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The Mediating Role of Technological Innovation Awareness on the Impact of SMEs' Resources on Their Sustainable Growth in Lao PDR

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This paper aims to investigate the effect of SME's resources including, financial resources (FRR), financial literacy (FLR), managerial capacities (MCR) and market orientation (MKR) on SME's sustainable growth (SG) in both financial SG (FSGE) and non-financial SG (NFSGE) terms; and to identify the technological innovation awareness (TIR) mediates the effect of these resources on SGSMEs. Data were collected from 517 SMEs, using survey method and adopted a random sampling technique. Structure Equation Model (SEM) and the Baron, and Kenny (1986) mediation approach, Amos was applied to test hypotheses. The findings revealed the resources contributed 41.9 percent and 32.9 percent of the variance in FSGE and NFSGE, respectively, and confirmed the mediating role of TIR in the relationship between resources and SG. Notably, FRR had an indirect effect on FSGE through TIR, although TIR partially mediated the relationship between FRR and NFSGE, and between FLR and SG, both in FSGE and NFSGE terms. While, TIR fully mediated the relationship between MKR and SG, both in FSGE and NFSGE terms as well. This evidence informs the importance of business resources and competencies. In particular, TIR plays an important role in business operations to enhance and maintain sustainable growth.

Keywords: technological innovation awareness, financial resources, financial literacy, managerial capacities, market orientation, sustainable growth, SMEs

Introduction

Sustainable business growth refers to continuous steady growth. In terms of financial dimensions, it indicates the maximum rate at which a firm's sales can increase without depleting its financial resources (Ashta, 2008; Higgins, 1977; Prabawani, 2013). This concept is an indicator to measure the efficiency of a firm using its resources for survival and development, as well as the level of strength of the firm (Hung, & Liu, 2009). Self-

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sufficient growth comes from the efficient use of a firm's resources to achieve long-term financial and performance objectives (Chang, 2012; Kambil, 2007; Mamilla, 2019; Yusoff et al., 2018). While the survival of a firm depends on business performance and continuous and long-term growth strategies, which strengthens the ability to maintain competitive advantage and growth (Yoo et al., 2018) and the firm must maintain its sustained growth in order to survive and expand as well as to avoid financial issues (El Madbouly, 2022).

While, small and medium enterprises (SMEs) contribute to technological innovation and engage with various parties to support sustainable economic growth. They play an important role in creating jobs, generating and distributing income, and enhancing productivity. SMEs in Lao don't differ from others countries, they play an important role in national socio-economic development. For this reason, the government has developed a policy to promote SMEs and support them by providing diversified sources of funds and strengthening other facilities. They are defined as enterprises related to commodity production, trade and services with annual income and total assets not exceeding Lao Kip 06 billion, and annual averaged labors less than 99 people (Decree No.25/GOL, date 16th January 2017).

In addition, the interest in the resource-based view (RBV) of an organization's performance and growth has found that some factors of a firm's resources affect business growth, for instance, the sustainable growth of SMEs as a result of the nature of the business and entrepreneurs (Diabate, & Allate et al., 2019). The influence of entrepreneurs' abilities on sustainable growth of SMEs (Diabate, & Sibiri et al., 2019). The managerial capacities, technology, and marketing and innovation technical competency impacted on firm performance (Kim, 2021) and the effect of business characteristics, managerial and personnel factors, capital availability, business support, business environment on success of SMEs (Al-Tit et al., 2019). However, in the context of Laos, there is no research that has been conducted on sustainable growth of SMEs, as well as the mediating role of technological innovation awareness in the relationship between resources and sustainable growth of SMEs. Therefore, the current study attempts to fulfill the research gaps to prove the technological innovation awareness (TIR) mediates the relationship between SMEs' resources and their sustainable growth due to the limitation dedicated to sustainable growth of SMEs in the developing countries, for instance in the context of Lao. This study aims to explore the relationship between SMEs' resources and their sustainable growth with the mediating effect of TIR on these relationships. The research questions of this study are: Is there a positive effect of SME's resources on their sustainable growth, and to what extent TIR may mediate the relationship between the resources of SMEs and their sustainable growth? Understanding these issues will shed light on which resources to focus on, both tangible and intangible, as well as capabilities. The findings may help policy makers and the private sector to find the right support channels for SMEs to survive in today's uncertain environment and grow their business sustainably.

