

SUSTAINABLE ENTREPRENEURSHIP PRACTICES AS PREDICTOR OF MICRO ENTERPRISES PERFORMANCE IN RURAL CONTEXT: A STRUCTURAL EQUATION MODELLING APPROACH

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Abstract: Entrepreneurial Sustainability Practices (ESPs) remain under-discussed despite rising concerns about the environment. Entrepreneurship is critical to economic and social endeavours, particularly for underprivileged communities. Nonetheless, it is argued that environmental preservation should be incorporated into entrepreneurial development, which is critical for achieving the Sustainable Development Goals (SDGs). Therefore, the objective of the study is to determine whether adopting ESPs increases the likelihood of superior business performance among Micro-entrepreneurs (MEs) in rural settlements. The Jengka Triangle Village, which is in Pahang State, Malaysia was selected as the study population, and the findings were to be generalised using Smart PLS 3.3.9 to model the ESPs using Structural Equation Modelling (SEM) analysis. The study discovered that people skills, financial management, and marketing skills all contributed significantly to the MEs' superior performance on seven ESP measures. The study also discovered that environmental aspects of ESPs, such as ecosystem management, production management, and stakeholder management, were unlikely to result in a performance advantage. Given the reduced importance placed on environmental concerns in current circumstances, this article discusses implications for policy and best practices in managing entrepreneurship sustainability objectives.

Keywords: Enterprise performance, rural entrepreneurship, small business, structural equation modelling, sustainable entrepreneurship.

Introduction

Malaysia aims to establish a united, inclusive, and equitable society by 2030, following the agenda of the United Nations Sustainable Development Goals (EPU, 2020). The Rural Development Policy (DPLB) 2030 has been implemented with ten strategic thrusts aimed at eradicating poverty and ensuring the prosperity of rural communities. The ten thrusts include achieving a competitive and sustainable economy; fostering entrepreneurship; enhancing the quality of human capital; providing a comprehensive

infrastructure; promoting a prosperous rural life; ensuring sustainable biodiversity and the environment; and concentrating intensely on sustainable regional development (Ministry of Rural Development, 2019). Therefore, sustaining entrepreneurship programmes that focus on rural social and economic development is critical, as the current policy landscape is focused on resolving national inequalities and poverty issues.

Since the early work of Silicon Valley and Route 128 (Saxenian, 1994), the concept

of a sustainable entrepreneurial ecosystem has garnered increasing attention. Policymakers, universities, private enterprises and communities have recognised the potential of cohesive structures, policies, programmes and processes that holistically foster regional entrepreneurship. Subsequently, it has been more than 15 years since the focus has been on expanding academic research, particularly in entrepreneurship studies (Theodoraki *et al.*, 2022). The fundamental idea of an entrepreneurial ecosystem is to produce a conducive environment that fosters innovation, creates new successful firms, and enables corresponding sustainable employment growth within a specific geographic region. This requires the active participation of various key stakeholders (Garud *et al.*, 2010; Brekke, 2015).

Tur-Porcar *et al.* (2018) emphasise the importance of coexisting with the triple bottom line of sustainability ecosystems to advance economic, social and environmental goals. This is consistent with the definition of sustainable entrepreneurship that seeks the “preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where the gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society” (Shepherd & Patzelt, 2011). For instance, sustainable entrepreneurship is considered instrumental because it has the potential to advance society (Ferreira, 2020) and promote long-term economic and social achievement (Tur-Porcar *et al.*, 2018).

However, the Covid-19 crisis has made the survival of entrepreneurs a major topic of discussion, with many uncertainties on the importance of sustainability practices and the ways these can be translated into sustainable operations, which have been linked to sustainability entrepreneurship practices in previous research (Jansson *et al.*, 2017; Malesios *et al.*, 2018). Therefore, it can be posited that the pathway to regional development can be paved with sustainable entrepreneurship practices that

promote improved enterprise performance and, thus, have a positive impact on job availability and economic growth for the community’s well-being.

However, the study of sustainable entrepreneurship practices from the perspective of SMEs, despite its visionary goals being sought as an important developmental agenda, has remained understudied. For example, previous studies have shed light on the positive consequences of sustainability towards corporate identity and performance (Hazudin *et al.*, 2015; Pham *et al.*, 2021; Rahi *et al.*, 2022). While corporate sustainable practices are bound to gain economic trust among key stakeholders for their long-term competitive advantage, SMEs, including micro-sized enterprises, regardless of their geographic origin should be inspired to be equally responsible enterprises (Bhatti *et al.*, 2022). Regardless, the study of sustainability entrepreneurship practices within the context of small business management requires attention concerning best practices since their business formation is largely different from their larger counterparts. There is an urgent need for more studies given the proposition that sustainability forces are not an option but rather mandatory to enforce sustainability objectives across the triple bottom line of the business environment in the future (Bhatti *et al.*, 2022).

This research aims to gain insight into the potential of a sustainable entrepreneurship ecosystem model that could guide the development of stronger and more successful entrepreneurship in a rural setting. Specifically, the study identifies a set of predictors related to sustainability practices that can be used to forecast the probability of small businesses achieving success in a village in Pahang, Malaysia. The relevance of these predictors in the post-pandemic era will be explored, providing new insight into practical perspectives and offering an outlook on the current state of sustainability entrepreneurship practices by small enterprises in remote areas for policy intervention.

Literature Review

Theoretical Background

This study argues that Stakeholder Theory (ST) applies to the design of sustainable entrepreneurship practices in rural micro-enterprise performance. The ST has not been adequately researched in the entrepreneurship literature, providing an opportunity to determine how effectively the enterprise-stakeholder relationship is optimally met, thus allowing the development of enterprise objectives and priorities that reflect stakeholder interests. The triple bottom lines of strategic sustainability decisions relate to the potential economic prospects of entrepreneurs. Moreover, it is the responsibility of businesses to maintain a plan for a more sustainable future. Therefore, it is essential to gain a deeper understanding of the factors that drive sustainable entrepreneurship practices based on ST, which suggests that both internal and external stakeholders value the incentives of enterprises to meet a sustainable agenda.

