Green Entrepreneurship Challenges and Business Growth among the Selected Sectors

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ABSTRACT

Green entrepreneurship plays a vital role in promoting sustainable development in Malaysia; however, entrepreneurs encounter barriers that constrain its growth. This study examines the impact of regulatory, financial, market, technological, and infrastructure barriers, as well as knowledge management barriers, on business growth across renewable energy, sustainable agriculture, and eco-friendly product sectors. Using a quantitative approach, data from 376 entrepreneurs were analysed through ANOVA and multiple regression. Results show significant sectoral differences for regulatory ($p = 0.035$) and financial barriers ($p = 0.033$). The model explained 60.7% of the variance in business growth ($R^2 = 0.607$). All barriers significantly affected growth, with financial ($\beta = 0.443$) and regulatory ($\beta = 0.188$) showing the strongest influence, while knowledge management had a negative effect ($\beta = –0.141$). The findings imply an urgent need for streamlined regulations, targeted financial mechanisms, enhanced technological infrastructure, and stronger knowledge management systems to support innovation, competitiveness, and long-term sustainability in Malaysia's green entrepreneurship ecosystem.

Keywords: Green Entrepreneurship, Challenges, Business Growth

INTRODUCTION

Entrepreneurship plays a vital role in economic development by introducing new goods, services, processes, and business models. At its core, it involves innovation, strategic planning, and the willingness to take risks. Entrepreneurs identify market gaps, develop solutions, and mobilize limited resources to create value. Through this process, they not only build businesses but also contribute to social progress and national competitiveness.

In recent decades, the concept of green entrepreneurship has gained global traction as environmental concerns intensify. The term originated from Berle's influential book The Green Entrepreneur (1991), which emphasized environmentally responsible business opportunities in areas such as recycling, renewable energy, and conservation. Berle's statement, "One man's garbage is another man's treasure," encapsulates the mindset behind green entrepreneurship turning environmental challenges into profitable and sustainable ventures. Later scholars, including Allen and Malin (2008), highlight that green entrepreneurs embrace environmental values as part of their identity, viewing sustainability not only as a moral obligation but as a source of competitive advantage.

Green entrepreneurs are individuals or teams who integrate ecological and social responsibility into their business models. They aim to address environmental problems while remaining commercially viable. Well-

known figures such as Yvon Chouinard of Patagonia demonstrate how sustainability-driven business models can thrive, proving that environmental activism and profitability can coexist (Green, 2021). The global rise in demand for eco-friendly products, combined with stronger environmental regulations and growing awareness of sustainability issues, has further accelerated this shift.

The growth of green entrepreneurship has been particularly notable in regions such as the United States, particularly in California, and across Europe, including Germany and the Nordic countries. International bodies, such as the United Nations, have reinforced this movement through the Sustainable Development Goals (SDGs), which promote environmentally responsible economic growth. Academic research has also expanded, exploring green entrepreneurship through theoretical models, policy analysis, case studies, and impact assessments. Hall et al. (2010) emphasizes the environmental and economic contributions of green ventures, while Schaper (2002) highlights the incentives and barriers eco-entrepreneurs encounter.

In Malaysia, green entrepreneurship is increasingly relevant as small and medium-sized enterprises (SMEs) play a major role in national economic growth. SMEs significantly contribute to the country's GDP, positioning them as essential actors in Malaysia's sustainability agenda. However, despite rising awareness, the transition toward green entrepreneurship remains challenging. Studies indicate that Malaysian green entrepreneurs often face regulatory burdens, financial constraints, technological limitations, and knowledge and infrastructure gaps (Whah & Merdikawati, 2020). These obstacles reduce their ability to innovate, differentiate products, or secure funding for green initiatives.

Moreover, challenges vary by sector. Demirel et al. (2021) demonstrate that renewable energy businesses struggle with high capital requirements and complex regulations; sustainable agriculture ventures face challenges related to consumer acceptance; and eco-friendly product manufacturers encounter difficulties with supply chain management and market differentiation. Understanding these sector-specific barriers is crucial for developing targeted support mechanisms.

