entrepreneurs navigating the digital landscape. Perceived competence refers to individuals' belief in their abilities to perform specific tasks effectively (Mohamad & Osman, 2025). This belief significantly influences their willingness to engage with technological tools and strategies (Liao et al., 2023). When entrepreneurs feel competent, they are more likely to explore and adopt online business practices, viewing technology as a facilitator rather than an obstacle (Osman et al., 2018). Self-efficacy, defined as the belief in one's ability to execute actions necessary for success, complements perceived competence by enhancing motivation and resilience (Gupta & Nagar, 2025). Entrepreneurs with high self-efficacy are not only more likely to engage with online business systems but also to overcome challenges and learn from setbacks (Sehar & Alwi, 2023). Together, perceived competence and self-efficacy create a robust foundation for successful online business adoption. Entrepreneurs who perceive themselves as competent and capable are more inclined to experiment with digital tools and integrate them into their business operations (Hao & Li, 2025). This dynamic emphasizes the importance of building both competencies and self-efficacy to foster a productive online business environment and drive sustainable growth (Chitiyo et al., 2025). *Thus, the following hypotheses were proposed for this study:*

H10: There is a relationship between perceived competence and the adoption of online business among small business entrepreneurs
H11: There is a relationship between perceived competence and self-efficacy toward the adoption of online business among small business entrepreneurs
H12: There is a relationship between self-efficacy and the adoption of online business among small business entrepreneurs

H13: There is a mediating effect of self-efficacy on the relationship between perceived competence and adoption of online business among small business entrepreneurs

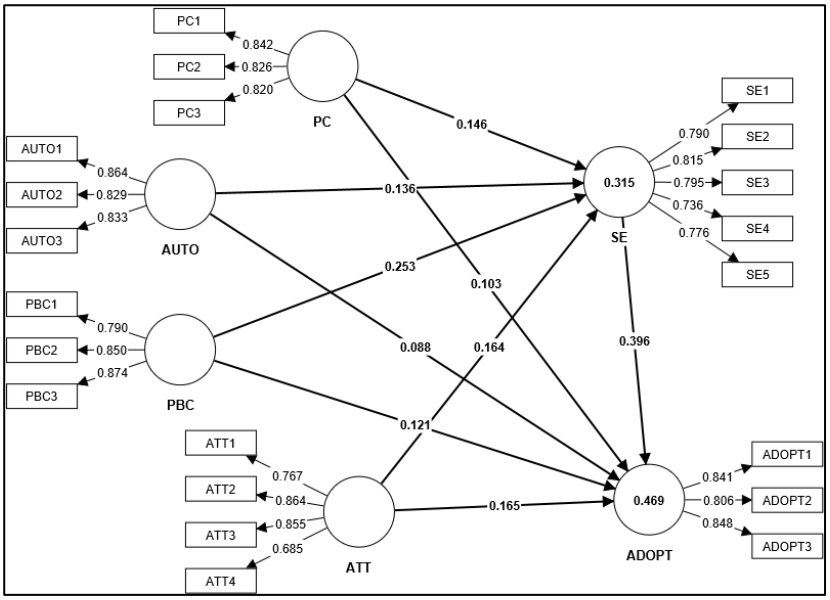

Figure 1: Research Framework

Notes: PC=Perceived Competence AUTO=Perceived Autonomy PBC=Perceived Behavioral Control ATT=Attitude SE=Self-Efficacy ADOPT=Adoption