This group of primary stakeholders may include employees, investors, customers, suppliers, local communities, and agencies, which can exert pressure on enterprise sustainability practices individually or collectively (Bıçakcioglu-Peynirci & Tanyeri, 2020). Consequently, the propositions in ST will imply the existence of adverse conditions on enterprise performance, especially in organisations with a high level of sustainability awareness (Hayibor, 2017; Acquah *et al.*, 2021). As proposed by the stakeholder theory, the widespread awareness of voluntarily initiating sustainability incentives can be favourable and relevant to the sustainability development of micro-enterprises to adapt to shifting social demands (Mir *et al.*, 2007).

Ecosystem Management and Enterprise Performance

A sustainable entrepreneurial ecosystem is defined as a group of stakeholders who are connected and collaborate to support entrepreneurs in promoting entrepreneurial

activities that consider all three dimensions of sustainability, i.e., economic, ecological and social, and thus contribute to the transformation of the regional economy towards sustainability (Bischoff & Volkmann, 2018). Ecosystem management is one of the components of environmental sustainability that was assessed as part of the sustainable entrepreneurship framework (Elkington, 1997; Soto-Acosta *et al.*, 2016). According to Shafiq *et al.* (2017), the environmental dimension requires firms to monitor their waste, conserve energy, maintain effective two-way communication with the public, and be environmentally responsible in their business operations.

Previous studies examined the environmental factors influencing sustainable entrepreneurship among small businesses. Kimuli *et al.* (2021) discovered that ecosystem management is one of the constructs that characterise sustainable entrepreneurship among small businesses in Uganda. The findings indicated that the majority of businesses have waste disposal mechanisms in place. Similarly, a study of 106 manufacturing SMEs in Uganda discovered that they used waste management, eco-friendly packaging, water conservation, and energy-efficient practices to protect the natural environment and the people's ethics in a growing economy (Sendawula *et al.*, 2020). In addition, Hosseinina and Ramezani (2016) discovered that social and environmental factors such as customer orientation, recycling, and the need to conserve the future significantly promote sustainability among Iran's food SMEs. Apart from that, Piyathanavong *et al.* (2019) discovered that the primary reasons for implementing organisational environmental protection methods among Thailand's manufacturing firms were to minimise their impact on the environment and to gain benefits such as company policy, environmental awareness, and cost savings.

Previous research has established a significant positive relationship between sustainable entrepreneurship (defined as the production of safe products and services), the adoption of responsible policies regarding the use of material and energy resources, and the

adoption of green technologies and business performance (Crowther & Aras, 2008; Kirkwood & Walton, 2010; Bell & Stellingwerf, 2012). The findings are supported by Hajmohammad *et al.* (2013) that the sustainability practices, like ISO14001 certification, pollution prevention and material recycling, had substantial positive impacts on a firm's environmental performance. Based on the above argument, it is hypothesised that:

H1: Ecosystem management is positively related to enterprise performance

Production Management and Enterprise Performance

Apart from ecosystem management and resource management, production management is one of the components of the environmental sustainability dimension that is used to assess sustainable entrepreneurship (Elkington, 1997; Soto-Acosta *et al.*, 2016). Sustainable environmental projects aim to prevent waste during the manufacturing process and promote the efficient use of energy resources. According to Quintas *et al.* (2018) and (Thanki & Thakkar, 2018), SMEs can implement a variety of practices related to manufacturing processes. These include sustainable manufacturing, green design, eco-labelling, and life cycle analysis. Furthermore, Tseng (2013) proposed the following indicators for determining a manufacturing unit's sustainability: Reduction of fresh water, material and energy consumption; the volume of waste, hazardous waste and waste generated by contracted services or materials; greenhouse gas emissions; and increased use of renewable sources. Moreover, providing value for money, high-quality, safe-to-use products, and environmentally and socially responsible product arrangements are critical for SMEs (Liang & Renneboog, 2017).

Additionally, Hami (2015) discovered that an imbalance between economic efficiency and social responsibility will result in environmental degradation, which will eventually result in unsustainable development. Therefore, firms must adopt sustainable manufacturing practices

(SMPs) to strike a balance between economic, environmental and social sustainability. A previous study on the extent to which SMPs are implemented was conducted on 127 SMEs in Malaysia's manufacturing sector. The findings indicated that SMEs have taken a proactive approach to SMP in their operational and business activities, but only to a limited or moderate extent. While environmental initiatives have become a critical component of SME strategic planning, there is still a dearth of SMP implementation due to a variety of factors, such as a lack of resources, organisational management and financial stability (Hami *et al.*, 2018).

Other than that, a study by Ahmad *et al.* (2020) confirmed the significance of SMEs' adoption of Sustainable Entrepreneurship Practices (SEPs), as they can eventually result in firm sustainability. SEPs enable firms to differentiate themselves from competitors, which is viewed as a critical competitive advantage (Crals & Vereeck, 2005). Numerous organisations seek to gain a competitive edge by emphasising environmental concerns to be recognised by society. Previous research has found that businesses that conduct production and supply chain operations with a focus on the natural environment typically maintain sustainability practices throughout their operations (Li *et al.*, 2020). This finding is consistent with the study of Namagembe *et al.* (2019) that eco-design and internal environmental management practices have a positive and significant impact on the environmental performance of manufacturing SMEs in Uganda. Previous studies also support the finding that there is a positive relationship between sustainability practices and enterprise performance (Zhu & Sarkis, 2004; Rao & Holt, 2005; Green *et al.*, 2012). Therefore, it is believed that production management significantly influences enterprise performance. Hence, the following hypothesis is proposed:

H2: Production management is positively related to enterprise performance

People Skills and Enterprise Performance

Entrepreneurship is inextricably linked to cognitive processes and skill sets (Linan, 2008). Under sustainable entrepreneurship and its triple bottom line (integration of economic, social, and environmental goals), a new category of entrepreneur known as the sustainable entrepreneur was developed (Shepherd & Patzelt, 2011). Research by Kimuli *et al.* (2021) on 358 small firms in Uganda revealed that people skills accounted for sustainable entrepreneurship in the Ugandan context. In terms of demographics, a study by Hosseininia and Ramezani (2016) on SMEs in the Iranian food industry discovered educational attainment, work and managerial experience, and the number of businesses formed have a direct correlation with sustainable entrepreneurship. The findings of this study corroborate with previous research indicating that the likelihood of establishing a successful and high-growth SME is highly dependent on one's education level and specific industry knowledge (Dickson & Solomon, 2008).

