

Entrepreneurs' Perspective on ICT, Entrepreneur Competency, and Entrepreneur Education in Influencing Business Performance in Selangor

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ABSTRACT

The study explores the influence of Information and Communication Technology (ICT), entrepreneurial competency, and entrepreneurial education on the business performance of small and medium enterprises (SMEs) in Selangor, Malaysia. This research emphasises the critical role of ICT in enhancing operational efficiency and market reach, of entrepreneurial competency in fostering strategic decision-making, and of education in equipping entrepreneurs with vital skills. Employing a qualitative phenomenological design, the study gathered data from a diverse sample of entrepreneurs through semi-structured interviews. Findings suggest that ICT adoption plays an important role in supporting business growth by streamlining processes and improving customer engagement, though challenges such as limited training persist. Entrepreneurial competencies, including innovation and financial management, were identified as pivotal in navigating market complexities. Additionally, entrepreneurial education emerged as a key factor in developing these competencies, with its integration with ICT further amplifying business performance. However, barriers such as inadequate access to quality education and training programs were noted. The study contributes to the understanding of the synergistic relationship between these elements, offering actionable insights for policymakers and educators. Enhancing support systems for entrepreneurs in Selangor could improve SME performance, fostering economic growth and sustainability in the region.

Keywords: *Information and Communication Technology (ICT), Small and Medium Enterprises (SMEs), Business Performance*

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1. INTRODUCTION

The influence of Information and Communication Technology (ICT), entrepreneurial competency, and entrepreneurial education on business performance is a critical area of study, particularly in the context of Selangor, Malaysia. This topic is significant because it directly relates to the economic development and sustainability of small and medium enterprises (SMEs), which are vital for job creation and innovation in the region. The integration of ICT into business operations has been shown to enhance efficiency and competitiveness, while entrepreneurial competencies and education are essential for equipping entrepreneurs with the skills needed to navigate the complexities of the modern business environment (Barazandeh et al., 2015; Marei et al., 2023; Sarwoko, 2013). However, despite the recognised importance of these factors, there remains a notable gap in understanding how they interact within the Selangor context, particularly regarding their collective impact on business performance. This gap highlights the need for further research to explore the nuances of these relationships and their implications for local entrepreneurs.

In today's rapidly evolving economic landscape, the significance of ICT, entrepreneurial competency, and education cannot be overstated. The digital transformation has reshaped how businesses operate, making it imperative for entrepreneurs to embrace technology to remain competitive (Marei et al., 2023; Indika et al., 2020). Furthermore, entrepreneurial education plays a crucial role in fostering a culture of innovation and resilience among business owners, enabling them to adapt to changing market conditions (Sarwoko, 2013; Mitchelmore et al., 2014). However, research indicates that many entrepreneurs, particularly in developing regions like Selangor, may lack access to quality education and training programs that could enhance their competencies (Setyaningrum et al., 2023). This presents a critical research gap, as understanding the barriers to accessing such resources is essential for developing effective support systems for entrepreneurs.

The role of ICT, entrepreneurial competency, and education in business performance is multifaceted. ICT serves as a catalyst for innovation, allowing businesses to optimise processes and enhance customer experiences (Marei et al., 2023). Concurrently, entrepreneurial competencies, which encompass a range of skills and knowledge, are essential for effective decision-making and strategic planning (Sarwoko, 2013; Mitchelmore et al., 2014). Education plays a pivotal role in developing these competencies, providing entrepreneurs with the tools and frameworks necessary to succeed in a competitive marketplace (Setyaningrum et al., 2023; Mitchelmore & Rowley, 2013). Together, these elements create a synergistic effect that can significantly enhance business performance, particularly for SMEs in Selangor.

The interplay between ICT, entrepreneurial competency, and education significantly influences the current business environment in Selangor. Entrepreneurs who leverage ICT effectively can streamline operations, enhance customer engagement, and access broader markets, thereby improving their overall business performance (Marei et al., 2023; Indika et al., 2020). Moreover, the development of entrepreneurial competencies—such as strategic thinking, financial management, and marketing skills—enables entrepreneurs to make informed decisions that drive growth and sustainability (Barazandeh et al., 2015; Sarwoko, 2013; Mitchelmore et al., 2014). However, many entrepreneurs still face challenges in adopting these technologies and competencies due to limited resources and knowledge, which can hinder their business performance (Sudirman et al., 2020; Setyaningrum et al., 2023). Addressing these challenges is crucial for fostering a more robust entrepreneurial ecosystem in Selangor.