Another key gap in current research is the lack of holistic analysis. Existing studies often examine barriers individually, overlooking how regulatory, financial, and technical challenges interact to influence long-term business growth (York & Avery). Additionally, global disruptions such as climate change and the COVID-19 pandemic highlight the need for resilient and adaptable green business models (Shepherd & Williams, 2022).

Overall, while green entrepreneurship holds immense potential for driving Malaysia's sustainability transition, significant barriers persist. Addressing these gaps through comprehensive research and supportive policy frameworks is crucial to empowering SMEs to adopt sustainable practices and contribute effectively to both environmental and economic well-being.

LITERATURE REVIEW

Green Entrepreneurship

Green entrepreneurship has gained significant attention as societies increasingly recognize the urgent need to address environmental degradation and promote sustainable development. Berle (1991) introduced the concept by describing green entrepreneurship as business activities that generate economic value while protecting the environment, often transforming waste into productive resources. This perspective reflects the central idea that environmental challenges can serve as opportunities for innovation. Green entrepreneurs integrate ecological values into their business identity, regarding sustainability not only as an ethical responsibility but also as a source of competitive advantage (Allen & Malin, 2008).

The growing relevance of green entrepreneurship is largely driven by global concerns related to climate change, resource depletion, and the long-term social impacts of environmental deterioration. International organizations such as the United Nations have promoted sustainability agendas that encourage firms to adopt environmentally responsible practices. With increasing pressure from consumers, investors, and regulators, businesses are expected to operate more sustainably. Green entrepreneurship provides a strategic pathway for firms to meet these expectations while enhancing competitiveness through cost savings, innovation, and market differentiation.

Schaltegger et al. (2019) emphasise that green entrepreneurship plays a crucial role in linking economic progress with environmental preservation, thereby supporting sustainable development goals.

However, the degree of acceptance and implementation of green entrepreneurship varies across regions due to differences in regulations, cultural values, and consumer awareness. Countries with strong environmental policies and a societal commitment to sustainability, such as Germany and the Scandinavian nations, exhibit higher levels of green entrepreneurial activity. Regions with weaker regulations or limited public awareness often face barriers related to financing, market acceptance, and consumer understanding. Studies by Arshad, M. Z., (2020) highlight the importance of government support and consumer education, while Schaltegger and Wagner (2019) stress the need for integrated sustainability strategies across industries to enhance green entrepreneurial efforts.

Regulatory

Regulatory barriers pose a significant constraint to the growth and sustainability of green entrepreneurship, particularly in emerging economies such as Malaysia. Although environmental regulations are intended to preserve natural resources and ensure responsible business practices, they often impose complex administrative and procedural burdens on entrepreneurs. In the Malaysian context, green businesses must navigate multiple layers of regulatory requirements, including obtaining environmental permits, complying with audits, and obtaining sustainability certifications. These procedures frequently demand considerable time, financial resources, and specialized knowledge, placing disproportionate pressure on small and medium-sized green enterprises. Such challenges can discourage entrepreneurial activity and limit the industry's ability to innovate or scale sustainably (Vasilescu et al., 2023).

A notable issue within the regulatory landscape is the inconsistency of policy enforcement and the lack of clarity in regulatory guidelines. Entrepreneurs commonly report uncertainty regarding environmental compliance procedures, overlapping responsibilities among regulatory agencies, and a lack of guidance on sustainability standards. This regulatory ambiguity increases operational risk and contributes to inefficiencies in planning and project implementation. Vasilescu et al. (2023) highlight that complex and unclear regulations significantly hinder the advancement of green entrepreneurship, as businesses may avoid pursuing environmentally focused initiatives due to concerns over regulatory unpredictability.

Evidence from other developing nations mirrors the Malaysian experience. For example, research by Purva Mimaansa (2020) reveals that Indian green entrepreneurs frequently encounter bureaucratic delays, stringent environmental approval processes, and unclear legal requirements. These barriers not only delay business operations but also reduce the attractiveness of green entrepreneurship as a viable economic activity. The similarities across national contexts suggest that regulatory challenges are not isolated but represent a broader systemic issue affecting green sectors globally.