According to Linan and Chen (2009), entrepreneurial skills refer to the activities or know-how to successfully establish and manage an enterprise. Entrepreneurial skills have been shown to have a positive effect on the performance, growth and profitability of businesses in the past (Lerner & Almor, 2002; Mitchelmore & Rowley, 2010). Apart from that, research into small business entrepreneurship has discovered that entrepreneurial skills have a sizeable impact on enterprise performance (Gerli *et al.*, 2011). Furthermore, Campbell *et al.* (2012) asserted that entrepreneurial abilities and beliefs are critical for businesses. Training is considered critical for employees to acquire the necessary skills to perform their jobs. According to Bell and Stellingwerf (2012), sustainable entrepreneurship entails considering human resource management in terms of hiring, continuous growth (through the establishment of a learning environment and culture) and training of the appropriate people to address social issues. This research confirms previous findings that training is critical for quality and productivity

as it influences the effectiveness, efficiency, and motivation of employees (Thassanabanjong *et al.*, 2009).

Entrepreneurial knowledge can positively impact the growth and success of an enterprise (Omerzel & Antoncic, 2008). In addition, entrepreneurs believe that considering the living conditions of employees and providing financial assistance through loans, job security and transportation are critical components of sustainable entrepreneurship for SMEs (Hosseininia & Ramezani, 2016). Furthermore, the value created in society from the motivation and activities implemented by responsible entrepreneurs is considered an initial and basic dimension to reaching sustainable impact (Vallaster *et al.*, 2019). Overall, it is reasonable to assume that there is a positive relationship between people skills and enterprise performance. Therefore, the following hypothesis is proposed:

H3: People skills have a positive influence on enterprise performance

Stakeholders Management and Enterprise Performance

Stakeholders refer to a group of individuals who require the existence of the business, most notably customers, suppliers, employees, shareholders, and communities (Dunham *et al.*, 2006). Previous research has established that stakeholders are a critical component of sustainable business models (Bocken *et al.*, 2013; Kujala & Korhonen, 2017; Freudenreich *et al.*, 2020). This finding is consistent with the findings of Kimuli *et al.* (2021), who discovered that stakeholders are one of the components of the social sustainability aspect that contribute to the formation of sustainable entrepreneurship. Moreover, Pearce and Doh (2005) advocated a collaborative approach to social initiatives that could benefit private and non-profit participants. In another study, Bell and Stellingwerf (2012) discovered that sustainable entrepreneurs must establish trust with all parties involved in their business, including stakeholders.

In addition, Schaltegger and Wagner (2011) emphasised the essential role of stakeholders, who have expectations and demands on the business and contribute significantly to the opportunities and performance of the business. This finding is consistent with the findings of Soto-Acosta *et al.* (2016), who investigated the relationship between the social dimension of sustainable entrepreneurship and business performance in 147 Romanian SMEs. According to the research, a positive attitude toward stakeholders, such as consumers, community members, partners and employees, results in long-term business performance. This finding is consistent with the findings of previous research examining the benefits and effects of sustainable entrepreneurship ventures on people, including employees, partners, and stakeholders (Schaltegger & Wagner, 2011; Hapenciucn *et al.*, 2015; Martinez-Ferrero & García-Sánchez, 2015). Moreover, entrepreneurs who strengthen their relationship with stakeholders enable their companies to sustain their operations over time (Attanasio *et al.*, 2021). Accordingly, it is hypothesised that stakeholders have a sizable impact on enterprise performance. Hence, the following hypothesis is posited:

H4: Stakeholders management is positively related to enterprise performance

Financial Management and Enterprise Performance

SMEs are primarily self-funded, with some government assistance. They have limited access to credit and require subsidised or government-backed loans. Ataei *et al.* (2020) discovered that financial resources are the most critical component of financing a business. Therefore, the study concluded that rural youth do not rely on a single source of financial assistance, but anticipate a variety of investment and financing opportunities based on economic conditions and strategic objectives. Their ability to adapt to complex socioeconomic, environmental and economic conditions always takes precedence over any risks. According to Zaman *et al.* (2012), a high percentage of businesses fail

due to a lack of funding and an unfavourable economic environment for start-ups. Besides, entrepreneurs value counselling for industry experience over sole financial support.

Kimuli *et al.* (2021) demonstrated that the competencies associated with sustainable entrepreneurship are not being used effectively by entrepreneurs, resulting in bankruptcy. Dutta and Banerjee (2018) stated that business performance declined due to a lack of guidance and counselling, management experience, respect for women in business, experience hiring outside services, and a lack of financial planning experience. Entrepreneurs are unable to track monthly revenue and expenses against formal budgets, identify the resources required to meet business objectives, analyse and update performance against defined business objectives, and prepare an annual cash flow forecast (Kimuli *et al.*, 2021).

Othman *et al.* (2015) and Ditkew (2018) argued that cost management is important for managers to control resources effectively enabling them to achieve goals and maintain performance in the competitive market in Vietnam. These resources refer to paying for materials, products and services to create the maximum benefits and profits for the company now and in future. Piao and Moon (2019) mentioned that SMEs are always confronted with the problem of limited financial resources. This leads them to depend on loans to operate effectively. This would establish a debt ratio that determines the balancing benefits from a tax shield on a debt against bankruptcy cost. Therefore, SMEs need to manage their financial leverage efficiently to avoid the risks of high debt. It is necessary to comprehend the implications of these competencies, as sound financial management always safeguards the enterprise from insolvency. These findings corroborate those of Soto-Acosta *et al.* (2016), who discovered that competencies and attitudes of business owners toward economic issues contribute to increased turnover and market share, as well as customer satisfaction and retention. Accordingly, the following is hypothesized:

H5: Financial management is positively related to enterprise performance.