Several factors influence the relationship between ICT, entrepreneurial competency, education, and business performance. These include the level of technological adoption, the quality of available educational programs, and the individual characteristics of entrepreneurs, such as their prior experience and motivation (Sudirman et al., 2020; Sarwoko, 2013; Mitchelmore et al., 2014). Research indicates that higher levels of entrepreneurial competency correlate with improved business performance, suggesting that targeted training and support can lead to better outcomes for entrepreneurs (Barazandeh et al., 2015; Soejono et al., 2015). Additionally, the integration of ICT into business practices has been linked to increased efficiency and market reach, further underscoring the importance of these factors in driving business success (Marei et al., 2023; Indika et al., 2020).

Previous studies have explored the influence of entrepreneurial competencies on business performance, highlighting the critical role these competencies play in the success of SMEs (Barazandeh et al., 2015; Sarwoko, 2013; Mitchelmore et al., 2014). For instance, research has shown that entrepreneurs with strong competencies in areas such as marketing and financial management are more likely to achieve higher levels of business performance (Sudirman et al., 2020; Soejono et al., 2015). However, there remains a lack of comprehensive studies that specifically examine the combined effects of ICT, entrepreneurial competency, and education on business performance in Selangor. This gap presents an opportunity for further investigation to better understand these dynamics and their implications for local entrepreneurs.

The objective of this study is to investigate the influence of ICT, entrepreneurial competency, and entrepreneurial education on business performance in Selangor. By examining these relationships, the research aims to identify key factors contributing to the success of SMEs in the region and to provide actionable insights for policymakers and educators. The implications of this research are significant, as enhancing entrepreneurs' competencies and facilitating access to ICT and educational resources can improve business performance, ultimately contributing to economic growth and development in Selangor.

2. LITERATURE REVIEW

2.1 The Influence of ICT, Entrepreneur Competency

Research on the influence of Information and Communication Technology (ICT) on entrepreneurial competency has evolved significantly over the past few decades. Early studies primarily focused on the basic integration of ICT in business practices, emphasising its role in enhancing operational efficiency and market reach. A notable milestone was the introduction of the Technology Acceptance Model (TAM), which provided a theoretical framework for understanding how users come to accept and use technology, particularly in entrepreneurial contexts (Zaremohzzabieh et al., 2015). Recent advancements have seen a shift towards more nuanced frameworks that incorporate various factors influencing ICT adoption, such as social influence and personal competencies (Geng, 2023; Shrivastava et al., 2021). Methodologically, contemporary research employs diverse approaches, including structural equation modelling and confirmatory factor analysis, to validate instruments measuring ICT competencies and their impact on entrepreneurial success (Tondeur et al., 2015). Additionally, qualitative methodologies are increasingly utilised to explore the lived experiences of entrepreneurs in leveraging ICT for business growth (Orrensal et al., 2022).

Definitions of ICT and entrepreneurial competency vary across scholarly literature, reflecting the complexity of these constructs. For instance, ICT competency is often defined as the ability to effectively use technology to manage information and facilitate communication (Solihat & Goran, 2019; Isa et al., 2021). Entrepreneurial competency, on the other hand, encompasses a range of skills, including innovation, risk-taking, and strategic planning, which are essential for business success (Wee et al., 2022; Sardar et al., 2021). A synthesis of these definitions reveals a common theme: the interplay between technological proficiency and entrepreneurial skills is crucial for navigating the modern business landscape. Scholars emphasise that ICT knowledge not only enhances operational capabilities but also fosters creativity and innovation among entrepreneurs (Solihat & Goran, 2019; Istifadah & Tjaraka, 2021). This interconnectedness highlights the necessity for entrepreneurs to develop both ICT and entrepreneurial competencies to thrive in a digitally-driven economy.

