

EMPOWERING SMALL AND MEDIUM ENTERPRISES IN TERENGGANU THROUGH TECHNOLOGICAL LEARNING AND INNOVATION FOR ECONOMIC GROWTH

EMPODERANDO AS PEQUENAS E MÉDIAS EMPRESAS EM TERENGGANU ATRAVÉS DA APRENDIZAGEM TECNOLÓGICA E DA INOVAÇÃO PARA O CRESCIMENTO ECONÔMICO

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Abstract

Small and Medium Enterprises in Terengganu play a pivotal role in promoting inclusive regional development, yet their capacity to drive technological progress, enhance productivity, and contribute to sustainable economic growth remains constrained by structural and systemic challenges. This study examines how financial accessibility, digital readiness, human capital capability, regulatory efficiency, and market connectivity collectively influence SME performance within the context of a developing regional economy. Drawing from an extensive review of contemporary literature and a structured conceptual analysis, the study identifies five interdependent issues that limit SME competitiveness, including restricted financing channels, uneven digital transformation, skills mismatches, fragmented institutional support, and narrow market reach. The findings highlight that these constraints function as mutually reinforcing conditions that suppress innovation, hinder value creation, and slow the transition of SMEs toward higher productivity activities. The study proposes an integrated framework for strengthening SME empowerment through inclusive financing models, targeted digitalisation strategies, industry aligned skills development, streamlined

Resumo

As Pequenas e Médias Empresas (PMEs) em Terengganu desempenham um papel fundamental na promoção do desenvolvimento regional inclusivo, mas sua capacidade de impulsionar o progresso tecnológico, aumentar a produtividade e contribuir para o crescimento econômico sustentável permanece limitada por desafios estruturais e sistêmicos. Este estudo examina como a acessibilidade financeira, a prontidão digital, a capacidade do capital humano, a eficiência regulatória e a conectividade de mercado influenciam coletivamente o desempenho das PMEs no contexto de uma economia regional em desenvolvimento. Com base em uma extensa revisão da literatura contemporânea e em uma análise conceitual estruturada, o estudo identifica cinco questões interdependentes que limitam a competitividade das PMEs, incluindo canais de financiamento restritos, transformação digital desigual, inadequação de habilidades, apoio institucional fragmentado e alcance de mercado limitado. Os resultados destacam que essas restrições funcionam como condições mutuamente reforçadoras que suprimem a inovação, dificultam a criação de valor e retardam a transição das PMEs para atividades de maior produtividade. O estudo



regulatory processes, and diversified market expansion pathways. The analysis contributes to existing scholarship by offering a regionally grounded perspective on SME development and demonstrating how coordinated interventions across financial, technological, human capital, and institutional domains are necessary for sustainable transformation. The study concludes that a holistic, collaborative, and long term strategy is essential for positioning SMEs in Terengganu as resilient, innovative, and competitive drivers of economic growth within Malaysia's evolving development landscape.

Keywords: Small and Medium Enterprises. Economic Growth. Digital Transformation. Financing.

propõe uma estrutura integrada para fortalecer o empoderamento das PME's por meio de modelos de financiamento inclusivos, estratégias de digitalização direcionadas, desenvolvimento de habilidades alinhadas ao setor, processos regulatórios simplificados e caminhos diversificados de expansão de mercado. Esta análise contribui para o conhecimento existente ao oferecer uma perspectiva regional sobre o desenvolvimento de PME's e demonstrar como intervenções coordenadas nas áreas financeira, tecnológica, de capital humano e institucional são necessárias para uma transformação sustentável. O estudo conclui que uma estratégia holística, colaborativa e de longo prazo é essencial para posicionar as PME's em Terengganu como motores resilientes, inovadores e competitivos do crescimento econômico no contexto do desenvolvimento em constante evolução da Malásia.

Palavras-chave: Pequenas e Médias Empresas. Crescimento Econômico. Transformação Digital. Financiamento.

1 INTRODUCTION

Small and Medium Enterprises (SMEs) are widely acknowledged as vital components of any nation's economic development, and Malaysia is no exception. These businesses serve as the backbone of the economy, generating significant employment, fostering innovation, and contributing to gross domestic product (GDP). The role of SMEs in Malaysia's economic landscape is particularly important due to their flexibility, adaptability, and potential to drive both social and economic change (Abdullah et al., 2020). In Malaysia, SMEs contribute around 38% to the national GDP and 66% to total employment (Department of Statistics Malaysia, 2020). Within this context, the state of Terengganu, located in the East Coast Economic Region (ECER), is uniquely positioned to harness the potential of SMEs to fuel its growth and development. However, the challenges SMEs face in Terengganu are multifaceted, requiring targeted interventions to unlock their full potential.

The contribution of SMEs to Terengganu's economy cannot be understated. According to the Terengganu State Economic Planning Unit (TSEPU), SMEs contribute significantly to employment, with more than 70% of the workforce engaged in small and

medium-sized businesses. SMEs in the state are primarily focused on industries such as agriculture, manufacturing, services, and retail (Ismail et al., 2021). Terengganu, rich in natural resources such as oil, gas, and agricultural products, provides a unique foundation for the growth of SMEs, especially in sectors like agro-processing, seafood processing, and tourism-related businesses. Furthermore, SMEs in Terengganu also contribute to the diversification of the state's economy, helping to mitigate the risks associated with over-reliance on natural resource extraction (Mohamad et al., 2021).

Despite the significant role SMEs play in Terengganu's economic development, their growth is impeded by a variety of barriers that hinder their competitiveness and long-term sustainability. One of the most prominent challenges is limited access to finance. A study by Tan and Kamarudin (2019) highlighted that SMEs in Terengganu face significant difficulties in securing financing due to stringent loan requirements imposed by traditional financial institutions. These institutions often demand high collateral and exhibit a cautious approach toward lending to small businesses, which results in many SMEs turning to informal sources of funding, such as family loans or personal savings. While these informal channels may provide short-term solutions, they are not sustainable for long-term growth, especially for businesses looking to scale their operations (Chong & Yip, 2021). Moreover, many SMEs lack the financial literacy necessary to navigate complex financing mechanisms, which limits their access to government grants or venture capital opportunities (Chin & Chin, 2021).

Another major challenge faced by SMEs in Terengganu is the digital divide. The rapid pace of technological advancement has created a significant gap between businesses that have embraced digital tools and those that have not. According to Othman and Raj (2021), many SMEs in Terengganu continue to rely on outdated technologies and manual business processes, limiting their ability to compete on a national or international scale. The inability to adopt digital platforms such as e-commerce websites, digital marketing tools, and automated accounting systems has placed SMEs at a disadvantage, particularly as the global economy becomes more digitally connected. In a recent report by the Malaysian Digital Economy Corporation (MDEC), it was found that only 40% of SMEs in Malaysia had adopted e-commerce platforms, a figure that is even lower in states like Terengganu (MDEC, 2021). The lack of digital infrastructure and the absence of adequate training programs for SMEs hinder their capacity to leverage technology for innovation, efficiency, and growth (Ahmed et al., 2022).