Methodology

This study aimed to thoroughly examine the direct and indirect effects of perceived competence, perceived autonomy, perceived behavioural control, and attitude on the adoption of online business, with financial self-efficacy serving as a mediator among small business entrepreneurs who have online business adoption. To achieve this objective, researchers meticulously collected primary data, ensuring measurement reliability and validity through a comprehensive literature review. Surveys were distributed via email to targeted participants using purposive sampling, given the absence of a complete population list. The analysis centred on 21 observed variables, including independent variables such as perceived competence (3 items) derived from Bandura (2006), perceived autonomy (3 items) sourced from Deci & Ryan (2008), perceived behavioural control (3 items) from Li et al. (2020), and attitude (4 items) based on Hair et al. (2019). The mediating variable of self-efficacy (5 items) was adopted from Kang et al. (2019), and the dependent variable of adoption (3 items) came from Pandey & Rai (2020). Participants rated each construct using a five-point Likert scale, resulting in a rich data set. Out of 470 distributed surveys to small business entrepreneurs in Malaysia, 373 were returned, yielding a satisfactory response rate of 79.4%, which was adequate for employing structural equation modelling (SEM) in analysis. Ultimately, 359 responses were deemed valid for examination. The researchers utilized SmartPLS 4 software, renowned for its SEM capabilities, for data analysis and hypothesis testing. This choice was informed by SmartPLS 4's robust competence in assessing multivariate data, aligning with the study's objectives and following the recommendations by Ringle et al. (2022). The software provided a thorough evaluation of the proposed hypotheses and an extensive analysis of multivariate data, facilitating an in-depth assessment of both measurement and structural models.

Data Analysis

Respondent Profile

The demographic breakdown of survey respondents reveals important insights into their characteristics, highlighting factors such as gender, age, education, income, marital status, and attitudes toward online business adoption. Of the total respondents, 51.8% identified as male, while 48.2% were female, indicating a slightly higher representation of men. In terms of age distribution, the most prominent group fell within the 31-40 years range, comprising 42.2% of participants, closely followed by the 41-50 years age bracket at 45.1%. Younger respondents aged under 30 years accounted for 15.6%, while those in older categories, specifically ages 51-60 and 61 years or older, represented 21.1% and 4.5%, respectively. The educational background of respondents varied, with a majority holding undergraduate degrees (54.9%) or being engaged in postgraduate studies (31.2%), while only 19.3% had completed secondary school. Regarding income, the majority earned between RM4,851 and RM10,970, representing 32.3% of respondents, with 31.2% earning RM4,850 or lower and a small fraction (3.6%) reporting incomes exceeding RM10,971. Marital status data revealed that 69.6% of respondents were married, while 25.1% identified as single, with the remainder distributed among other categories. Most strikingly, a significant majority of participants (95.8%) recommended adopting online business practices, reflecting a positive attitude towards the digital transition. This comprehensive demographic insight thus provides a valuable context for understanding the findings related to online business adoption, as it sheds light on the profiles of entrepreneurs who participated in the study.

Common Method Bias

Kock (2015) and Kock & Lynn (2012) proposed a detailed methodology referred to as the collinearity test, which assesses both vertical and horizontal collinearity. This approach identifies pathological collinearity by analyzing variance inflation factors (VIFs). According to Kock Lynn (2012), VIF values that exceed 3.3 signal a notable risk of common method bias within the model. In contrast, if the VIFs generated from the collinearity analysis are under 3.3, it is indicated, as per Kock (2015), that common method bias is not present in the model. In the present study, as shown in Table 1, all VIFs obtained from the comprehensive collinearity evaluation were below the 3.3 threshold, confirming that common method bias does not influence the model.

Table 1
Full Collinearity

	ADOPT	PC	PBC	AUTO	ATT	SE
ADOPT		1.822	1.832	1.677	1.717	1.540
PC	1.453		1.331	1.712	1.802	1.464
PBC	2.021	1.842		1.833	1.460	2.007
AUTO	1.609	1.621	1.520		1.906	1.613
ATT	1.782	1.811	1.709	1.677		1.823
SE	1.434	1.710	1.694	1.712	1.489	

Measurement Model

The analysis of construct reliability and validity based on Table 2 reveals satisfactory results concerning Cronbach's Alpha (CA), composite reliability (CR), and average variance extracted (AVE). For the Adoption construct, the CA was 0.778, CR was 0.784, and the AVE was 0.692,