Marketing Skills and Enterprise Performance

There is a growing body of evidence that suggests marketing plays a role in sustainable entrepreneurship. In the marketing context, Tur-Porcar *et al.* (2018) stated that sustainability can be the result of economic profits generated by market opportunities, or it can be the product of sustainability itself. It is a method of generating economic and societal value that is motivated by creativity, such as the development of groundbreaking, environmentally or socially responsible products or services, hence, it is critical to conduct market research if entrepreneurs intend to launch SMEs. If they are unable to appropriately interpret the market, the business will face severe risk (Ataei *et al.*, 2020).

Furthermore, Shkabatur *et al.* (2021) discovered that SME entrepreneurs frequently lack knowledge of their competition, are unaware of market needs, and lack clear incentives to improve their products due to their market niche being pre-determined. Entrepreneurs must focus on identifying unfulfilled market needs and demands that necessitate the marketing of creative and innovative products. Nowadays, consumers seek attractive and unique products and services that are environmentally friendly (Hosseininia & Ramezani, 2016; Soto-Acosta *et al.*, 2016). Cunha *et al.* (2020) provide additional support by asserting that people are more attracted to unique local products, thus opening a new avenue for attracting investors and customers. Environmentally friendly products or services would maintain the ecosystem and production management, enabling them to maintain their financial and marketing strategies (Kimuli *et al.*, 2021).

Meanwhile, pricing determination is critical for sustainable business performance. Low-cost renewable resources increase profitability, but the failure of the pricing mechanism contributes to downward business performance (Bajdor *et al.*, 2021). Moreover, entrepreneurial knowledge of sales and promotion influences profit and

growth (Cunha *et al.*, 2020). For instance, the government of Uganda is now promoting sustainable entrepreneurship as a means of achieving inclusive growth, job creation and wealth generation in the country through industrialisation.

The result indicates that the majority of businesses that survive and perform well employ entrepreneurial marketing practices, such as a well-written business plan, accurate forecasting of future opportunities, conducting a SWOT analysis of the business, prioritising profit growth over revenue growth, reviewing customer databases annually, updating and aggressively promoting through business websites, and reviewing and updating promotional materials (Kimuli *et al.*, 2021). While Stephen *et al.* (2018) found that 852 firms in South Africa significantly improved profitability through business-marketing skills training, where they gain higher sales, greater investments in stock and materials, and hire more employees. Therefore, the following hypothesis is proposed:

H6: Marketing skills are positively related to enterprise performance

Based on the literature, a research model was developed to examine the influence of sustainable practices which include factors of ecosystem management, production management, people and skills, stakeholders' management, finance and marketing skills with enterprise performance. Figure 1 shows the conceptual framework of the current study.

Methodology

This research is a cross-sectional study which involves data analysis of a sample within a fixed period at the Jengka Triangle Village. 150 entrepreneurs voluntarily participated in this study of rural entrepreneurs. Due to the area's proximity to a vast stretch of oil palm and rubber plantations, the local economic identity of the respondents as agricultural farmers were established. To achieve statistical power, a minimum sample size of 114 micro-enterprises should be collected to test the nine predictors

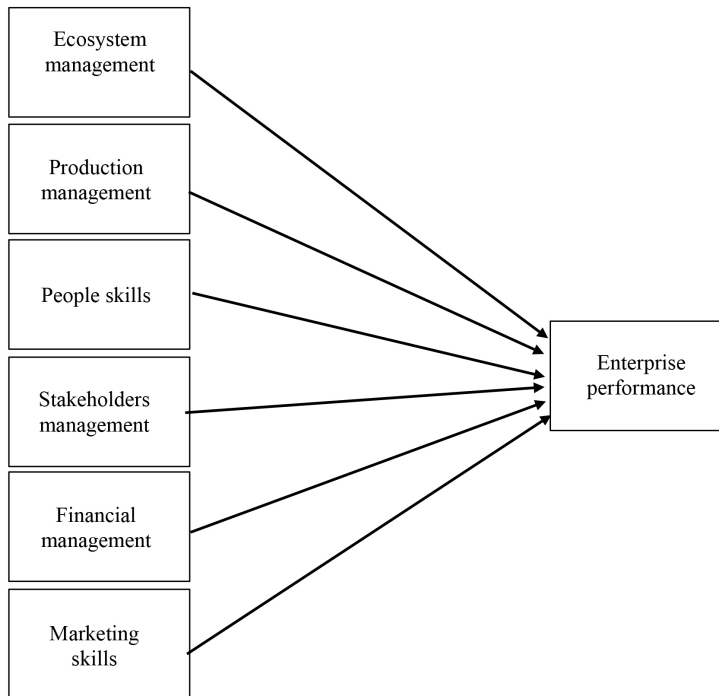


Figure 1: Conceptual framework

in the study based on a set of effect sizes as 0.15 (medium), alpha (0.05), and power (0.80). The data collection process commenced in November and concluded in December 2021 using stratified random sampling based on sector distribution. By responding to the questionnaires given, it is assumed that respondents have given their voluntary consent to take part in this study. However, their personal information was kept confidential. Three enumerators were employed to distribute and administer the questionnaire to respondents.

After initial screening of the returned questionnaires, 5 cases had to be discarded because of significant missing data, with another 2 cases not returned, a total of 143 cases were finally usable, which corresponds to a response rate of 96.3%. Following the study's objectives, descriptive statistics and SEM analysis were employed. PLS-SEM was selected to analyse the study as it aims to test the underpinned theoretical framework from a prediction perspective and the distribution of

data tested using the Mardia's coefficient has been confirmed to not follow a multivariate normal distribution (Hair *et al.*, 2019).