Despite these constraints, effective regulatory engagement remains essential for green entrepreneurial success. Entrepreneurs who proactively engage with regulatory bodies, invest in legal and compliance expertise, and participate in industry associations are better positioned to navigate these challenges. Collaboration between government agencies, industry groups, and entrepreneurs can also contribute to more coherent and streamlined regulatory processes. Enhanced communication between regulators and businesses may help reduce ambiguity, strengthen compliance, and foster a more conducive environment for sustainable enterprise development.

H1: Regulatory challenges significantly impact the growth and sustainability of green entrepreneurship businesses in Malaysia.

Financial

Access to financing is a critical determinant of green entrepreneurship development in Malaysia. Green ventures often require substantial initial investments for renewable energy infrastructure, sustainable agricultural practices, or eco-friendly product development. Despite growing global interest in sustainable investments, traditional financiers frequently perceive such initiatives as high-risk due to limited familiarity with green

business models and uncertainties in market demand. This perception constrains green entrepreneurs' ability to access necessary capital, limiting their growth, innovation, and competitiveness (Alvarez & Lowell, 2001).

The reluctance of traditional lenders is compounded by concerns over the long-term sustainability of environmentally friendly technologies and potential regulatory shifts. Profitability uncertainty, coupled with the absence of standardized evaluation metrics for green ventures, further heightens perceived risk. Alvarez and Lowell (2001) emphasize that conventional financing mechanisms are often inadequate, highlighting the need for alternative structures specifically designed to address the challenges of green entrepreneurship.

Government interventions have emerged as an effective strategy to mitigate these financial constraints. Brnjas et al. (2019) demonstrate that grants, subsidies, and low-interest loans can facilitate access to capital, enabling green enterprises to pursue growth and innovation. Beyond immediate financial support, these initiatives promote resource efficiency, waste reduction, and sustainable business practices, contributing to the broader transition toward a circular economy.

In sum, financing remains a substantial barrier for green entrepreneurs in Malaysia. Overcoming this challenge requires coordinated efforts from public and private stakeholders, including innovative financial structures and supportive policy frameworks. By addressing these constraints, Malaysia can unlock the potential of its green sector, fostering sustainable economic development and long-term environmental benefits.

H2: Financial constraints significantly impact the growth and sustainability of green entrepreneurship businesses in Malaysia.

Market Dynamics

Green entrepreneurs face significant challenges in penetrating mainstream markets and encouraging consumers to prioritize sustainability. In Malaysia, as in many other countries, consumer behavior is strongly influenced by price sensitivity, convenience, and cultural norms. Chang (2011) highlights that, despite growing environmental awareness, many consumers continue to prioritize affordability and ease of access when making purchasing decisions. This creates a competitive disadvantage for green entrepreneurs, who must contend with conventional products that are often perceived as more convenient or less expensive.

Consumer awareness and market education are critical in driving demand for green products. Hannah (2012) emphasizes that, although interest in sustainability is increasing among Malaysian consumers, a gap remains in understanding the tangible benefits of green products and services. Effective marketing strategies that clearly communicate environmental advantages, product quality, and value propositions are essential for differentiating green offerings from conventional alternatives and building consumer trust.

To navigate these challenges, green entrepreneurs must develop strategies that align with market dynamics while promoting sustainability. This includes offering competitive pricing, ensuring convenient access to products, and emphasizing tangible sustainability benefits such as cost savings, health improvements, or energy efficiency. Strategic partnerships with retailers, e-commerce platforms, and value-aligned influences can further expand market reach and enhance visibility for green products.

In conclusion, successful market penetration in Malaysia requires a comprehensive and adaptive approach that addresses consumer preferences, educates the market on the benefits of green products, and strategically positions offerings within competitive marketplaces. Green entrepreneurs must adopt agile, innovative, and proactive marketing strategies to stimulate demand and drive sustainable consumption in Malaysia's evolving economic and cultural context.