Recent research trends have focused on constructs and models that elucidate the relationship between ICT and entrepreneurial competency. For instance, studies have explored the role of digital literacy and critical thinking as essential components of ICT competency that directly influence entrepreneurial outcomes (Orrensal et al., 2022; Iqbal et al., 2022). Theories such as the Unified Theory of Acceptance and Use of Technology (UTAUT) have been adapted to better understand the factors that drive ICT adoption among entrepreneurs, particularly in emerging economies (Goswami & Dutta, 2017). Furthermore, the integration of soft skills into the entrepreneurial competency framework has gained traction, emphasising the importance of interpersonal skills alongside technical abilities (Jardim et al., 2020). These developments reflect a broader recognition of the multifaceted nature of entrepreneurship in the digital age.

Several factors influence the impact of ICT on entrepreneurial competency. Key among these are access to technology, digital literacy, and the socio-economic context of entrepreneurs. Research indicates that entrepreneurs with higher levels of ICT knowledge are more likely to innovate and adapt their business strategies effectively (Shrivastava et al., 2021; Omar et al., 2019). Additionally, social networks play a significant role in shaping entrepreneurs' attitudes towards ICT adoption, as peer influence can enhance motivation and provide essential support (Geng, 2023; Sardar et al., 2021; Mustapha & Seman, 2023). The contribution of these factors varies, with access to technology being a critical enabler for entrepreneurs in rural and underserved areas, where ICT can bridge information and resource gaps (Maramura & Shava, 2016; Kivunike et al., 2011).

Recent trends in research methods highlight a shift towards mixed-methods approaches that combine quantitative and qualitative data to provide a more comprehensive understanding of ICT's influence on entrepreneurial competency. This trend allows researchers to capture the nuances of entrepreneurs' experiences and the contextual factors that affect ICT adoption (Orrensal et al., 2022; Omar et al., 2019). The implications of these trends suggest that future research should

continue to explore the intersection of technology and entrepreneurship through interdisciplinary lenses, integrating insights from fields such as sociology, psychology, and economics to enrich the understanding of these constructs.

In summarising the main findings of previous studies, it is evident that while significant progress has been made in understanding the influence of ICT on entrepreneurial competency, several limitations persist. Many studies have focused narrowly on specific contexts or demographics, which may not generalise across settings (Zaremohzzabieh et al., 2015; Isa et al., 2021). Additionally, there is a notable gap in research addressing the long-term impacts of ICT adoption on entrepreneurial sustainability and growth. Future research should aim to fill these gaps by exploring longitudinal studies that assess the evolving relationship between ICT and entrepreneurial competency over time, as well as the impact of emerging technologies on traditional entrepreneurial practices.

2.2 Entrepreneur Education on Business Performance in Selangor

Entrepreneurial education is a multifaceted concept that has been defined in various ways in the context of business performance, particularly in regions like Selangor. One definition posits that entrepreneurial education encompasses the development of skills, knowledge, and attitudes necessary for individuals to successfully start and manage their own businesses, ultimately leading to improved business performance (Manafe et al., 2023). Another perspective highlights that entrepreneurship education significantly enhances the entrepreneurial mindset, which is crucial for business success by fostering proactivity and resilience among entrepreneurs (Manafe et al., 2023). Additionally, it has been noted that education level directly correlates with business performance, particularly among women entrepreneurs, suggesting that higher educational attainment can lead to greater confidence and improved business outcomes (Tasman, 2023).

The relationship between entrepreneurial education and business performance is further influenced by factors such as Information and Communication Technology (ICT) and entrepreneurial competency. Research indicates that ICT plays a vital role in enhancing entrepreneurial competencies, which, in turn, positively affect business performance. For instance, the integration of ICT in entrepreneurial education can provide entrepreneurs with essential tools and resources that facilitate better decision-making and operational efficiency (Ferreira et al., 2021). Moreover, studies have shown that higher educational levels among entrepreneurs strengthen the relationship between entrepreneurial orientation and business performance, suggesting that education enhances the ability to leverage entrepreneurial competencies effectively (Ferreira et al., 2021; Sarwoko, 2013). This interplay between ICT, entrepreneurial competency, and education underscores the importance of a holistic approach to entrepreneurship education in fostering business success.

Despite the valuable insights provided by previous research, several limitations and gaps remain. Many studies have focused predominantly on quantitative measures of business performance without adequately exploring qualitative aspects such as entrepreneurial motivation and the socio-cultural context of entrepreneurs (Sulaiman, 2023; Hendriani et al., 2019). Additionally, there is a scarcity of research specifically addressing the unique challenges faced by entrepreneurs in Selangor, which may differ significantly from those in other regions. This gap highlights the need for more localised studies that consider the specific economic, cultural, and social dynamics influencing entrepreneurship in Selangor.