The questionnaire was developed based on reviewing existing literature on sustainable entrepreneurship (Shepherd & Patzelt, 2017). In this study, to measure sustainable entrepreneurship, the researchers adapt Soto-Acosta *et al.* (2016) and Elkington's (1998) items that include environmental sustainability (ecosystem management and production management), social sustainability (people skills, and stakeholder management) and economic sustainability (financial management and marketing skills). For assessing performance, the study used 6 items developed by Munene, Kikooma and Nansubuga (2015). All instruments showed an acceptable Cronbach reliability coefficient ($\alpha > 0.70$) and were translated into the Malay language. Section A consists of nine categorical variables about demographic characteristics (gender, age, education level, previous working experience,

type of previous job, business type, years of business, source of capital, and the total number of employees). Section B comprises six sub-sections arranged accordingly, which pertain to sustainable entrepreneurship (ecosystem management, production management, people skills, stakeholder management, financial management and marketing skills). All questions in Section B employ a 5-point Likert scale: (1) Never; (2) Not often; (3) Quite rarely; (4) Quite often; and (5) Often. Before distributing the questionnaires, an expert panel executed a content validity test, to ensure that the items on the test were relevant and represented the constructs that it was designed to measure (Hair

et al., 2019; Shmueli *et al.*, 2019). As a result, a minor change in language and descriptions of some items in the questionnaire were solicited.

The raw data were recorded and analysed using SPSS software, which allows for data screening, exploration and cleaning. By plotting graphs for each variable, a descriptive statistic was created to describe the demographic characteristics of entrepreneurs concerning their components of sustainable entrepreneurship. After determining the frequencies and percentages of categorical variables, SEM analysis was used to determine which components of sustainable entrepreneurship have a significant association with business performance.

Table 1: Demographic profile of the respondents

Variable	Categories	Frequency	Percentages (%)
Gender	Male	40	28
	Female	103	72
Age	49 years old and below	134	94
	Above 50 years old	9	6
Education	Primary education	75	52
	Higher education	68	48
Working experience	Yes	108	76
	No	35	24
Type of business	Fashions	34	24
	Grocery/agriculture store	12	8.4
	Beauty and health	7	4.9
	Food and beverages	14	9.8
	Optical service	4	2.8
	Accommodation	1	0.7
	Telecommunications and accessories	2	1.4
Age of business	Others	69	48
	5 years and below	83	58
Source of business financing	6 years and above	60	42
	Internal	76	53
Number of employees	External	67	47
	One	11	7.7
	Two	87	64
	Three	33	23
	Four	8	5.6
	Five	4	2.8

Results

Descriptive Statistics

This section discusses the descriptive statistics of the respondents in greater detail. To perform descriptive statistics, a frequency table and scatter plot were created using demographic characteristics and data from components of sustainable entrepreneurship. Table 2 shows that female entrepreneurs made up 72% (n = 103) of respondents, outnumbering male entrepreneurs who comprised the remaining, 28% (n = 40). Most respondents were 49 years old or younger, had completed primary and secondary education, and had work experience: 94% (n = 134), 52% (n = 75), and 76% (n = 108), respectively. Following that, 6.3% (n = 9) previously worked in the food and beverage industry, and 5.6% (n = 8) previously worked in the fashion industry. Furthermore, 24% (n = 34) of the entrepreneurs now operate food and beverage businesses, 9.8% (n = 14) operate fashion businesses, and 52% (n = 75) operate other types of businesses. However, more than half of the businesses surveyed are still in their infancy and not yet fully established 58% (n = 83). Among all entrepreneurs, 53% (n = 76) used their own funds as capital, and 61% (n = 87) employed fewer than two employees to run their businesses.

Data Analysis

SmartPLS 3.3.9 (Ringle *et al.*, 2015) was used to analyse the data in this study. After carrying out data screening as well as the assessment of common methods, the reliability and validity of the measurement models were assessed. Then, the structural model was assessed using the PLS algorithm, bootstrap, and blindfolding procedure. The study employed the guidelines of Hair *et al.* (2019) who suggested that loadings should be a minimum of 0.70 (or 0.60 in exploratory research), Composite Reliability (CR) should be 0.70 and above and Average Variance Extracted (AVE) should be greater than 0.5. Thus, it can be concluded that the data was valid and reliable. For normality testing,

the Web Power software was used, which is accessible at <https://webpower.psychstat.org/models/kurtosis/>, to calculate the univariate skewness and kurtosis, while for multivariate normality, the Mardia's coefficient of skewness and kurtosis was also calculated (Cain *et al.*, 2017). As suggested by Hair *et al.* (2022) and Cain *et al.* (2017), the multivariate skewness and kurtosis were assessed. Kline (2016) mentioned that if the multivariate skewness was greater than ± 3 and kurtosis was greater than ± 20 then the data are not multivariate normal.

The results showed that the data collected were not multivariate normal, which is indicated by Mardia's multivariate skewness ($\beta = 4.971$, $p < 0.01$) and Mardia's multivariate kurtosis ($\beta = 64, 090$, $p < 0.01$). Thus, a bootstrapping with 5,000 resamples was conducted to test the hypotheses. A full collinearity test was conducted for common method variance as suggested by Kock (2015) if the Variance Inflation Factor (VIF) does not exceed 5 then it can be concluded that common method variance is not a serious issue. The results of the full collinearity yielded the following VIF values for Ecosystem Management (EM = 1.820), Production Management (PM = 2.384), People Skills (PS = 3.765), Stakeholders Management (SM = 3.859), Financial Management (FM = 3.204), Marketing Skills (MS = 3.260) and Enterprise Performance (EP = 1.848). Thus, it is concluded that Common Method Variance (CMV) is not a serious problem with the data of the study.