H3: Market dynamics significantly impact the growth and sustainability of green entrepreneurship businesses in Malaysia.

Technology and Infrastructure

Developing and implementing green technologies presents significant challenges for entrepreneurs in Malaysia

due to the specialized technical expertise required and the rapid evolution of green innovations. Green ventures must continuously invest in research and development (R&D) to stay abreast of advancements in waste management, renewable energy, and sustainable agricultural methods. However, such R&D activities require substantial financial resources and a dedicated focus, which can be challenging for startups and small enterprises with limited capital (Fulvia et al., 2011).

Scaling green technologies to commercial viability adds further complexity. Entrepreneurs face challenges related to production processes, supply chain management, and market acceptance. Fulvia et al. (2011) highlights that the successful deployment of sustainable technologies, such as renewable energy systems and advanced waste management solutions, requires not only technical expertise but also adequate technological infrastructure. Without access to these resources, green entrepreneurs may struggle to implement effective solutions or achieve operational efficiency.

Another critical barrier is the limited availability of skilled labor and technology infrastructure in Malaysia. The green sector is still emerging, and there is a shortage of professionals with expertise in green technologies. This talent gap, combined with the scarcity of facilities such as renewable energy installations or advanced waste management systems, can hinder both adoption and scalability of green innovations. Entrepreneurs must navigate these structural limitations to develop and implement sustainable solutions effectively (John & Stephanie, 2008).

Continuous innovation is therefore essential for overcoming technical challenges in the green sector. By fostering a culture of innovation and strategically investing in research and development, green entrepreneurs can develop products and services that meet market demands while minimizing environmental impacts. Collaborations with research institutions, industry partners, and government agencies can further facilitate knowledge transfer, provide access to technical expertise, and accelerate the adoption of green technologies, enabling sustainable growth in Malaysia’s green sector (John & Stephanie, 2008).

H4: Technology and infrastructure significantly impact the growth and sustainability of Malaysia's green entrepreneurship businesses.

Knowledge Management

Knowledge management is a critical factor in the success of green entrepreneurship, as it enables entrepreneurs to effectively utilize information, experience, and best practices to implement sustainable business operations. Green entrepreneurs often face challenges in accessing relevant environmental knowledge, which can hinder innovation and reduce competitive advantage (Hockerts, 2017). The ability to gather, share, and apply information efficiently is therefore essential for ensuring that sustainable practices are effectively integrated into business processes.

The rapid pace of technological advancement in sustainability further underscores the need for ongoing knowledge acquisition and adaptation. Green entrepreneurs must actively update their knowledge base through research and development (R&D), participation in industry conferences, and collaboration with environmental organizations. Schaltegger and Wagner (2019) highlight that the absence of formal knowledge management systems often results in critical insights and experiences being poorly documented or shared within organizations, limiting the effectiveness of sustainable business practices.

Effective knowledge management also enables green entrepreneurs to make informed strategic decisions and respond proactively to market and regulatory changes. By understanding consumer preferences, emerging trends, and evolving environmental regulations, green enterprises can optimize operational processes and identify new opportunities for sustainable innovation. This capability is especially important in dynamic markets where both consumer expectations and technological standards are continually evolving.

Investing in robust knowledge management practices strengthens the overall resilience and sustainability of green organizations. By systematically capturing, disseminating, and applying knowledge, green entrepreneurs can enhance their innovative capacity, improve operational efficiency, and build sustainable competitive

advantages. Ultimately, knowledge management serves as a foundational mechanism that supports the growth, adaptability, and long-term success of green ventures in Malaysia and beyond (Hockerts, 2017; Schaltegger & Wagner, 2019).

H5: Knowledge management barriers significantly impact the growth and sustainability of green entrepreneurship businesses in Malaysia.

Based on the discussions above, a conceptual framework is developed, as shown in Figure 1.