In addition to digital transformation barriers, there is also a persistent skills gap in the SME sector in Terengganu. Despite efforts to improve education and training programs, the state continues to face a mismatch between the skills required by SMEs and the qualifications of the local workforce (Jamil & Lee, 2020). Terengganu's labor force is still largely concentrated in traditional sectors, such as agriculture and manual labor, with limited access to advanced technical and managerial training programs. As a result, many SMEs struggle with low productivity, poor innovation, and inefficient business operations. The lack of a skilled workforce is particularly problematic in the manufacturing and technology sectors, where there is a growing demand for specialized skills, such as data analysis, digital marketing, and machine learning (Nor et al., 2021). In the absence of a trained workforce, SMEs are unable to fully exploit opportunities for growth, innovation, and market expansion.

The combination of financial constraints, digital barriers, and workforce limitations presents a significant challenge for the sustainable growth of SMEs in Terengganu. However, these challenges also present opportunities for policymakers, business leaders, and educational institutions to collaborate in creating an ecosystem that supports SME growth. By addressing these key barriers, SMEs can be better positioned to contribute to Terengganu's economic diversification, create jobs, and foster innovation. This paper aims to examine the role of SMEs in Terengganu's economic development, explore the challenges they face, and propose strategies for overcoming these obstacles.

One of the most significant opportunities for SMEs in Terengganu lies in the diversification of the local economy. Traditionally, Terengganu's economy has been heavily reliant on the oil and gas industry, which exposes the region to volatile global energy prices (Tan et al., 2022). In recent years, there has been a concerted effort to diversify the economy through the promotion of tourism, agriculture, and manufacturing. SMEs in these sectors have the potential to drive the next wave of economic growth by creating value-added products, exploring new markets, and building sustainable business models. For example, SMEs in the seafood processing industry can tap into global demand for sustainable and traceable food products, which is a growing trend in the international market (Nguyen & Hasan, 2020). Similarly, SMEs in the eco-tourism sector can capitalize on Terengganu's natural beauty and biodiversity to attract both domestic

and international tourists, thereby boosting local economies and creating new employment opportunities (Razak et al., 2022).

Moreover, Terengganu's strategic location within the East Coast Economic Region (ECER) offers SMEs access to a wider regional market. The development of infrastructure projects, such as the East Coast Rail Link (ECRL) and improvements to port facilities, will enhance connectivity and facilitate trade between Terengganu and other states in Malaysia, as well as neighboring countries (Ismail et al., 2021). These infrastructure developments will open up new opportunities for SMEs to engage in cross-border trade, establish regional supply chains, and expand their market reach.

To capitalize on these opportunities, SMEs in Terengganu need to be empowered with the right tools, resources, and support systems. This includes improved access to financing through alternative funding models, greater support for digital transformation, and investment in education and training programs to equip the workforce with the necessary skills. The state government, in collaboration with industry stakeholders, must prioritize the development of policies and programs that foster innovation, enhance competitiveness, and encourage sustainable business practices.

This paper will examine the key challenges faced by SMEs in Terengganu and propose targeted strategies for addressing these issues. It will explore the role of government policies in facilitating SME development, the importance of digital literacy and infrastructure, and the need for a more skilled workforce. Through a comprehensive analysis, the paper aims to contribute to the ongoing discourse on SME development in Malaysia and offer practical recommendations for fostering an environment conducive to SME growth and innovation in Terengganu.

2 LITERATURE REVIEW

Small and Medium Enterprises (SMEs) are widely regarded as critical drivers of economic growth, regional competitiveness, and employment creation. In emerging economies such as Malaysia, their contribution is essential not only for national performance but also for balancing regional development between urban and rural states. Terengganu, situated on the East Coast of Peninsular Malaysia, represents a unique case where SMEs serve as an engine of diversification in an economy historically dependent on extractive industries. Scholars consistently affirm that SME performance is closely

linked to financial accessibility, technological adoption, human capital development, and institutional support structures. This Literature Review synthesizes global and Malaysian scholarship across five subtopics: the developmental role of SMEs, financial constraints affecting growth, digital transformation and innovation dynamics, human capital and skills challenges, and strategic frameworks for SME empowerment. These themes establish the theoretical and empirical foundation that informs the later sections of this study, including the identification of issues, discussion of barriers, and formulation of strategic recommendations.

2.1 SMEs as catalysts for regional and national economic development

The role of SMEs in economic development has been extensively documented across development economics and entrepreneurship literature. According to the Organisation for Economic Co-operation and Development (OECD, 2019), SMEs represent more than 95 percent of all registered firms globally and account for up to 60 percent of total employment. In Southeast Asia, SMEs contribute significantly to national GDP, export diversification, and innovation-led productivity growth (ASEAN, 2020). Malaysia reflects a similar trend, where SMEs contribute 38 percent to GDP and 66 percent to total employment (Department of Statistics Malaysia, 2020). These contributions illustrate not only their economic importance but also their social function in supporting inclusive development.

Within the Malaysian context, SMEs act as strategic vehicles for regional diversification. Terengganu, previously reliant on petroleum-based revenues, increasingly depends on SMEs to stimulate non-oil sectors, particularly agriculture, food processing, eco-tourism, manufacturing, and small-scale services. Studies such as Hashim (2019) and Saleh & Ndubisi (2021) show that SMEs play a pivotal role in enabling rural communities to participate meaningfully in economic activities, reducing income disparities, and encouraging entrepreneurial culture. Scholars argue that SMEs also enhance resilience by distributing economic activity across multiple industries, thereby reducing vulnerability to global commodity fluctuations (Abdullah & Kim, 2020).

Innovation capacity within SMEs is another theme highlighted across the literature. Santoro et al. (2021) demonstrate that SMEs, due to their flexible structures

and shorter decision-making cycles, are often more capable of experimenting with new ideas, niche products, and customized solutions. In Malaysia, innovation among SMEs is especially evident in agro-based and tourism sectors, where firms leverage local cultural identity, natural resources, and technological learning to improve competitiveness (Rahman & Ramli, 2020). These findings underscore that SMEs are not merely support actors but strategic contributors to regional transformation, especially in developing states like Terengganu.

2.2 Access to finance as a persistent structural barrier

Limited access to finance remains the most frequently cited constraint affecting SME development worldwide. According to the World Bank (2022), approximately 40 percent of SMEs in developing countries face severe credit constraints, primarily due to stringent collateral requirements, risk-averse lending practices, and high information asymmetry. These patterns are evident in Malaysia, where studies show that financial institutions continue to classify SMEs as high-risk due to irregular cash flows, inadequate documentation, and limited credit histories (Abdullah & Manan, 2019; Haron et al., 2021).