Table 2: Full collinearity assessment

Construct	VIF
1. EM	1.820
2. PM	2.384
3. PS	3.765
4. SM	3.859
5. FM	3.204
6. MS	3.260
7. EP	1.848

Measurement Model

First, the convergent validity was tested based on the outer loading, Composite Reliability (CR) and Average Variance Extracted (AVE). As shown in Table 2, all the CR were greater than 0.7 and the AVE were also greater than 0.5. Although some loadings were lower than 0.7, the AVEs were already above 0.5. Thus, the items were retained for conceptual purposes.

Next, to test discriminant validity, the Heterotrait-monotrait ratio of correlations (HTMT) was used, as proposed by Henseler *et al.* (2015). Under this approach, the discriminant validity can be accepted if the HTMT value is below 0.85. As seen in Table 3, all the HTMT values of each construct are found to be below the cut-off value. Thus, it can be concluded that the measurements are valid and reliable, and all constructs in this study are distinct.

Table 3: Measurement model

Variable	Items	Loadings	CR	AVE
Ecosystem Management (EM):			0.917	0.690
Collect information on waste generated in all parts of the business	EM1	0.817		
Review and update plans to reduce and recycle wastes	EM2	0.810		
Write environmental and sustainability policy	EM3	0.897		
Commit to protecting and conserving the local ecosystem	EM4	0.783		
Document waste management plan	EM5	0.843		
Enterprise Performance (EP):			0.874	0.537
Business locations and customers over the past few years have expanded	EP1	0.677		
Owned new equipment/machines in the past few years	EP2	0.680		
The business has understood the strength of the competitor's business	EP3	0.754		
The business has managed to achieve its main goals in the past few years	EP4	0.846		
The business is more successful than other business competitors	EP5	0.679		
The business has been able to provide funds to add new businesses	EP6	0.746		
Financial Management (FM):			0.953	0.835
Monitor income and expenditure monthly against formal budgets	FM1	0.904		
Identify the resources needed to achieve business objectives	FM2	0.927		
Review and update the performance against written business objectives	FM3	0.938		
Have a cash flow forecast for both this year and next year	FM4	0.885		

Variable	Items	Loadings	CR	AVE
Marketing Skills (MS):			0.957	0.739
Have a clear, well-thought-out written business plan	MS1	0.875		
Clear where you want the business to be in three years from now	MS2	0.923		
Evaluate the threats and opportunities facing the business within the past 12 months	MS3	0.911		
Evaluate the strengths and weaknesses of the business	MS4	0.859		
Prioritize profit growth and not just turnover growth	MS5	0.791		
Review and update customers' database in the last 12 months	MS6	0.905		
Update the website of the business	MS7	0.731		
Review and update the promotional materials within the past 24 months	MS8	0.865		
Production Management (PM):			0.928	0.569
Develop a management plan to support the production of quality products/services	PM1	0.781		
Routinely undertake sample analysis to improve the quality of products/services	PM2	0.828		
Undertake fertilization/use of artificial ingredients/chemicals when necessary	PM3	0.563		
Make a plan that helps to maintain and improve the quality of supplies and natural resources	PM4	0.821		
Control the quality of the products/service using cultural/mechanical methods rather than relying on the use of chemicals	PM5	0.739		
Maintain a written record of all activities relating to the use of chemicals and preservatives	PM6	0.707		
Use chemicals in the production process when necessary	PM7	0.526		
Write a plan that specifies targets and actions for reducing energy usage	PM8	0.819		
Consider energy efficiency when purchasing new plant and equipment	PM9	0.831		
Review energy usage in all aspects of the business (office, production, transport)	PM10	0.847		

Variable	Items	Loadings	CR	AVE
People Skills (PS)			0.943	0.676
Have employees understand where the business will be in three years	PS1	0.795		
Undertake training	PS2	0.829		
Give credit to someone who goes out of their way to improve the performance of our business	PS3	0.839		
Give constructive feedback to employees about their performance	PS4	0.871		
Write a well-defined job description for the employees	PS5	0.855		
Provide health and safety training to staff	PS6	0.876		
Have an effective employee induction program	PS7	0.692		
Regularly identify training needs	PS8	0.807		
Stakeholders Management (SM)			0.939	0.720
Fully understand customers' views on environmental issues	SM1	0.839		
Promote environmental and sustainability policies to customers	SM2	0.830		
Understand how environmental performance impacts the business	SM3	0.894		
Network with other local business owners	SM4	0.826		
Participate in one or more business associations	SM5	0.805		
Take time to communicate regularly with the key stakeholders	SM6	0.895		

Table 4 shows the mean, standard deviation, kurtosis, and skewness. As can be seen, all variables were univariate normal well within the ± 1. Thus, it can be concluded that there is no issue with non-normality at the univariate level. The lowest mean value was for EM at 2.969,

suggesting that most of the firms are low on ecosystem management, while the highest mean value was for FM at 4.453, which indicates that financial management is practised at a high level for most of the responding companies.

Table 4: Discriminant validity (HTMT Ratio)

Variable	1	2	3	4	5	6	7
1. EM							
2. FM	0.235						
3. MS	0.287	0.826					
4. PM	0.687	0.558	0.524				
5. PS	0.528	0.745	0.773	0.695			
6. EP	0.263	0.678	0.722	0.396	0.662		
7. SM	0.506	0.763	0.751	0.686	0.832	0.647	

Table 5: Mean, standard deviation, kurtosis, and skewness of main variables

Variables	Mean	Std. Dev.	Kurtosis	Skewness
EM	2.969	1.192	-0.582	0.246
FM	4.453	1.275	0.188	-0.827
MS	4.166	1.245	-0.139	-0.659
PM	3.343	1.268	-0.620	-0.148
PS	3.777	1.271	-0.587	-0.288
EP	4.371	0.817	-0.039	-0.439
SM	3.863	1.279	-0.676	-0.222

Structural Model

To calculate the standard deviation, t-values, and p-values, a bootstrap with 5,000 samples was used (Hair et al., 2017; Ramayah et al., 2018). First, by evaluating the R², the study’s in-sample prediction was assessed. Also included were 3 control variables, namely Size, Business Age, and Source of Finance in the analysis. As can be seen in Table 4, all 3 control variables were insignificant. The R² was 0.499 (Q² = 0.258), indicating that all 6 variables taken together with the three control variables can explain 49.9% of the variance in enterprise performance and the blindfolding procedure (Q²) with an omission

distance of 12 returned a value of 0.258, which was well above the recommended value of 0, thus confirming the predictive relevance of the model.