indicating acceptable levels of reliability and convergent validity despite requiring improvement in item loading, particularly with ATT4 (0.685). The Autonomy construct demonstrated strong reliability with a CA of 0.795, CR of 0.797, and an AVE of 0.710, reflecting good convergent validity across the three indicators. For Perceived Behavioral Control, the CA was 0.792, CR was 0.826, and AVE was 0.703, confirming reliability and validity. Perceived Competence showed a CA of 0.774, CR of 0.777, and AVE of 0.688, which are also acceptable. Self-efficacy exhibited robust reliability metrics with a CA of 0.842, CR of 0.844, and AVE of 0.613. Overall, all constructs demonstrated satisfactory reliability, with individual item loadings meeting the recommended thresholds, effectively affirming the model's construct validity. Subsequently, the Heterotrait-Monotrait (HTMT) ratio was used for additional evaluation, in line with the established standards for assessing discriminant validity in Variance-Based Structural Equation Modeling (VB-SEM) (Henseler et al., 2015). The HTMT ratios, along with the original sample values and 95% confidence intervals, were displayed in Table 3, affirming adherence to the HTMT threshold of 0.85.

Table 2
Construct Reliability and Validity & Items Loadings

Constructs	Indicators	Loadings	CA	CR	AVE
Adoption	ADOPT1	0.841	0.778	0.784	0.692
	ADOPT2	0.806			
	ADOPT3	0.848			
	ATT1	0.767	0.804	0.812	0.634
	ATT2	0.864			
	ATT3	0.855			
	ATT4	0.685			
Autonomy	AUTO1	0.864	0.795	0.797	0.710
	AUTO2	0.829			
	AUTO3	0.833			
Perceived	PBC1	0.790	0.792	0.826	0.703
Behavioural Control	PBC2	0.850			
	PBC3	0.874			
Perceived	PC1	0.842	0.774	0.777	0.688
Competence	PC2	0.826			
	PC3	0.820			
Self-Efficacy	SE1	0.790	0.842	0.844	0.613
	SE2	0.815			
	SE3	0.795			
	SE4	0.736			
	SE5	0.776			

Notes: CA=Cronbach Apha CR=Composite Reliability AVE=Average variance Extracted

Table 3
Heterotrait-Monotrait (HTMT) Ratios

	ADOPT	ATT	AUTO	PBC	PC
ATT	0.629				
AUTO	0.55	0.677			
PBC	0.641	0.727	0.668		
PC	0.541	0.526	0.392	0.674	
SE	0.743	0.536	0.496	0.594	0.484

Structural Model

In this study, the evaluation of the structural model adhered to the methodology outlined by Hair et al. (2017), entailing a detailed analysis of pathway coefficients (β) and coefficients of determination (R^2). Employing the Partial Least Squares (PLS) approach, 5,000 sub-samples were utilized to determine the significance of the path coefficients. The hypothesis testing results, including confidence intervals for path coefficients (beta), t-statistics, and p-values, are thoroughly presented in Table 4. This extensive analysis sheds light on the significance and strength of relationships among variables, enhancing the clarity and depth of findings regarding their interconnections. The analysis of the hypothesis testing results reveals insights into the relationships among various constructs. *Hypothesis H1*, which posits that attitude (ATT) positively influences adoption (ADOPT), is supported with a beta of 0.165, a t-statistic of 2.548, and a p-value of 0.011, indicating statistical significance and leading to its acceptance. Similarly, *H2* supports the influence of ATT on self-efficacy (SE), with a beta of 0.164, t-statistic of 2.715, and p-value of 0.007; thus, this hypothesis is also accepted. *H3* demonstrates that SE mediates the relationship between ATT and ADOPT, yielding a beta of 0.065, a t-statistic of 2.542, and a p-value of 0.011, confirming its acceptance. In contrast, *H4*, proposing that perceived autonomy (AUTO) affects ADOPT, is rejected due to a beta of 0.088 and a t-statistic of 1.653, with a p-value of 0.098, indicating insignificance. However, *H5* shows a significant positive effect of AUTO on SE, with a beta of 0.136, a t-statistic of 2.289, and a p-value of 0.022, leading to acceptance. *H6* further indicates that SE mediates AUTO's influence on ADOPT, accepted with a beta of 0.054, t-statistic of 2.244, and p-value of 0.025. *H7*, which examines the impact of perceived behavioural control (PBC) on ADOPT, is rejected with a beta of 0.121, a t-statistic of 1.950, and a p-value of 0.051, narrowly missing significance. Conversely, *H8* is accepted, showing that PBC positively influences SE with a substantial beta of 0.253, a t-statistic of 4.187, and a p-value of 0.000. *H9* reveals that SE mediates the relationship between PBC and ADOPT, with strong support indicated by a beta of 0.100, a t-statistic of 3.470, and a p-value of 0.001. *H10*, testing PBC's direct effect on ADOPT, is rejected due to a beta of 0.103 and a p-value of 0.052, showing insignificance. *H11*, however, supports that PBC positively influences SE with a beta of 0.146 and a p-value of 0.007, leading to acceptance. *H12* asserts that SE has a strong direct influence on ADOPT, accepted with a high beta of 0.396, a t-statistic of 7.883, and a p-value of 0.000. Finally, *H13* illustrates that PC positively influences SE, leading to ADOPT, accepted with a beta of 0.058, a t-statistic of 2.491, and a p-value of 0.013. Collectively, these results emphasize the significance of attitudes, self-efficacy, and perceived autonomy in enhancing online business adoption among small entrepreneurs.