The financing gap affects SME capacity to expand operations, modernize equipment, adopt digital technologies, and hire skilled labor. Beck & Demirgüç-Kunt (2020) assert that firms lacking adequate financing typically experience lower productivity, weaker innovation performance, and shorter survival rates. In rural states like Terengganu, geographical distance from major financial hubs further exacerbates credit-related challenges. Ismail & Ku Rasdi (2020) found that SMEs in Malaysia's East Coast region were less likely to secure traditional loans compared to SMEs in the Klang Valley due to limited financial infrastructure and reduced investor interest.

Alternative finance models, such as microfinance, peer-to-peer lending, and venture capital, have emerged as viable solutions to bridge the financing gap. However, studies show mixed results regarding SME readiness to adopt such mechanisms. According to Low et al. (2021), Malaysian SMEs exhibit low awareness and cautious attitudes towards digital financing platforms due to trust issues and insufficient digital literacy. Likewise, venture capital activity in Malaysia remains concentrated in

technology hubs, with limited penetration into non-urban regions (Wonglimpiyarat, 2019).

Financial literacy is identified as another mediating factor. Research by Lusardi & Mitchell (2017) highlights that financially literate entrepreneurs are more capable of preparing compelling business proposals, evaluating financial products, and managing debt responsibly. In the Malaysian context, Siti-Nabiha et al. (2020) emphasize that many SME owners lack foundational financial management skills, resulting in weak budgeting, poor record-keeping, and ineffective loan negotiations. These empirical findings demonstrate that financial accessibility is not solely an institutional issue but also an entrepreneurial competency challenge.

2.3 Digital transformation, technology adoption, and innovation capacity

The digital economy has become a defining force shaping SME competitiveness in the twenty-first century. Digital technologies such as e-commerce, automation, data analytics, and cloud computing provide opportunities for SMEs to achieve operational efficiency, expand market reach, and innovate more rapidly. Scholars establish strong evidence that digitally enabled SMEs experience higher productivity growth and stronger resilience during economic shocks (OECD, 2021; Brynjolfsson & McAfee, 2019).

Despite these benefits, digital transformation among SMEs remains uneven. In Malaysia, only 44 percent of SMEs have adopted digital tools at a meaningful level (MDEC, 2021). Studies by Mohd Yusof & Lai (2020) reveal that SMEs in rural states face greater digital adoption challenges due to inadequate ICT infrastructure, insufficient training, and perceived high costs of technological investment. These findings align with global patterns where SMEs frequently lack strategic vision and digital capabilities necessary to initiate and sustain transformation processes (Li et al., 2018).

Digital divide literature emphasizes three critical barriers: accessibility, affordability, and ability. Accessibility issues relate to slow broadband speeds and limited rural connectivity. Affordability concerns focus on the high cost of hardware, software, and cybersecurity measures. Ability refers to limited digital literacy among SME owners and employees. In Terengganu, all three barriers are present, particularly among micro-enterprises that rely on traditional business models and informal operations.

Innovation ecosystems also play an important role. Research by Ferreira & Teixeira (2019) shows that SMEs embedded in strong innovation networks are more likely to adopt new technologies and sustain competitive advantage. However, such networks are underdeveloped in Malaysia's East Coast region, where linkages between SMEs, universities, and technology providers remain weak (Zulkifli & Wahab, 2020). This suggests that digital transformation requires not only technological readiness but also institutional coordination and collaborative capacity.

2.4 Human capital limitations and skills mismatch in the SME sector

Human capital is central to SME performance, particularly in environments where technology adoption and innovation are essential for growth. A recurring theme across the literature is the mismatch between labor supply and SME competency requirements. According to the World Economic Forum (2020), SMEs increasingly demand skills such as digital literacy, analytical thinking, complex problem-solving, and adaptive learning. However, many education and training systems in developing countries fail to produce graduates with such capabilities.

In Malaysia, multiple studies highlight persistent skills shortages affecting SMEs. Ahmad & Zabri (2021) observe that SMEs frequently report difficulty in recruiting workers with adequate technical and managerial skills, particularly in areas related to automation, quality control, and digital marketing. This shortage leads to low productivity, operational inefficiencies, and limited innovation output. Rahman & Wahab (2020) argue that human capital deficiencies are more pronounced among rural SMEs, where exposure to training and professional development opportunities is limited.

Training participation among SME employees also remains low. A study by Hashim & Abdullah (2019) found that many Malaysian SMEs lack structured human resource development practices and seldom invest in training due to cost concerns, time constraints, and lack of awareness about available programs. This contributes to weak organizational learning, low adaptability to technological changes, and limited competitiveness.

Industry–education alignment is another critical issue. Scholars such as Mohamed & Idris (2021) emphasize that higher education institutions often operate independently from industry needs, resulting in graduates who lack practical experience. Strengthening

apprenticeship systems, vocational programs, and industry partnerships is widely recommended to enhance workforce readiness. The challenge is particularly relevant for Terengganu, where the economy is transitioning toward more knowledge-intensive activities that require technically skilled labor.

2.5 Strategic frameworks for SME empowerment and sustainable growth

Across global and Malaysian literature, scholars advocate for integrated strategies that combine financial support, technological advancement, human capital development, and regulatory reforms to strengthen SMEs. A multidimensional framework is essential because challenges faced by SMEs are interrelated and cannot be effectively addressed through isolated interventions.

Financial empowerment is a priority recommendation. Beck et al. (2020) advocate for diversified financing ecosystems including microfinance, venture capital, credit guarantee schemes, and government-backed loans. Malaysia has implemented several initiatives, yet regional disparities persist. For states like Terengganu, localized financing mechanisms are necessary to meet the unique needs of rural SMEs.

Digital empowerment frameworks highlight the importance of infrastructure readiness, subsidized technology acquisition, digital literacy training, and strengthening of innovation networks (OECD, 2021; MDEC, 2021). SMEs require tailored digitalization roadmaps that reflect their size, industry, and technological capabilities. Studies by Li et al. (2020) show that incremental adoption combined with capacity-building initiatives yields more sustainable outcomes than rapid top-down digitalization.

Human capital development strategies emphasize lifelong learning, workforce reskilling, and university–industry collaboration. The International Labour Organization (ILO, 2020) recommends competency-based training systems to equip SME workers with the skills required in a digitalized economy. For Malaysia, stronger coordination between national training bodies, state agencies, and SME associations is essential to ensure aligned objectives.

Regulatory frameworks also play an important enabling role. The World Bank (2022) highlights that simplified licensing procedures, transparent regulatory enforcement, and digital government services significantly improve SME

competitiveness. Malaysia's move toward online business registration and centralized licensing has shown positive outcomes, yet adoption varies across states.