People Skills ($\beta = 0.207, p < 0.05$), Financial Management ($\beta = 0.229, p < 0.05$), and Marketing Skills ($\beta = 0.314, p < 0.01$) were all positively related to Enterprise Performance. Thus, H3, H5, and H6 were supported while H1, H2, and H4 were not significant predictors. A closer scrutiny of the standardised beta values indicated that Marketing Skills were the strongest predictor of Enterprise Performance, followed by Financial Management and People Skills.

Table 6: Hypotheses testing

Hypothesis	Relationship	Std. Beta	t-value	p-value	BCI LL	BCI UL	f ²
H1	EM ◦ Performance	0.045	0.525	0.300	-0.097	0.180	0.002
H2	PM ◦ Performance	-0.145	1.424	0.077	-0.334	0.004	0.017
H3	PS ◦ Performance	0.207	1.676	0.047	0.00	0.412	0.022
H4	SM ◦ Performance	0.100	0.934	0.175	-0.086	0.265	0.006
H5	FM ◦ Performance	0.229	2.080	0.019	0.049	0.410	0.031
H6	MS ◦ Performance	0.314	2.553	0.005	0.102	0.495	0.061
Control Variables							
	Age ◦ Performance	0.099	1.452	0.073	-0.010	0.211	0.018
	Source ◦ Performance	0.059	0.823	0.205	-0.059	0.178	0.006
	Size ◦ Performance	0.036	0.634	0.263	-0.053	0.131	0.002

Furthermore, as suggested by Shmueli *et al.* (2019), PLSpredict is a holdout sample-based procedure that generates case-level predictions on an item or a construct level using the PLS-Predict with a 5-fold procedure to check for predictive power. The Q^2 of the LV was 0.397, which was greater than 0, and then, based on Table 6, all the errors of the PLS model were lower than the LM model. Thus, it can be concluded that this study's model has strong predictive power.

Discussion

The current study proposes a model in which sustainable entrepreneurship practices could be translated into improved micro-enterprise performance in a rural context, considering that businesses of all sizes have a responsibility to participate in the future sustainability agenda. Conceptually, sustainable entrepreneurship enables entrepreneurs to create value by initiating strategic and collective actions in which social, environmental, and economic concerns are embedded to satisfy the apprehensions of stakeholders in highly competitive environments.

The results for hypotheses H1 (Ecosystem Management), H2 (Production Management), and H4 (Stakeholders Management) indicate that none of the environmental-related practises have a significant impact on enterprise performance, implying that investment in pro-environmental behaviours do not consider performance objectives in the context of the

investigated SMEs. These findings support the prior study by Soto-Acosta *et al.* (2016) who discovered no correlation between environmental protection and business performance, yet sustainable entrepreneurial approaches to people and profit dimensions result in improved business performance in the case of Romanian SMEs. Furthermore, SMEs in the manufacturing sector were also found not as active as larger firms in sustainable management (Omar & Samuel, 2011) due to challenges to implementing sustainable initiatives, such as scarcity of resources (Hsu *et al.*, 2017) and low organizational management (Raja Ghazilla *et al.*, 2015). Moreover, SMEs exhibited a low degree of sustainable practices implementation and need to make extensive changes, particularly in the internal recycling of materials, exchanging non-environmentally friendly materials, and concentrating on decreasing energy and material consumption when creating products (Hami, 2018).

Regarding the prevalent environmental challenges, the results indicate the emerging need to incorporate environmental policy into a national entrepreneurship agenda; positive change is likely to result from the utilisation of awareness programmes (Mir & Feitelson, 2007; Haryati *et al.*, 2021). Based on the stakeholder theory, the study's findings indicate that rural micro-enterprise sustainability practices are not well developed. It can be concluded that progress in fostering sustainable entrepreneurs may be sluggish due to a lack of resources and knowledge at the enterprise level or the government; as the strongest stakeholder,

Table 7: PLS-Predict

MV	PLS		LM		PLS-LM		Q ² _predict
	RMSE	MAE	RMSE	MAE	RMSE	MAE	
EP1	0.950	0.739	1.263	0.992	-0.313	-0.253	0.099
EP2	1.056	0.801	1.332	1.023	-0.276	-0.222	0.171
EP3	0.897	0.698	1.114	0.890	-0.217	-0.192	0.293
EP4	0.969	0.752	1.209	0.945	-0.240	-0.193	0.249
EP5	1.120	0.877	1.558	1.175	-0.438	-0.298	0.151
EP6	1.007	0.797	1.304	1.032	-0.297	-0.235	0.263

the government may not have implemented sustainability standards seriously, or the market recognition for being environmentally friendly is visibly low (Icka *et al.*, 2021).

In essence, it has been argued that micro-enterprises must have the entrepreneurial skillset and the capacity to act sustainably toward growth. The hypotheses about People Skills (H3), Financial Management (H5), and Marketing Skills (H6) were all supported, providing compelling evidence of the model's ability to predict rural micro-enterprise growth. The study reveals that marketing management is the most crucial factor in fostering sustainable entrepreneurship, followed by financial management and people management.

The key components of the sustainable entrepreneurship practice emphasise the need for entrepreneurs to master effective marketing techniques and strategies, as stated by Kimuli *et al.* (2021) and Stephen *et al.* (2018), which are compatible with rapid technological advancements. The findings of this study illustrate how to adapt to the negative consequences of the COVID-19 crisis. Prior research has demonstrated the substantial role of digital marketing and its positive impact on business growth to bolster this argument. Correspondingly, recent studies indicate that in the post-pandemic era, prioritising digital transformation is imperative (Klein & Todesco, 2021). It is possible to contend that digital marketing can be advantageous for rural entrepreneurs, particularly in terms of expanding the market, improving communication, and maintaining positive relationships with key stakeholders, particularly customers (Hazudin *et al.*, 2021; Koyluoglu *et al.*, 2021).