Conceptual Framework

This study examines the impact of green entrepreneurship barriers on the growth and sustainability of SMEs' businesses in Malaysia. The independent variables (IVs) consist of five dimensions of barriers: regulatory, financial, market, technology, and infrastructure, as well as knowledge management. The dependent variable (DV) is the impact on the growth and sustainability of their businesses.

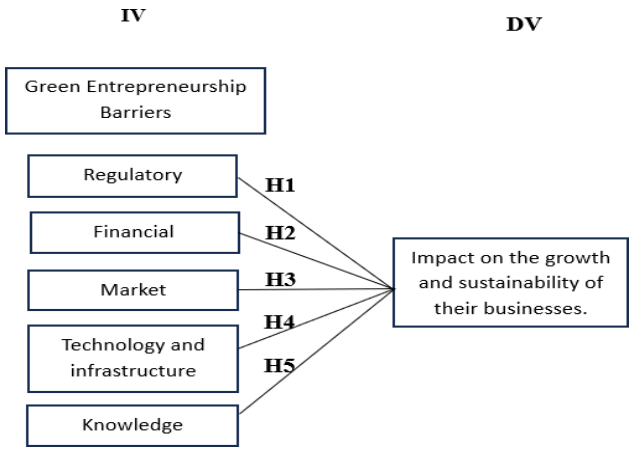

Fig. 1. Conceptual framework

RESEARCH METHODOLOGY

Methodology

This study employed a quantitative research design to investigate the challenges faced by green entrepreneurs in Malaysia, specifically examining regulatory, financial, market, technological, infrastructural, and knowledge management barriers. A positivist philosophy with an objectivist epistemology guided the research, ensuring that findings remained unbiased and independent of the researcher's interpretation. A deductive approach was employed to test hypotheses regarding the relationships between identified barriers and the growth and sustainability of green enterprises.

Data were collected using a structured questionnaire distributed to Malaysian entrepreneurs who are engaged in or interested in green entrepreneurship. The questionnaire comprised three sections: (A) demographic profile, (B) factors influencing green entrepreneurship, and (C) assessment of perceived challenges, with Section C measured on a five-point Likert scale. Primary data were collected from a stratified random sample of 384 entrepreneurs across three sectors: renewable energy, sustainable agriculture, and eco-friendly products. Secondary data from literature, reports, and previous studies supplemented the findings to provide context for the research.

Data analysis was conducted using SPSS, incorporating descriptive statistics to identify prevalent challenges, ANOVA to compare differences across sectors, and multiple regression to assess relationships between barriers and business growth. Reliability analysis was performed to ensure internal consistency of measurement scales, while data cleaning and transformation ensured accuracy and readiness for statistical evaluation. A pilot study with 30 respondents validated the questionnaire and confirmed the reliability of the measurement model prior to full-scale data collection.

The study adopted a cross-sectional time horizon, collecting data at a single point to provide a snapshot of current challenges in Malaysia's green entrepreneurship landscape. Stratified random sampling ensured representation across geographic regions and economic sectors, enabling generalizable and statistically reliable insights. This methodology provided a robust framework for identifying barriers, evaluating their impact, and informing strategies to promote sustainable growth in the green sector.

A total of 374 respondents took part in this study, with the sample size determined using the Krejcie and Morgan (1970) method for calculating the population size. Data were collected through online surveys targeting entrepreneurs in the renewable energy sector, the eco-friendly products sector, and the sustainable agriculture sector in Malaysia, resulting in a 100% response rate. The demographic analysis provides an overview of the respondents' characteristics, including their gender, age, business operation period, and business sector.

This study consisted of 376 respondents, with a slightly higher proportion of males (55.1%) than females (44.9%), indicating a relatively balanced gender distribution. Most respondents were young to middle-aged adults, primarily between 26 and 34 years old (35.6%), followed by those between 19 and 25 years old (26.9%) and 35 and 44 years old (26.6%). A small proportion were 45 years and above (10.9%). Regarding business experience, the majority operated enterprises that had been established for 1–6 years, with 35.6% in business for 4–6 years and 30.9% for 1–3 years, suggesting that most participants manage relatively young to moderately established firms. The respondents were engaged in environmentally conscious sectors, with sustainable agriculture being the most represented (47.1%), followed by renewable energy (26.9%) and eco-friendly products (26.1%).