Finally, market access strategies emphasize participation in regional value chains, export development, and digital marketing. According to UNCTAD (2021), SMEs that internationalize early experience stronger long-term growth. For SMEs in Terengganu, opportunities exist in halal food exports, eco-tourism, handicrafts, and agro-based products.

3 ISSUES IN EMPOWERING SMALL AND MEDIUM ENTERPRISES IN TERENGGANU

Small and Medium Enterprises (SMEs) hold strategic importance in Terengganu's economic development, particularly as the state transitions from petroleum dependency toward a more diversified and innovation-driven economy. Despite their growing contributions, SMEs continue to face structural, operational, and institutional barriers that constrain their growth potential. These issues are not isolated; rather, they interact in complex ways and create a reinforcing cycle that impedes innovation, competitiveness, and long-term sustainability. Drawing from contemporary global and Malaysian scholarship, this section presents five major issues affecting the empowerment of SMEs in Terengganu: financial accessibility constraints, digital transformation barriers, human capital and skills mismatches, regulatory and institutional inefficiencies, and limited market access in an increasingly competitive environment. Each issue is grounded in empirical evidence while reflecting the unique socio-economic context of Terengganu.

3.1 Persistent financial barriers limiting SME growth

Financial constraints remain one of the most significant and well-documented issues affecting SMEs across developing economies. Although Malaysia has implemented numerous policies to facilitate SME financing, real-world access to credit remains uneven, especially in less urbanized regions such as Terengganu. According to Beck and Demirgüç-Kunt (2020), SMEs globally face higher financing constraints than larger firms due to information asymmetry and perceived risk. This phenomenon is intensified in rural states where formal financial institutions adopt stricter lending

standards in response to uncertainties regarding collateral, business sustainability, and credit history. Malaysian evidence supports this trend; Abdullah and Manan (2019) found that SMEs outside major cities face lower approval rates for bank financing and higher rejection rates for working capital loans.

In Terengganu, SMEs often lack documented financial records, audited statements, and formal governance structures, which further reduces their bankability. Haron et al. (2021) emphasize that these structural weaknesses hinder SMEs from meeting minimum loan requirements. The reliance on personal savings, family loans, or informal credit channels limits the ability of SMEs to scale operations, modernize production facilities, or invest in digital technologies. Financial exclusion thus becomes a systemic barrier that suppresses innovation and growth.

Alternative financing options such as peer-to-peer lending, microfinance, and venture capital remain underdeveloped in the East Coast region. Studies by Wonglimpiyarat (2019) and Low et al. (2021) reveal that Malaysian venture capital activities are concentrated in Klang Valley technology hubs, leaving small regional entrepreneurs with minimal access to equity financing. Furthermore, many SMEs in Terengganu exhibit low levels of financial literacy, leading to difficulty in interpreting financial products, managing debt, and preparing viable loan applications. Lusardi and Mitchell (2017) argue that financial literacy directly influences entrepreneurial survival and investment decision-making, a finding highly relevant to SMEs seeking to navigate complex financing mechanisms.

3.2 Digital transformation barriers hindering innovation and competitiveness

Digital transformation is increasingly recognized as a fundamental requirement for SME competitiveness, yet it remains one of the most pressing challenges for SMEs in Terengganu. Digital adoption enables firms to increase productivity, expand into new markets, automate manual processes, and enhance decision-making through data analytics. However, the digital divide between urban and rural SMEs is still substantial. MDEC (2021) reports that rural SMEs in Malaysia have significantly lower digitalization levels due to limited exposure, inadequate ICT infrastructure, and constrained financial capability to invest in technology.

In Terengganu, these challenges are amplified by uneven broadband access, especially in remote coastal and inland areas. According to Yusof and Lai (2020), inadequate digital infrastructure reduces SMEs' ability to participate in e-commerce platforms or adopt cloud-based systems, which are essential for expanding customer reach and improving operational efficiency. Scholars such as Brynjolfsson and McAfee (2019) argue that digital lag creates a cumulative disadvantage: firms that fail to digitalize early become progressively less competitive, as they cannot match the speed, convenience, or customer-centric capabilities of digitally enabled competitors.

Digital skills deficits represent an additional barrier. Li et al. (2018) found that many SME owners perceive digital technologies as complex, risky, or unnecessary, reflecting a lack of understanding about potential benefits. This perception reduces willingness to invest in digital tools even when financial resources are available. The ability to navigate digital ecosystems, analyze online market trends, protect digital assets, and engage in online marketing requires competencies that are not yet widespread within Terengganu's SME workforce.

Moreover, innovation ecosystems in the state remain underdeveloped. Ferreira and Teixeira (2019) highlight that SMEs embedded in strong innovation networks—including universities, technology providers, and industry clusters—are more likely to innovate and digitalize effectively. In Terengganu, limited collaboration between higher education institutions and SMEs weakens opportunities for technology transfer, joint research, and innovation-led growth. Consequently, SMEs face structural challenges in utilizing digital technology to compete effectively in local and global markets.

3.3 Human capital limitations and skills mismatches across SME sectors

Human capital challenges continue to restrict SME productivity, innovation readiness, and operational resilience. The World Economic Forum (2020) identifies skills such as digital literacy, creative problem-solving, and analytical thinking as essential for modern SMEs. However, these competencies are often scarce in regions where education systems are not closely aligned with industry needs.

In Malaysia, Ahmad and Zabri (2021) found that SMEs frequently face difficulty recruiting workers with appropriate technical, managerial, and technological skills. In Terengganu, where many SMEs operate in agriculture, food processing, and tourism, the

shift toward technology-driven operations requires workforce capabilities that exceed traditional competencies. Rahman and Wahab (2020) emphasize that staff often lack training in quality management, automation, health and safety compliance, and customer service systems, resulting in lower productivity and inefficiencies.

Training participation among SME employees is another area of concern. Hashim and Abdullah (2019) noted that SMEs often underinvest in employee development due to cost constraints, time limitations, and lack of awareness about available government programs. This creates a cycle where employees are unable to adapt to new technologies, and SMEs subsequently avoid adopting innovation due to limited internal capability. Without structured talent development pathways, SMEs remain vulnerable to operational disruptions and are unable to move into higher-value activities.

Another factor shaping Terengganu's human capital landscape is graduate employability. Mohamed and Idris (2021) show that misalignment between university curricula and industry expectations leads to graduates lacking practical workplace skills. For SMEs requiring immediate operational competence, this mismatch becomes a barrier to hiring young talent. Furthermore, SMEs struggle to attract skilled workers because larger firms in more urban states offer better career progression and compensation packages. This internal migration of talent reduces the availability of skilled labor within Terengganu, reinforcing the skills gap.