The ability of entrepreneurs to manage their finances effectively is also a crucial indicator of sustainable entrepreneurial competence. Entrepreneurs who pay close attention to cash management activities can provide the most effective cushion for their businesses against unforeseen events. Good cash management facilitates the growth and survival of micro-

businesses even in times of crisis when obtaining external financing resources is either difficult or available on unfavourable terms. Similarly, sustainable entrepreneurship practices are also associated with prudent financial practices, as past research supports the indirect effect of financial practices on business success and knowledge (Abdullah & Azam, 2015; Ditekew 2018; Purwidiyanti *et al.*, 2021; Wati *et al.*, 2022). Consequently, the privilege of having such a solid financial base may also generate potential entrepreneurial opportunities that stimulate sustainable value-creation activities related to process innovation, such as investment in financial technology (fintech).

Moreover, the capacity of managing a workforce may be associated with organisational leadership characteristics that influence employees' motivation and productivity, thereby improving business performance (Hayton, 2015). Entrepreneurs must ensure that the calibre of their workforce is commensurate with their business aspirations, especially in terms of sustainability, where critical skills such as marketing, financial, and production management are necessary. The skill set of employees is of the utmost importance since the entrepreneur, as a business manager, may have a limited or no longer relevant skill set. Thus, prior research has established that emphasising employee skill development is crucial, contributing more to the success of entrepreneurs (Sembiring, 2016; Egberi, 2019).

Overall, this study emphasises 3 critical elements for developing a model of sustainable rural entrepreneurship. Nonetheless, efforts must be made to raise awareness of the significance of environmental preservation in entrepreneurial activities and the strategic direction of small businesses. This is because economic, social, and environmental concerns play a greater role in determining the future sustainability and viability of the SME sector. It is necessary to promote the commitment of entrepreneurs to environmental concerns since all businesses face the risk of environmental degradation. As such, the elements of sustainable entrepreneurship should be inseparable and heavily emphasised as

part of the social responsibilities that are equally as important as profit and other economic objectives (Ahmad *et al.*, 2020).

Theoretical and Practical Implications

The present study adds to the currently limited literature on sustainable entrepreneurship practices by considering 6 constructs of sustainable entrepreneurship practices (ecosystem management, production management, people skills, stakeholders management, financial management and marketing skills) that have an association with enterprise performance among rural micro-entrepreneurs. The originality of the current work is explained through the perspective of the ST, which offers a potential strategic move by enterprises to act sustainably to gain economic performance. The study also adds contextual contributions, which highlight the aspect of sustainable entrepreneurship practices dimensions which to the authors' knowledge, is the first of its kind study conducted in remote and underdeveloped areas in Malaysia. The findings revealed that environmental awareness among micro-enterprise operators has not yet been established as an important cursor of economic performance, which may imply a lack of stakeholders' concern for the environmental issues in that areas. Another significant contribution of the study is that it has confirmed previous knowledge that entrepreneurial skills which include understanding the market, finances and people are key in managing small business success and thus its sustainability pursuit. Overall, the study has extended the current literature in entrepreneurship studies on the aspect of environmental-enterprise connection.

As regards to practical implications, the research draws attention to owner-managers of small business enterprises to design and engage in sustainable entrepreneurship initiatives, in particular environmental behaviours which may offer an opportunity to attract key stakeholders' interest that put more value on such acts. If the government imposes inclusive enforcement of environmental protection across business

segments, those enterprises that valued environmental strategies in their business model should be pleased by the potential gain. In that case, sustainable entrepreneurship practices suggest a necessity as well as a differentiation strategy which can be rewarding. Additionally, managers of micro-enterprises can pay attention to which skills are deemed critical to help them in achieving better performance.

The findings of the study also shed some important points that the role of government and industry partners to cultivate environmental concern is highly sought. To achieve a sustainable agenda, by which the inclusion of the environment is targeted, clear and comprehensive, guidelines and measures to facilitate responsible and competitive entrepreneurs should be introduced. Accordingly, the applicability of sustainable practices should be viewed as a separate policy as small businesses require specific needs to act sustainably due to their resource availability and constraints.

Conclusion

The findings of this study suggest several crucial indicators of rural microentrepreneurial success. First, as the technological complexity of the business environment increases, government agencies must collaborate with community leaders to establish training facilities that will assist entrepreneurs and their employees in enhancing their fundamental entrepreneurial skills and equipping them with key personnel and strategic enterprise management. Adopting digital business solutions, such as financial technology (fintech), is strongly encouraged to support efficient financial transactions. However, conducting business online necessitates a firm's ability to comprehend complex market requirements and cybercrime risks. For instance, hiring and retaining skilled employees are also crucial aspects of human resource management, which is essential to the success of a small business. Second, the findings emphasise the significance of incorporating sustainability practices, where policymakers can play a proactive role by raising awareness

and developing intervention programmes to facilitate sustainable entrepreneurial practices by outlining rules and regulations, providing infrastructure, and providing financial and technical support.

This current study is not without limitations, indicating the need for further research. The findings of the study indicate that the proposed constructs have a high degree of estimation capability. Nonetheless, additional potential variables could be supplemented to enhance the predictive capability. Next, since the findings are limited to the population's interest, future research should be expanded to include additional rural areas or enterprise segments to confirm the findings and develop the theory. In recent years, sustainability has received noteworthy attention, thereby necessitating microenterprises to protect the environment while also addressing social and economic development. Regardless of the firm's size or its operating location, for the SDGs to be achieved by 2030, business strategies must incorporate the concept of sustainability without forfeiting environmental equilibrium.

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