RESULT

Reliability Analysis

A reliability analysis was conducted during the pilot study to assess the internal consistency of the measurement items for each variable using Cronbach's Alpha. The results, summarized in Table II, indicate that all variables exceed the acceptable threshold of 0.7, demonstrating good to excellent reliability. Specifically, regulatory challenges had a Cronbach's Alpha of 0.741, financial challenges 0.803, market challenges 0.763, technology and infrastructure challenges 0.798, and knowledge management challenges 0.746. Each of these variables was measured using five items, reflecting consistent and reliable measurement.

The dependent variable, business growth, exhibited the highest internal consistency, with a Cronbach's Alpha of 0.888 across 10 items. These findings confirm that the measurement instruments are reliable and consistent, providing confidence in the precision of data collection. The high reliability of these scales establishes a strong foundation for further research in the main study.

Table I Summary of reliability analysis of independent and dependent variables

Variables	Cronbach Alpha	No of Items
Regulatory challenges	0.741	5
Financial challenges	0.803	5
Market challenges	0.763	5
Technology and infrastructure challenges	0.798	5
Knowledge management challenges	0.746	5
Business growth	0.888	10

ANOVA Analysis

In this study context, ANOVA can be used to determine the difficulties faced by various green entrepreneurship sectors, such as renewable energy, sustainable agriculture, and eco-friendly products. This would enable understanding whether specific limitations, such as budgetary constraints, regulatory hurdles, or technological challenges, differ considerably among various sectors. By doing ANOVA, the researcher can test the hypothesis that the problems faced by green entrepreneurs in these sectors are diverse, thereby offering Significant Insights For Sector-Specific Strategies.

Table II Multiple Comparison (Anova) Analysis

	Significant value		
Variable	Renewable energy	Eco-friendly product	Sustainable agriculture
Regulatory	0.035	0.21	0.035
Financial	0.033	0.033	0.304
Market	0.242	0.23	0.242
Technology and infrastructure	0.859	0.859	0.237
Knowledge management	0.067	0.373	0.765

This table presents the results of the ANOVA multiple comparison analysis across three business sectors: renewable energy, eco-friendly products, and sustainable agriculture. The independent variables examined include regulatory, financial, market, technological, and infrastructural aspects, as well as knowledge management challenges.

The analysis reveals that regulatory challenges differ significantly across sectors, with significant values of 0.035 for renewable energy and sustainable agriculture, indicating sectoral differences in how regulatory issues are experienced. Financial challenges also exhibit significant differences in the renewable energy (0.033) and eco-friendly product sectors (0.033), whereas the sustainable agriculture sector (0.304) does not show significant differences.

No significant differences were observed for market challenges across any of the sectors, with p-values exceeding 0.05 (0.242–0.242). Similarly, technology and infrastructure challenges were not significantly different for renewable energy (0.859) and eco-friendly products (0.859), though sustainable agriculture showed a lower value (0.237), which remains above the standard significance threshold. Finally, knowledge management challenges did not show significant differences across sectors, with p-values ranging from 0.067 to 0.765.

Overall, the ANOVA results suggest that while regulatory and financial challenges vary significantly between certain sectors, other challenges, including market, technology, and knowledge management, are perceived relatively similarly across the selected green business sectors. These findings offer insight into sector-specific barriers that affect green entrepreneurship and may inform targeted strategies for business growth and innovation adoption.

Multiple Regression Analysis

By determining the association between the important variables in this study, multiple regression analysis accomplishes its goal. This multiple regression technique is also used to determine a straight line that illustrates the relationship between the independent variables and the dependent variable in this study.