3.4 Regulatory and institutional inefficiencies affecting SME operations

Regulatory environments significantly influence SME development, and inefficiencies within institutional frameworks can become major barriers to growth. The World Bank's Ease of Doing Business Report (2022) highlights that complex licensing procedures, inconsistent policy enforcement, and bureaucratic delays discourage SME formation and expansion. While Malaysia has made progress through digital business registration systems and SME-focused support agencies, regulatory challenges persist at state and local levels.

Many SMEs in Terengganu report difficulties in navigating licensing requirements, taxation procedures, labor compliance, and safety regulations. Abdullah and Kim (2020) emphasize that SMEs lacking administrative expertise spend disproportionate time and resources managing compliance, reducing their focus on

innovation or market expansion. Delays in obtaining business permits or approvals can lead to lost opportunities, particularly for SMEs in fast-moving markets such as food production, logistics, and tourism.

Additionally, regulatory fragmentation between national, state, and local authorities creates ambiguity for SMEs. Mohamed and Idris (2021) argue that unclear guidelines or inconsistent enforcement practices can lead to uncertainty, discouraging SMEs from investing in new facilities or market diversification. In Terengganu, where SMEs often engage in food-related activities, inconsistent enforcement of standards such as halal certification, food safety regulations, and environmental compliance can impose unexpected costs.

Institutional support structures also exhibit gaps. While agencies such as SME Corp, MARA, MDEC, and Terengganu State Economic Planning Unit provide assistance, SMEs often report difficulty accessing these programs due to limited communication channels, unclear eligibility criteria, or bureaucratic procedures. Studies by Rahman and Ramli (2020) suggest that SMEs prefer advisory systems that offer personalized guidance rather than generalised workshops or online documents.

3.5 Limited market access and rising competitive pressures

Market access represents a critical determinant of SME sustainability, yet it remains a challenge for many SMEs in Terengganu. Despite the growing role of SMEs in Malaysia's domestic economy, only a small proportion succeed in expanding beyond state borders or penetrating international markets. UNCTAD (2021) notes that SMEs globally face substantial barriers to internationalization, including lack of exposure to foreign customers, limited marketing capabilities, and insufficient understanding of global standards.

Terengganu SMEs often operate within small, localized markets, relying heavily on traditional customer bases. While this model may sustain micro-enterprises, it limits the potential for growth, innovation, and diversification. Nguyen and Hasan (2020) assert that SMEs lacking participation in broader supply chains face lower competitiveness and reduced resilience against economic shocks. The challenge is heightened by increasing competition from larger firms with established brands, advanced digital marketing capabilities, and stronger logistics networks.

Digital marketing competence is another key determinant of market access. SMEs with weak online presence are unable to reach wider audiences or compete on equal footing with technology-enabled firms. The shift toward digital consumption patterns following the COVID-19 pandemic has further widened this gap. OECD (2021) reports that SMEs without strong e-commerce capabilities experienced significant revenue losses during the pandemic, while digitally transformed SMEs grew rapidly.

Export readiness is also limited. Malaysian studies by Hashim (2019) and Haron et al. (2021) emphasize that SMEs face challenges meeting international product standards, handling logistics complexities, and navigating export regulations. For Terengganu, the absence of strong export facilitation networks reduces opportunities for SMEs involved in agro-food products, handicrafts, and halal goods to engage in global trade.

4 DISCUSSION ON EMPOWERING SMALL AND MEDIUM ENTERPRISES IN TERENGGANU

The issues affecting SMEs in Terengganu must be interpreted through a broader strategic and theoretical lens in order to understand how financial constraints, digitalisation challenges, human capital limitations, institutional barriers, and market access difficulties interact with one another. The role of SMEs in Malaysia and other emerging economies is multi dimensional because their performance is influenced by structural conditions, resource availability, technological readiness, and policy environments. The following discussion deepens the interpretation of the five major issues identified earlier. It also explains how these issues shape SME development trajectories and their ability to contribute to regional economic transformation.

4.1 Financial exclusion as a systemic constraint limiting enterprise growth and innovation

Financial barriers affecting SMEs in Terengganu cannot be understood solely as temporary obstacles. They represent a structural outcome of financial systems that are traditionally designed for larger and more formalised businesses. Researchers such as Beck and Demirgüç Kunt (2020) show that SMEs in developing economies consistently

face higher financing constraints than larger firms because financial institutions perceive small enterprises as risky, volatile, and insufficiently documented.

In Terengganu, this structural bias becomes even more pronounced due to geographical distance from major financial hubs and the prevalence of micro enterprises that lack audited statements, financial projections, and formal business structures. Abdullah and Manan (2019) explain that Malaysian lenders continue to rely heavily on asset based lending criteria. As a result, SMEs without property or high value collateral struggle to access loans that would enable expansion or technological upgrading.

This financial exclusion creates a cumulative cycle. Without access to capital, SMEs cannot invest in technology, skilled labor, or production improvements. When they cannot upgrade their operations, their competitiveness declines. When competitiveness declines, their financial position weakens further. This cycle aligns with the findings of Haron et al. (2021), who argue that undercapitalised SMEs are trapped in low productivity conditions and therefore face long term vulnerabilities.

Another key element of financial exclusion relates to financial literacy. Lusardi and Mitchell (2017) highlight that entrepreneurs with weak financial knowledge often make poor borrowing decisions, misunderstand loan terms, or fail to prepare credible financial proposals. In Terengganu, many SME owners do not maintain proper records or business plans. This makes it difficult for financial institutions to assess viability. Low et al. (2021) also found that digital finance platforms and peer to peer lending systems are less utilised by SMEs in non urban states because business owners lack trust and understanding of such mechanisms.

The limited availability of venture capital outside the Klang Valley reinforces regional inequality. Wonglimpiyarat (2019) notes that venture capital investment in Malaysia remains highly concentrated in major technology corridors. Consequently, SMEs in Terengganu seldom receive equity based financing or innovation grants.

Financial exclusion therefore acts as a foundational barrier. It influences all other areas of SME development including technology adoption, innovation potential, quality of employment, and market competitiveness. Addressing this issue requires systemic transformation in financing models as well as capacity building among SME owners.

4.2 Digital capability divide and its influence on competitiveness and resilience

Digital transformation has become a central requirement for SME growth and resilience in the modern economy. However, the evidence shows that SMEs in Terengganu face substantial digital capability gaps. These gaps include infrastructural deficiencies, limited technological awareness, low digital confidence, and insufficient skills among business owners and employees.

The first dimension of this divide relates to digital infrastructure. According to the OECD (2021), limited connectivity and inconsistent broadband access significantly reduce the ability of SMEs to adopt digital tools. In Terengganu, the availability and speed of internet services in rural areas remain below national standards. Yusof and Lai (2020) found that many rural SMEs are unable to maintain stable online operations, which restricts participation in e-commerce and digital communication platforms.