Table 4
Hypothesis Testing Results

Hypotheses	Beta	T-statistics	P-values	2.50%	97.50%	Decision
H1: ATT -> ADOPT	0.165	2.548	0.011	0.032	0.291	*Accepted*
H2: ATT -> SE	0.164	2.715	0.007	0.043	0.276	*Accepted*
H3: ATT -> SE -> ADOPT	0.065	2.542	0.011	0.018	0.117	*Accepted*
H4: AUTO -> ADOPT	0.088	1.653	0.098	-0.019	0.189	***Rejected***
H5: AUTO -> SE	0.136	2.289	0.022	0.020	0.249	*Accepted*
H6: AUTO -> SE -> ADOPT	0.054	2.244	0.025	0.009	0.101	*Accepted*
H7: PBC -> ADOPT	0.121	1.950	0.051	-0.001	0.243	***Rejected***
H8: PBC -> SE	0.253	4.187	0.000	0.129	0.364	*Accepted*
H9: PBC -> SE -> ADOPT	0.100	3.470	0.001	0.049	0.162	*Accepted*
H10: PC -> ADOPT	0.103	1.944	0.052	-0.004	0.207	***Rejected***
H11: PC -> SE	0.146	2.704	0.007	0.039	0.250	*Accepted*
H12: SE -> ADOPT	0.396	7.883	0.000	0.298	0.496	*Accepted*
H13: PC -> SE -> ADOPT	0.058	2.491	0.013	0.017	0.107	*Accepted*

Note: Significant at p<0.05

Effect Sizes (f^2)

The effect sizes (f^2), assessed independently of the sample size, align with Cohen's criteria (1992), which classify effect sizes as small (0.020 to 0.150), medium (0.150 to 0.350), or large (0.350 or greater). In this research, the effect sizes observed ranged from small (0.009) to large (0.203). The explained variance for the endogenous construct is significant, with an R^2 value of 0.469, as shown in Figure 1. Regarding the mediator, the model accounted for approximately 31.5% of the variance, evidenced by an R^2 value of 0.315.

Table 5
Effect Sizes (f^2)

	ADOPT	SE
ATT	0.029	0.023
AUTO	0.009	0.017
PBC	0.013	0.047
PC	0.014	0.021
SE	0.203	

PLSpredicts & Ctoss-Validated Predictive Ability Test (CVPAT)

The inferences and management recommendations of the model were assessed through an out-of-sample predictive analysis utilizing the PLSpredict method, as described by Shmueli et al. (2016, 2019). As depicted in Table 6, PLS-SEM showcased better Q^2 predictions (>0) compared to naive mean predictions and displayed consistently lower root mean square error (RMSE) values than the linear model (LM) benchmarks, indicating its robust predictive capability. Notably, in six out of eight instances, the RMSE values for PLS-SEM predictions were lower than those of the linear model, underscoring the model's predictive strength, as illustrated in Table 6. Additionally, the Cross-Validated Predictive Ability Test (CVPAT), outlined by Hair et al. (2022), along with PLSpredict analysis from Liengaard et al. (2021), further demonstrates the advantages of PLS-SEM. Table 7 affirms its superior predictive

capabilities, showing lower average loss values compared to indicator averages and LM benchmarks, highlighting its enhanced predictive effectiveness.