Table III Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.779	0.607	0.602	0.55768	1.782

The table indicates that the R-squared value of 0.607 suggests that approximately 60.7% of the variance in business growth is explained by the combined effect of the independent variables. The adjusted R-squared value of 0.602 accounts for the number of predictors in the model and confirms that the model provides a good fit to the data. The standard error of the estimate (0.55768) indicates the average distance that the observed values fall from the regression line. Finally, the Durbin-Watson value of 1.782 is close to 2, indicating that There Is No Significant Autocorrelation In The Residuals, And The Assumption Of Independence Is Reasonably Met.

Table IV Anova

Model	Source	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	177.842	5	35.568	114.365	<0.001
	Residual	115.073	370	0.311		
	Total	292.915	375			

The ANOVA results indicate that the regression model is statistically significant in predicting business growth based on the independent variables. The F-value of 114.365 with a p-value < 0.001 demonstrates that the overall model explains a significant portion of the variance in business growth. Specifically, the regression sum of squares is 177.842, while the residual sum of squares is 115.073, resulting in a total sum of squares of 292.915. This confirms that the model provides a strong fit and that the independent variables collectively have a significant effect on business growth.

Table V Coefficients

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	0.604	0.164	–	3.675	<0.001
Regulatory	0.209	0.063	0.188	3.321	<0.001
Financial	0.419	0.048	0.443	8.81	<0.001
Market	0.168	0.058	0.164	2.893	0.004
Technology & Infrastructure	0.187	0.056	0.183	3.358	<0.001
Knowledge Management	-0.14	0.047	-0.141	-2.999	0.003

Based on the results, the multiple regression analysis indicates that regulatory, financial, market, technology, infrastructure, and knowledge management challenges significantly influence business growth. Regulatory challenges have a positive impact on growth ($B = 0.209$, $\beta = 0.188$, $p < 0.001$), suggesting that firms that effectively manage regulatory requirements tend to experience growth. Financial challenges have the strongest positive impact ($B = 0.419$, $\beta = 0.443$, $p < 0.001$), highlighting the importance of financial resources and management. Market challenges ($B = 0.168$, $\beta = 0.164$, $p = 0.004$) and technology and infrastructure challenges ($B = 0.187$, $\beta = 0.183$, $p < 0.001$) also positively contribute to growth. Conversely, knowledge management challenges have a negative impact on growth ($B = -0.140$, $\beta = -0.141$, $p = 0.003$), suggesting that gaps in

knowledge management can hinder business performance.

Table VI Hypothesis

Hypothesis	p-value	Decision
H1: Regulatory challenges significantly impact Malaysia's growth and sustainability of green entrepreneurship businesses.	0.001	Support
H2: Financial challenges significantly impact Malaysia's growth and sustainability of green entrepreneurship businesses.	0.001	Support
H3: Market challenges significantly impact Malaysia's growth and sustainability of green entrepreneurship businesses.	0.004	Support
H4: Technology and infrastructure challenges significantly impact Malaysia's growth and sustainability of green entrepreneurship businesses.	0.001	Support
H5: Knowledge management challenges significantly impact Malaysia's growth and sustainability of green entrepreneurship businesses.	0.003	Support

DISCUSSION

This study identified regulatory, financial, market, technological, and infrastructure barriers, as well as knowledge management challenges, as the primary obstacles to green entrepreneurship in Malaysia. Regulatory challenges emerged as the most significant obstacle, reflecting complex, inconsistent, or outdated frameworks that slow down licensing, compliance, and operational processes. Financial constraints were the second most pressing challenge, as green businesses, particularly SMEs, struggle to secure funding for sustainable infrastructure, advanced technologies, and innovative operations. Technology and infrastructure barriers further compounded these difficulties by limiting access to cost-effective, state-of-the-art solutions necessary for sustainable production and operational efficiency. Knowledge management gaps also negatively impacted business growth, as entrepreneurs often lack access to critical information, training, and expertise needed to innovate and remain competitive. Although market challenges were comparatively less significant, low consumer awareness and competition from conventional products still hindered market penetration and scaling.