The second dimension relates to organisational readiness. Zahra and George (2002) describe absorptive capacity as the ability of a firm to acquire, assimilate, transform, and apply external knowledge. Many SMEs in Terengganu have not yet developed this capability. Li et al. (2018) argue that SMEs often perceive technology as a cost rather than a strategic investment. This perception contributes to delayed or minimal adoption of digital tools even when subsidies or support programs are available.

The digital capability divide also affects market competitiveness. Brynjolfsson and McAfee (2019) explain that firms with strong digital presence can reach larger markets, customise customer engagement, and respond more rapidly to market changes. SMEs in Terengganu that rely solely on traditional marketing methods are restricted to small customer bases and face difficulties competing with technologically advanced firms that use digital advertising, data analytics, and automated systems.

Resilience is another critical dimension. UNCTAD (2021) demonstrates that digitally enabled SMEs recovered more quickly from pandemic-related disruptions because they could shift sales channels to online platforms. SMEs in Terengganu that lacked digital readiness faced prolonged shutdowns and revenue losses during movement restrictions.

Furthermore, the innovation ecosystem in the state remains underdeveloped. Ferreira and Teixeira (2019) note that SMEs that are well connected to universities, research institutions, and technology providers generally achieve higher innovation

output. In Terengganu, collaboration between SMEs and local universities is improving but remains limited in terms of joint research, digital training programs, and knowledge transfer initiatives.

The digital divide therefore represents more than a technological challenge. It reflects deeper issues related to infrastructure, skills, organisational culture, and institutional support networks.

4.3 Human capital limitations as a strategic barrier to SME productivity and innovation

Human capital quality is a core determinant of SME competitiveness. The ability of a firm to innovate, adopt technology, deliver quality products, and achieve operational efficiency depends heavily on the skills and competencies of its workforce. In Terengganu, the skills mismatch identified earlier requires deeper interpretation.

Many SMEs operate in traditional sectors such as agriculture, food processing, fisheries, and small scale manufacturing. As these industries begin integrating technology into production and marketing, the demand for digital skills, quality control expertise, analytical thinking, and adaptability increases. Ahmad and Zabri (2021) highlight that SMEs across Malaysia struggle to find employees with these capabilities.

In Terengganu, the challenge is compounded by structural conditions within the education system. Mohamed and Idris (2021) report that graduates frequently lack practical experience and industry aligned competencies. For SMEs that require immediate operational contribution, this gap results in inefficiencies and higher training costs.

Human capital shortages are also influenced by migration patterns. Skilled workers often leave Terengganu to seek better employment opportunities in Kuala Lumpur, Selangor, Johor, or Penang. Henderson et al. (2020) argue that talent concentration in urban centres is a common trend in developing economies and creates long term human capital deficits in rural regions.

Furthermore, SMEs typically underinvest in employee development. Hashim and Abdullah (2019) found that SMEs rarely allocate budgets for structured training. Many business owners fear that trained workers may leave the company for higher salaries, which discourages investment in skills enhancement.

These human capital limitations reduce innovation potential. Rahman and Wahab (2020) observe that firms with weak technical capabilities are slower to adopt new technologies and less likely to engage in product innovation. This reduces competitiveness and prevents SMEs from entering higher value markets or participating in value added supply chains.

Human capital challenges therefore represent a strategic barrier that affects all aspects of SME development. Addressing this issue requires coordinated collaboration between government bodies, vocational institutions, universities, and industry associations in order to improve workforce readiness.

4.4 Institutional and regulatory ecosystem shaping SME development trajectories

The regulatory and institutional environment strongly influences SME performance. Although Malaysia has made progress in improving business friendliness, SMEs in Terengganu still experience challenges due to bureaucratic processes, policy inconsistencies, and fragmented support structures.

Regulatory complexity remains a core issue. The World Bank (2022) reports that high compliance costs and lengthy administrative processes discourage business expansion. For SMEs in Terengganu, especially micro enterprises lacking administrative staff, navigating licensing requirements, taxation rules, and safety regulations consumes significant resources.

Policy inconsistency is another major concern. Abdullah and Kim (2020) note that unpredictable enforcement, unclear guidelines, and overlapping regulations create uncertainty for SMEs. This uncertainty discourages investment, slows decision making, and increases compliance risks.

Institutional fragmentation further complicates the support landscape. Rahman and Ramli (2020) found that SMEs often struggle to identify appropriate support agencies because multiple organisations offer overlapping programs. Examples include SME Corp, MARA, MDEC, TEKUN, and state level economic agencies. Without clear coordination, SMEs may miss opportunities or become overwhelmed by administrative requirements.

Localised support remains insufficient. National programs often adopt uniform designs that do not reflect regional economic structures. Terengganu's economy is shaped

by rural demographics, fisheries, agriculture, and tourism, hence policy interventions must be tailored to these unique characteristics.

Institutional challenges therefore form an ecosystem level barrier. Strengthening SME empowerment will require improved coordination, streamlined processes, clearer communication, and decentralised support mechanisms.

4.5 Market access limitations and competitive pressures affecting SME sustainability

The final major issue concerns market access and competition. SMEs in Terengganu face limitations in expanding to wider markets due to restricted digital presence, limited marketing capabilities, and inadequate exposure to regional and global value chains.

UNCTAD (2021) explains that modern market access depends heavily on online visibility and participation in digital commerce. SMEs without e-commerce platforms or digital marketing strategies cannot reach customers beyond their immediate geographic area. This restricts business growth and increases vulnerability to demand fluctuations within the local market.

Integration into global value chains requires compliance with international standards, logistical competence, and certification readiness. Gereffi (2018) highlights that SMEs need strong technological capabilities in order to access export markets. Many SMEs in Terengganu lack these capabilities due to technological, financial, and institutional constraints.

Competition within domestic markets is also intensifying. Brynjolfsson and McAfee (2019) show that technologically advanced firms achieve superior performance by using data analytics, targeted advertising, and efficient supply chain systems. SMEs in Terengganu that rely on traditional processes are unable to match the efficiency or customer engagement levels of digital competitors.

Tourism related SMEs face additional pressures. Rapid changes in consumer preferences, especially toward digital booking systems and online reviews, require SMEs to adopt digital marketing practices. Without such capabilities, SMEs are overshadowed by firms that use online tourism platforms and globally accessible content.

In summary, market access challenges restrict SME scalability, limit innovation incentives, and reduce resilience. They also influence financial performance and long term viability. These constraints must be addressed in order to integrate SMEs into wider economic networks and increase competitiveness.

5 SUGGESTIONS FOR EMPOWERING SMALL AND MEDIUM ENTERPRISES IN TERENGGANU

The challenges facing SMEs in Terengganu require strategic, multi dimensional interventions that address the interconnected issues of financial accessibility, digital transformation capability, human capital readiness, institutional support, and market expansion. While Malaysia has introduced various national level initiatives to support SME development, regional differences and structural constraints indicate that Terengganu requires a more tailored and context specific approach. The following suggestions are organised into five subtopics that reflect the complexity of SME empowerment and offer integrated strategies grounded in global and Malaysian scholarship.