Table 6
PLSpredicts

Items	Q^2predict	PLS-RMSE	LM-RMSE	PLS-LM
ADOPT1	0.274	0.612	0.614	-0.002
ADOPT2	0.208	0.613	0.623	-0.010
ADOPT3	0.216	0.677	0.690	-0.013
SE1	0.218	0.615	0.610	0.005
SE2	0.198	0.610	0.622	-0.012
SE3	0.130	0.669	0.667	0.002
SE4	0.151	0.677	0.692	-0.015
SE5	0.189	0.612	0.615	-0.003

Table 7
Cross-Validated Predictive Ability Test (CVPAT)

	Average loss difference	t-value	p-value
ADOPT	-0.123	5.500	0.000
SE	-0.087	4.592	0.000
Overall	-0.100	5.744	0.000

Importance-Performance Map Analysis (IPMA)

The Importance-Performance Map Analysis (IPMA) provides valuable insights into the priorities for enhancing the adoption of online business by evaluating the importance and performance of various constructs. As recommended by Ringle and Sarstedt (2016) and Hair et al. (2018), IPMA helps identify key areas that require attention. According to Table 8, self-efficacy (SE) exhibits the highest importance (0.396) but the lowest performance (60.582), suggesting a critical area for improvement. To bolster SE and consequently enhance online business adoption, targeted strategies should focus on increasing entrepreneurs' confidence in their abilities. This could involve providing training programs that enhance digital skills, offering mentorship opportunities to build confidence, and creating supportive networks that encourage knowledge sharing. By improving SE, entrepreneurs are more likely to feel capable and motivated to adopt online business practices, thus driving better outcomes in the digital transition.

Table 8
Importance-Performance Map Analysis (IPMA)

Constructs	Importance	Performance
ATT	0.230	63.868
AUTO	0.142	66.612
PBC	0.221	67.231
PC	0.161	67.057
SE	0.396	60.582

Discussion & Conclusion

Discussion

The study findings suggest several practical strategies to enhance interactions with perceived competence, autonomy, perceived behavioural control, and attitude to positively impact online business adoption, with self-efficacy as a key mediator. The beta values from hypothesis testing indicate significant pathways. Attitude notably influences both self-efficacy (H2: β=0.164) and adoption (H1: β=0.165), suggesting that cultivating positive attitudes is crucial. Businesses can foster positive attitudes by highlighting success stories and providing clear evidence of the benefits of online practices, thereby enhancing motivation for digital engagement (Gupta & Nagar, 2025). Enhancing perceived competence is vital, as it significantly impacts self-efficacy (H11: β=0.146) and indirectly affects adoption (H13: β=0.058). Providing comprehensive training and resources can build skills and confidence, enabling entrepreneurs to navigate digital platforms effectively (Sehar & Alwi, 2023). Additionally, perceived behavioural control's direct influence on self-efficacy (H8: β=0.253) indicates that strengthening control perceptions through user-friendly technology and support can empower entrepreneurs to overcome barriers (Liao et al., 2023). Perceived autonomy's indirect impact through self-efficacy (H6: β=0.054) highlights the importance of empowering entrepreneurs to make independent decisions. This could be achieved through flexible digital solutions that allow customization according to individual business needs (Chitiyo et al., 2025). However, not all hypotheses showed significance. The direct influence of perceived autonomy and perceived behavioural control on adoption (H4: β=0.088; H7: β=0.121) was unsupported, possibly due to intervening factors such as technological complexity or market conditions that may hinder the direct application of autonomy or control in adoption decisions (Yu et al., 2025). In addition, high autonomy does not mean that entrepreneurs are willing to adopt new technology because many people may like the traditional way of doing business and do not want to change, even if they have full decision-making power. In addition, small business enterprises have to face financial, human, and time constraints, which prevent them from taking advantage of their autonomy to implement digital transformation. To address these gaps, businesses should ensure ongoing technical support to reduce perceived complexity and enhance the direct application of perceived behavioural control. Lastly, bolstering self-efficacy (H12: β=0.396) is paramount, as it has a strong direct influence on adoption. This involves offering mentorship and creating environments that encourage experimentation and learning, reinforcing the belief in one's capability to succeed in online business contexts. By focusing on these strategic areas, businesses can enhance the pathway to successful online business adoption, leveraging self-efficacy as a core mediator to drive positive outcomes.