The current study aims to contribute to the existing body of knowledge by addressing these gaps. By focusing on the specific context of Selangor, this research will explore the nuanced relationship among entrepreneurial education, ICT, and business performance, providing insights directly applicable to local entrepreneurs. Furthermore, this study will incorporate both quantitative and qualitative methodologies to capture a comprehensive understanding of the factors influencing entrepreneurial success in the region. Ultimately, the findings of this research are expected to inform policymakers and educational institutions about the critical components of effective entrepreneurship education, thereby enhancing the overall business performance landscape in Selangor. These dimensions informed the interview questions used to explore entrepreneurs' lived experiences in Selangor.

3. METHODOLOGY

This study adopts a qualitative methodology, utilising a phenomenological design to investigate the impact of ICT, entrepreneurial competency, and entrepreneurial education on business performance in Selangor. The emphasis is on understanding the lived experiences and perspectives of entrepreneurs, offering comprehensive insights into how these elements interact and influence success.

The research used a purposive sampling technique, focusing on entrepreneurs in Selangor with pertinent experience in ICT, entrepreneurial education, and business management. Participants are selected according to defined inclusion criteria,

including active utilisation of ICT in business operations, a background in formal or informal entrepreneurial education, and a position as a decision-maker within their firms. The sample seeks diversity across sectors and company sizes to yield more comprehensive findings.

Data will be gathered through semi-structured interviews using a tailored interview guide to examine participants' experiences with ICT, their entrepreneurial competencies, and the impact of education on their business practices. Questions will be open-ended to enable participants to provide comprehensive narratives, and interviews will be recorded for further transcription and analysis. Further participant observations may be undertaken to augment the interview data. The data will undergo thematic analysis, in which interview transcripts are examined to identify recurring patterns and themes. The procedure entails encoding essential concepts, classifying them into overarching themes, and analysing their relevance within the framework of corporate performance. Analytical tools such as Nvivo can facilitate coding and data handling. Data collection continued until thematic redundancy was observed across the four participants. Interview transcripts were manually coded to identify recurring themes related to ICT use, entrepreneurial competency, and education.

Interview transcripts were analysed using thematic coding. First, all interview recordings were transcribed verbatim and read several times to achieve familiarity with the data. Second, meaningful statements related to ICT usage, entrepreneurial competency, and entrepreneurial education were identified and assigned initial codes. Third, similar codes were grouped into broader categories, which were then developed into major themes reflecting the participants' shared experiences. Finally, the themes were reviewed and interpreted in relation to the study objectives and relevant literature.

Ethical permission will be secured before to the trial. Participants will provide informed consent, confirming their understanding of the study's objective, their voluntary participation, and their right to withdraw at any time. Confidentiality will be upheld by the anonymisation of personal data and the secure storage of audio recordings and transcripts. All findings will be utilised only for research purposes, in compliance with ethical rules throughout the process.

4. FINDINGS AND DISCUSSION

4.1 Data Analysis

The analysis focuses on four business ventures across Selangor, each with unique workforce compositions and operational scales, and examines their use of Information and Communication Technology (ICT), levels of entrepreneurial competency, and educational backgrounds. These businesses span various industries, including tech companies, florists, and book-publisher companies. The respondents represent diverse operational structures, with workforce sizes ranging from 1 to 20 employees.

4.2 Participant Profile

Respondent	Business Name	Industry	Number of Employees	Gender Distribution
1	TechFusion Solutions	Technology	20	Male: 50% Female: 50%
2	Klasik Kraf Selangor	Book Publisher	5	Male: 40% Female: 60%
3	EcoSmart Innovations	Technology	10	Male: 60% Female: 40%
4	Flora & Fizz	Florist	1	Male: 100% Female: 0%

4.3 Research Findings One: ICT Tools for Business Operation

4.3.1 Technology Reliance

Entrepreneurs in Selangor see ICT tools such as cloud software, digital marketing, and project management as essential to growing their businesses. These tools help them reach more customers, improve efficiency, and make better decisions. However, many struggle with using technology due to limited training and digital skills. This shows a need for more accessible ICT education and support to help entrepreneurs fully benefit from technology and boost their business performance. This supports Marei et al. (2023), who found that ICT capability improves operational efficiency among SMEs.