5.1 Strengthening access to diverse and inclusive financing mechanisms

Addressing financial exclusion must begin with the development of a more inclusive and diversified financing ecosystem that is accessible to SMEs across rural and urban settings. Traditional banking systems rely heavily on collateral based lending models, which disproportionately disadvantage SMEs without tangible assets. Scholars such as Beck and Demirgüç Kunt have repeatedly shown that credit constraints inhibit SME development and reduce innovation activity. Therefore, the first suggestion calls for the adoption of alternative financing mechanisms that complement existing bank based models.

One promising approach is the expansion of microfinance programs that offer small loan amounts with flexible conditions. Microfinance institutions have been highly successful in other developing regions because they rely on relationship based assessments rather than purely collateral based evaluations. In Terengganu, microfinance can serve micro enterprises in agriculture, fisheries, handicrafts, food processing, and

home based industries. These sectors dominate the state economy but often operate informally and lack traditional documentation.

Another important recommendation involves strengthening equity based financing channels such as venture capital, angel investment, and impact investment. Wonglimpiyarat reports that Malaysia's venture capital landscape is concentrated mainly in urban technology hubs, which creates geographic inequality. Establishing state level venture funds in Terengganu that prioritise innovation in tourism, halal food production, agro technology, and digital services could stimulate entrepreneurial activity in high potential sectors. Local universities can also be encouraged to participate in early stage investment programs through innovation funds that support student and graduate enterprises.

Financial literacy development is equally critical. As noted in global studies by Lusardi and Mitchell, entrepreneurs with stronger financial skills are more capable of preparing loan applications, managing cash flow, and making informed investment decisions. Therefore, structured financial literacy programs should be introduced at state level through agencies such as SME Corp and MARA. These programs must focus on practical topics including budgeting, digital financial tools, credit management, and investment planning. Training should be delivered in user friendly formats that accommodate adult learners and rural business owners.

Collectively, these expanded financing mechanisms can reduce financial exclusion, stimulate technological investment, and improve the growth trajectory of SMEs in Terengganu.

5.2 Enhancing digital transformation capacity through infrastructure, training, and innovation networks

Digital readiness must be significantly strengthened to ensure that SMEs in Terengganu can compete in the rapidly evolving global economy. Digital transformation requires not only infrastructure improvements but also capacity building, cultural change within enterprises, and the development of supportive innovation ecosystems.

The state should prioritise the expansion of high speed internet connectivity, especially in rural districts where SMEs experience limited digital access. Studies by the OECD demonstrate that broadband availability directly influences the rate of digital

adoption among SMEs. Ensuring consistent internet coverage across Terengganu would enable SMEs to adopt e commerce, cloud systems, and automated tools more effectively. Public private partnerships between the state and telecommunications providers can accelerate these infrastructure upgrades.

Digital skills training must also be central to the transformation agenda. Research by Li et al. shows that many SMEs fear the complexity of digital tools due to limited technological literacy. Targeted training programs should therefore be introduced to teach SME owners and employees how to use basic digital systems including e commerce platforms, digital marketing tools, accounting software, and customer relationship management systems. These programs must be practical, accessible, and tailored to the needs of small rural enterprises.

Innovation networks represent another crucial strategy. Ferreira and Teixeira highlight that SMEs connected to universities, research institutions, and technology providers demonstrate significantly higher innovation output. In Terengganu, Universiti Sultan Zainal Abidin, Universiti Malaysia Terengganu, and other institutions can play a central role by offering technology transfer programs, digital coaching, and collaborative research opportunities. Local government should facilitate more structured partnerships between SMEs and academic institutions, with a focus on developing applied solutions for agriculture, tourism, marine industries, and halal production.

Digital transformation is not solely a technological effort. It requires a shift in organisational culture. SMEs should be encouraged to adopt experimental mindsets that value innovation, continuous learning, and data driven decision making. State agencies can support this shift through digital audit programs that assess SME readiness and provide tailored recommendations for digital improvement. Incentives such as grants, tax reductions, or equipment support can encourage digital adoption among hesitant enterprises.

With improved digital capacity, SMEs in Terengganu will be better positioned to expand market reach, improve productivity, automate processes, and enhance competitive resilience.

5.3 Developing human capital through targeted skills training, talent retention strategies, and industry education alignment

Human capital represents one of the most decisive factors influencing SME productivity and innovation. Addressing the skills mismatch in Terengganu requires a comprehensive human capital development agenda that includes workforce upskilling, talent retention strategies, and closer alignment between educational institutions and industry needs.

The first component involves strengthening vocational and technical training. Studies by Ahmad and Zabri indicate that SMEs struggle to recruit employees with appropriate technological and managerial skills. To close this gap, state level vocational institutions should be mandated to incorporate industry specific modules related to digital literacy, automation systems, food safety management, tourism management, supply chain operations, and quality control. Training should emphasize hands on learning, problem solving, and real world application.

Apprenticeship programs represent another effective solution. Mohamed and Idris highlight the lack of practical experience among Malaysian graduates. By establishing structured apprenticeship programs involving SMEs, higher education institutions can produce graduates equipped with market ready skills. Apprenticeships can also act as recruitment pipelines for SMEs, reducing hiring uncertainties and improving talent quality.

Talent retention is equally important. Many skilled workers leave Terengganu due to limited opportunities for career advancement or professional growth. SMEs should be encouraged to develop internal career pathways that reward performance, provide mentorship, and encourage skill development. State agencies can support SMEs by offering wage subsidies for skilled workers, grants for employee training, and incentives for firms that retain local talent.

The education system must also be more responsive to industry needs. Tertiary institutions in Terengganu should establish advisory councils that include SME representatives who can guide curriculum updates. This ensures that training content reflects current industry demands. Interdisciplinary programs that combine business, technology, and engineering competencies can also produce graduates who are better prepared to support SME innovation.

Finally, continuous learning must be embedded in SME culture. SMEs need to view employee training as an investment rather than an expense. Government agencies can encourage this mindset by offering access to low cost training programs and by recognising SMEs that excel in workforce development.

Strengthening human capital will enable SMEs in Terengganu to adopt new technologies, improve productivity, enhance service quality, and innovate more effectively.

5.4 Improving institutional and regulatory ecosystems through simplification, integration, and localisation

The regulatory and institutional environment shapes the strategic choices, operational costs, and development pathways of SMEs. The analysis of issues showed that SMEs in Terengganu experience regulatory burdens and institutional fragmentation. Addressing these constraints requires reforms that simplify processes, integrate support services, and localise institutional arrangements.