Theoretical Implications

This study contributes significantly to existing theories surrounding online business adoption by reinforcing the critical roles of self-efficacy, perceived competence, autonomy, and perceived behavioural control, as highlighted by foundational theories such as the Theory of Planned Behavior and Social Cognitive Theory. The findings underscore self-efficacy as a pivotal mediator, offering new insights into how psychological constructs interact to influence entrepreneurial behaviour in digital contexts. Moreover, this research expands the theoretical framework regarding the emotional and cognitive dimensions involved in online business adoption, particularly how positive attitudes impact both self-efficacy and adoption decisions. Future studies could explore longitudinal approaches to analyze how these

constructs evolve as entrepreneurs gain experience in digital environments. Additionally, researchers could investigate the contextual factors affecting perceived autonomy and behavioural control in different market settings, potentially revealing nuances that could enhance the proposed models (Yu et al., 2025). Investigating the influence of external variables, such as economic conditions or technological advancements, on these psychological constructs may yield more comprehensive theoretical insights (Gupta & Nagar, 2025). Furthermore, exploring the intersection of demographic variables, such as age or education level, on the relationship between self-efficacy and online business adoption could refine existing theories and provide a more nuanced understanding of the entrepreneurial landscape (Chitiyo et al., 2025; Sehar & Alwi, 2023). This study thus sets the stage for deeper exploration into the complex dynamics influencing online business adoption.

Practical Implications

The practical implications of this study are significant for small business entrepreneurs seeking to enhance online business adoption. First, the findings emphasize the importance of fostering self-efficacy among entrepreneurs, which is crucial for motivating them to engage with digital tools and platforms. Initiatives such as training programs, workshops, and mentorship opportunities can effectively build confidence in their abilities, leading to better adoption outcomes (Sehar & Alwi, 2023). Moreover, the study highlights the need for creating positive attitudes towards online business practices. Utilizing success stories and case studies can stimulate interest and reduce apprehension, thereby encouraging entrepreneurs to embrace digital transformation (Gupta & Nagar, 2025). Lastly, enhancing perceived competence through targeted skill development, such as digital literacy programs, can empower entrepreneurs to navigate online environments more effectively (Liao et al., 2023). By focusing on these strategies, stakeholders, including educational institutions and government agencies, can foster an ecosystem that supports the digital transition for small businesses, facilitating overall economic growth. Ultimately, this study serves as a roadmap for practical interventions that can significantly impact the success of online business adoption among entrepreneurs.

Suggestions for Future Studies

Future studies should explore longitudinal approaches to assess how self-efficacy, perceived competence, autonomy, and behavioural control evolve as entrepreneurs gain experience in online business environments. Investigating contextual factors, such as varying market conditions or technological advancements, could reveal nuances in adoption behaviours. The research on the role of environmental and policy factors (such as government support, technological infrastructure, finance, or corporate culture) could be proposed for a more comprehensive view. Additionally, researchers might examine the impact of demographic variables, like age and education, on the relationships between these psychological constructs and online business adoption. Finally, incorporating qualitative methods, such as interviews or focus groups, could provide deeper insights into the challenges and motivators faced by entrepreneurs in the digital landscape.

Conclusion

This study underscores the critical role of psychological constructs, such as self-efficacy, perceived competence, autonomy, and behavioural control, in fostering the adoption of online business among small entrepreneurs. The findings highlight how positive attitudes

significantly influence both self-efficacy and adoption, providing valuable insights for practical interventions aimed at enhancing digital engagement. By focusing on strategies that build self-efficacy and perceived competence, stakeholders can effectively support entrepreneurs in navigating the complexities of online environments. The study's results not only advance theoretical understanding but also offer a roadmap for future research and practical applications, ultimately contributing to the successful integration of online business practices in the entrepreneurial landscape. The enhanced understanding gained can help drive economic growth and innovation.

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