"I rely heavily on ICT tools in my business. Almost every aspect of my operations is digitised. I use cloud-based platforms for managing inventory, customer databases, and financial transactions. Additionally, social media apps and digital marketing tools are essential for my outreach and customer engagement strategies. I also use project management tools to coordinate with my team and track progress in real-time. Technology not only helps me automate repetitive tasks but also gives me access to valuable data insights that guide my decision-making process." Respondent Entrepreneur 1

4.3.1 Traditional Business Preference

In Selangor, some entrepreneurs prefer using traditional methods over advanced ICT tools. They use computers for basic tasks like accounting, but avoid complex systems. Most customer communication happens by phone or in person, and they still use handwritten invoices and ledgers for order management. These entrepreneurs focus on simplicity and time management, sticking to familiar methods that have worked for years, without relying too much on technology.

"I use ICT tools, but only when necessary. I mainly use my computer for accounting and tracking sales, but I'm not comfortable with complex systems or digital platforms. Most of my communication with customers happens over the phone or in person. I know there are apps for managing orders, but I still prefer using traditional methods like handwritten invoices and ledgers. I believe my business doesn't need to be overly reliant on technology, especially since I've been doing things this way for years." Entrepreneur 2

4.4 Research Findings Two: Staying Updated on Business Operations

4.4.1 Strategic Adaptability

In Selangor, some entrepreneurs stay up to date with industry trends to keep their businesses adaptable. They subscribe to newsletters, follow key influencers on LinkedIn, listen to podcasts, and attend webinars to learn about new technologies and customer behaviour. This helps them adapt quickly to change and stay competitive in a fast-moving market.

"I make it a priority to stay updated with the latest industry trends and market changes. I subscribe to newsletters, follow key influencers on LinkedIn, and listen to podcasts related to my business field. I also attend webinars and online conferences to learn about new technologies or shifts in customer behaviour. Staying informed helps me adapt quickly and keeps my business competitive, especially in a rapidly evolving market." Respondent Entrepreneur 1

4.4.1 Continuous Learning

In Selangor, some entrepreneurs focus on staying up to date with industry trends. They spend time daily reading industry news, following experts, and networking with other entrepreneurs. By attending startup events, both in-person and online, they learn about market changes and innovations. This constant effort helps them stay prepared for challenges and spot new opportunities, keeping their business flexible and competitive.

"Staying updated with the latest industry trends is absolutely essential in the startup world. I spend time every day reading industry news, following thought leaders, and networking with other entrepreneurs. I attend startup-focused events, both in person and online, to hear about innovations and market shifts. It's important to know where the market is headed, and being aware of emerging trends helps me anticipate challenges and seize opportunities. Whether it's a new technological advancement or changing customer preferences, I make it a point to stay informed." Respondent Entrepreneur 3

5. CONCLUSION

This study suggests that among the interviewed entrepreneurs, ICT, entrepreneurial competency, and entrepreneurial education were perceived as important contributors to business performance. This study emphasises the essential significance of Information and Communication Technology (ICT), entrepreneurial competency, and entrepreneurial education in improving business performance, especially among SMEs in Selangor. The results highlight the significance of ICT tools in enhancing operations, customer interactions, and efficiency. The lack of extensive ICT training and digital literacy remains a concern. Entrepreneurial competencies, including strategic planning and financial management, along with ongoing education, are essential for successfully navigating the changing business environment. Entrepreneurial education, which imparts crucial skills and promotes innovation, substantially enhances corporate performance.

This research is significant for elucidating the interconnected influence of ICT, competencies, and education on the success of SMEs. By overcoming obstacles such as limited access to technology and inadequate training, policymakers and educators can develop customised initiatives that encourage entrepreneurship. This, therefore, promotes economic growth and sustainability in the region.

Subsequent research ought to build upon this study by integrating longitudinal studies to monitor the enduring impacts of ICT adoption and entrepreneurial training. Furthermore, examining the influence of emerging technologies, including artificial intelligence and blockchain, on business processes in Selangor may yield significant insights. Comparative analyses across several locations may reveal overarching trends and solutions that can be tailored to specific local settings.

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