The study also revealed that the impact of these barriers varied across green entrepreneurship sectors. Renewable energy and sustainable agriculture sectors were disproportionately affected by regulatory constraints, while financial challenges were particularly pronounced in the renewable energy and eco-friendly product sectors. Sustainable agriculture faced additional challenges related to market access and specialized knowledge, including organic cultivation methods and resource-efficient practices. Eco-friendly product businesses struggled mainly with securing investment for product development, branding, and market education. These sector-specific differences suggest that a one-size-fits-all approach is insufficient, and interventions must be tailored to address the unique challenges faced by each industry.

Multiple regression analysis demonstrated the significance of these barriers in influencing business growth and sustainability. Financial barriers had the most significant impact, underscoring the critical need for access to capital, specialized funding, and supportive financial policies. Regulatory constraints were also influential, emphasizing the importance of simplifying laws, providing incentives, and creating a supportive policy environment for green enterprises. Technology and infrastructure limitations, as well as market challenges, were found to significantly affect operational efficiency and competitiveness. Knowledge management barriers were negatively associated with business growth, confirming that limited expertise, restricted information access, and inadequate skill development hinder innovation and long-term success. Collectively, these predictors explained 60.7% of the variance in business growth, underscoring the close relationship between overcoming these challenges and achieving sustainable development.

In summary, the study highlights that financial, regulatory, and knowledge management barriers are the most critical factors affecting green entrepreneurship in Malaysia, while technological, market, and infrastructure challenges also play important roles. Addressing these barriers requires coordinated strategies, including policy reforms, financial support, training programs, and initiatives to enhance knowledge management systems. Sector-specific interventions are particularly necessary to ensure tailored solutions for renewable energy, sustainable agriculture, and eco-friendly product businesses. By mitigating these challenges, policymakers and stakeholders can promote sustainable business growth, foster innovation, and strengthen Malaysia's position as a leader in environmentally responsible entrepreneurship.

CONCLUSIONS

This study offers a comprehensive understanding of the challenges facing green entrepreneurship in Malaysia, highlighting the crucial role of knowledge management in promoting sustainable business growth and innovation. Ineffective knowledge management processes were found to hinder green innovation and long-term sustainability, underscoring the need for strategies that promote the collection, dissemination, and effective implementation of information. Additionally, internal and external barriers, such as financial constraints, regulatory complexity, and technical limitations, were identified as significant obstacles that entrepreneurs must overcome to achieve green business objectives. These findings underscore the importance of a holistic approach that combines organizational, financial, and technical interventions to support green entrepreneurship.

From a theoretical perspective, the study contributes to the understanding of how knowledge management and sustainable practices interact to enhance green innovation. By reinforcing the principles of the Natural Resource-Based View (NRBV) and the Dynamic Capabilities View (DCV), the research demonstrates that intangible assets, such as knowledge and capabilities, are essential for achieving a competitive advantage in green entrepreneurship. The study further illustrates how Green Entrepreneurial Orientation (GEO) and Green Absorptive Capacity (GAC) serve as key mechanisms for translating knowledge into tangible business and environmental outcomes. These contributions lay a strong foundation for future research that explores the strategic integration of knowledge management into sustainability initiatives.

At the managerial level, the study offers practical guidance for enhancing green business performance. Managers are encouraged to cultivate GEO within their organizations and strengthen GAC by investing in training, development, and systems that facilitate the acquisition and application of external green knowledge. These strategies enable businesses to proactively address environmental challenges, improve operational efficiency, and achieve compliance while maintaining a competitive advantage. Furthermore, sector-specific insights suggest that interventions should be tailored to industry-specific challenges, such as developing financial models for renewable energy, providing market education for eco-friendly products, and offering technical support for sustainable agriculture.

Finally, the research highlights avenues for future exploration, including longitudinal studies to examine the long-term impacts of GEO on business and environmental performance, sectoral comparative studies, and investigations into the influence of external factors such as government policies, market trends, and technological advancements. Additionally, the potential of digital solutions, including AI-driven analytics and knowledge-sharing platforms, presents new opportunities to enhance green entrepreneurship. By addressing these research gaps, scholars and practitioners can develop more effective strategies to foster innovation, competitiveness, and sustainability in Malaysia's green business sector.

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