The first recommendation concerns regulatory simplification. Time consuming licensing procedures, inconsistent enforcement, and unclear guidelines impose significant burdens on SMEs. The state government should introduce a centralised business service centre that consolidates licensing, registration, tax guidance, safety compliance information, and advisory services. This one stop centre would streamline regulatory interactions and reduce processing delays. The World Bank has repeatedly demonstrated that regulatory simplification significantly improves SME entry rates and business confidence.

Second, institutional coordination must be strengthened. Agencies such as SME Corp, TEKUN, MARA, MDEC, and state economic offices often operate independently. This leads to duplication of programs and confusion among SMEs. Establishing an integrated SME coordination council in Terengganu can ensure that support programs are aligned, complementary, and communicated clearly to business owners. Such a council can also provide regular feedback to national policymakers regarding regional challenges.

Third, support mechanisms should be localised. National SME policies often adopt a one size fits all model that does not adequately represent Terengganu's economic structure. State level strategies should therefore focus on priority sectors such as halal

food production, eco tourism, marine based industries, and agro processing. Tailored support programs, including targeted training, financing schemes, and innovation grants, can address the unique needs of these sectors.

Fourth, transparency and policy certainty must be strengthened. SMEs require predictable regulatory environments to make investment decisions. The government should ensure that policy changes are communicated clearly and implemented consistently. Clear regulatory roadmaps can reduce uncertainty and encourage SMEs to undertake expansion and innovation projects.

Strengthening the institutional and regulatory ecosystems will create a more stable, predictable, and supportive environment for SMEs in Terengganu to grow and innovate.

5.5 Expanding market access through digital marketing, export readiness, and value chain integration

Improving market access is essential for the long term sustainability and competitiveness of SMEs. Many SMEs in Terengganu rely heavily on local markets and face difficulties penetrating larger regional or international markets. This suggestion focuses on strategies that expand market opportunities, enhance competitiveness, and integrate SMEs into broader economic networks.

The first strategy involves strengthening digital marketing capabilities. As noted by UNCTAD, modern consumers increasingly rely on online platforms for purchasing decisions. SMEs in Terengganu should learn how to use social media, e commerce platforms, search engine optimisation techniques, and online advertising tools. Training programs offered by state agencies can support SMEs in building online visibility and brand identity.

The second strategy emphasises export readiness. Gereffi highlights that participation in global value chains requires compliance with international standards and production consistency. SMEs in Terengganu, particularly those in halal food production, handicrafts, and agro based industries, have strong potential to access regional and Middle Eastern markets. Export development programs should therefore focus on training SMEs to meet certification requirements, understand export regulations, and engage in international trade fairs.

Third, SMEs should be integrated into domestic and regional supply chains. Larger companies in Malaysia and neighbouring countries require reliable suppliers of raw materials, semi processed goods, support services, and niche products. State agencies can facilitate supply chain matching programs that connect SMEs with anchor firms in tourism, manufacturing, logistics, and food production. Such integration increases business stability, encourages innovation, and opens pathways for long term growth.

Fourth, tourism related SMEs require targeted market strategies. Terengganu's tourism industry has significant potential, but SMEs must have the capability to market products and services to both domestic and international tourists. This includes adopting digital booking systems, enhancing hospitality service quality, and developing tourism packages that highlight local culture.

By expanding market access, SMEs in Terengganu can diversify revenue streams, reduce dependence on small local markets, and increase competitiveness in a rapidly changing economic environment.

6 CONCLUSION

The empowerment of Small and Medium Enterprises in Terengganu represents a strategic imperative for achieving long term and inclusive economic development. SMEs in the state contribute significantly to employment, income generation, and sectoral diversification, yet their ability to fulfil a transformative economic role remains uneven due to persistent constraints in financing, digital readiness, human capital development, regulatory effectiveness, and market accessibility. The findings of this study emphasise that these challenges are deeply interconnected and must therefore be addressed through integrated and contextually tailored strategies that respond to the unique socio economic structure of Terengganu. Strengthening SMEs is not merely a matter of expanding financial assistance or offering isolated training programs. It requires coordinated efforts across institutional, technological, educational, and market systems to create an environment that consistently supports innovation, competitiveness, and resilience.

A central conclusion emerging from the analysis is that financial exclusion remains a foundational barrier that restricts SME growth trajectories. Without accessible and diversified financing, SMEs struggle to invest in modern equipment, digital technologies, workforce development, and market expansion. This limitation reinforces

a cycle of low productivity and inhibited innovation. At the same time, the digital capability divide continues to widen the gap between SMEs that are able to participate in the modern digital economy and those that remain dependent on traditional business models. Limited broadband infrastructure, insufficient digital literacy, and weak innovation networks constrain the opportunities for SMEs to scale their operations, access wider markets, and adopt data driven decision making. Addressing financial accessibility and digital transformation together is therefore essential for elevating SMEs to higher value activities.

Human capital emerges as another decisive determinant of SME competitiveness. The analysis demonstrates that skills mismatches, limited exposure to applied learning, insufficient training opportunities, and outmigration of talent weaken the innovative capacity and operational efficiency of SMEs. Strengthening human capital development requires the alignment of educational institutions with industry needs, the expansion of vocational pathways, and active collaboration between employers and training providers. These actions will ensure that SMEs have access to a workforce capable of supporting technological adoption, quality improvement, and business expansion.

Institutional and regulatory conditions also strongly influence the success of SMEs in Terengganu. Complex compliance procedures, overlapping support programs, and inconsistent enforcement create uncertainty and administrative burden for small enterprises. The study highlights that regulatory simplification, integrated institutional coordination, and decentralised support structures are essential for creating a predictable and business friendly environment. When regulatory frameworks are transparent and streamlined, SMEs are more willing to invest, innovate, and pursue new opportunities.

Finally, improving market access remains critical for strengthening SME resilience and sustainability. Many SMEs in Terengganu continue to operate within narrow local markets, limiting their potential for growth and exposing them to market fluctuations. Digital marketing capabilities, export readiness, and participation in domestic and regional value chains are necessary for expanding market reach. By developing strategic linkages with larger firms, tourism networks, agro food chains, and international markets, SMEs can diversify revenue streams, increase competitiveness, and contribute more significantly to economic diversification.

Taken together, these findings demonstrate that empowering SMEs in Terengganu requires a holistic policy approach that integrates financial innovation, digital

transformation, human capital development, regulatory reform, and market expansion. Such an integrated framework is critical for enabling SMEs to move beyond survival based models toward sustainable growth and innovation oriented operations. The evidence presented in this study reaffirms that SMEs possess tremendous potential to drive Terengganu's transition into a more diversified, technologically enabled, and globally competitive economy. Realising this potential will depend on sustained commitment from policymakers, industry stakeholders, educational institutions, and the SMEs themselves. Through coordinated action and long term strategic planning, Terengganu can strengthen its SME ecosystem and secure a more resilient and prosperous economic future.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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