In accomplishing the main and specific objectives, the study adopted a quantitative research paradigm with cross-sectional design to collect data from owners-managers of SMEs in four main provinces in Laos. The remainder of the paper is organized in the following manner. Literature Review section presents the main background and theoretical frame- work. Methodology section presents the methodology employed, describing the data- base and the empirical model used. Results and Discussion section states the results and discussion. Conclusions section mentions the conclusions. Finally, there is the Policy implications section.

Literature Review

The concept of sustainable growth firms is introduced to test the consistency of a firm's growth objectives

and its financial policies. It is defined as the annual percentage of increase in sales that comprises the established financial policies of the firm, and the growth needs to be commensurate with an increase in assets and without issuing new equity. Any increase in assets must be funded by added liabilities or by retained earnings (Ashta, 2008; Higgins, 1977). However, the growth of a firm could become sustainable and unsustainable. In terms of sustainable growth, that can be seen from the income and the normal earning power of the firm and it takes into account the current level of margin, turnover, leverage and taxes. While the component of the unsustainable growth will be shown as fluctuations above or below the level of sustainable growth (Babcock, 1970). Therefore, sustainable growth does not just help them survive but also to maintain the ability to be competitive within the industry (Fonseka et al., 2012).

Resource Based Theory (RBV) was developed by means of numerous publications from the 1980s to 1990s, and the resource refers to tangible and intangible assets that a firm uses to conceive and implement business strategies (Barney, 1991; Barney et al., 2001; Porter, 1981; Wernerfelt, 1984). Theory consists of resources and capacities. A firm's resources are available factors or inputs that are owned and/or controlled by the firm, which consist of financial or physical assets (property, plant and equipment); know-hows that can be traded (patents and licenses) and human capital (talent, competence, expertise and experience of the firm). These resources are then linked by mechanisms that a firm uses to convert them into final products and services (Barney et al., 2001). This current study applies this RBV theory by selecting some of the resources of SME that are appropriate to the Lao context and thought to be likely to contribute to their sustainable growth, including: financial resources, financial literacy, managerial capacities and market orientation, as follows:

Financial resources (FRR): business finance refers to firm's ability to allocate both internal and external funds in a way that maximizes return on investment for the business (Osei-Assibey, 2013) and the two main objectives of satisfactory working capital management are profitability and liquidity (Pass, & Lowes, 1978; Rahim, 2017) and aims to acknowledge valuable investment opportunities and financing behavior to clarify between relying on internal financing or preferring external financing for a business (Myers, & Majluf, 1984). Earlier studies found the influence of FRR on financial performance (Khan et al., 2022). The working capital significantly impacted on a firm's profitability and indirectly influenced sustainability growth through the firm's profitability (Nastiti et al., 2019) and the external funding was more positively associated with productivity growth than the internal funds (Osei-Assibey, 2013). Most studies used financial resources as an independent variable, while firm performance and growth have been used as a dependent variable. The financial resource construct was measured by twelve items (Roxas, & Chadee, 2012).

Financial literacy (FLR) means to the set of skills and knowledge necessary for effective decisions, use financial services, and business position in the market (Reich, & Berman, 2015). It consists of knowledge, attitude and awareness. Here, financial knowledge means understanding fundamental financial concepts that influence organizational performance. While financial attitude refers to the ability to evaluate new and sophisticated financial instruments. Financial awareness refers to the ability to understand and manage various financial strategies and being aware of external service providers (Eniola, & Entebang, 2017). Previous studies mainly used it as an independent variable that have revealed the positive influence on sustainability (Ye, & Kulathunga, 2019), and on firm financial performance (Agyapong, & Attram, 2019; Eniola, & Entebang, 2017; Huston, 2010). It's a strong predictor of fundamental financial and business outcomes (Agyapong, & Attram, 2019). It was measured twelve items (Yang et al., 2018; Ye, & Kulathunga, 2019).

Managerial capacities (MCR) is the key for achieving business goals by integrating resources and gaining

positive business through effective teamwork with additional knowledge and expertise (Hussain et al., 2020). The RBV identifies resources and capabilities are the source of a firms' sustainable competitive advantages (Barney et al., 2001). A successful business largely depends on the level of knowledge and experience of the entrepreneur as well as the management skills, which makes the difference between a business that succeeds or fails (Popescu et al., 2020). Therefore, SMEs adopting advanced management practices in core business processes is the key to improving business efficiency and successful competitiveness and likewise, sustainability and high efficiency are the results of good performance management practice (Ates et al., 2013). Previous studies measured this construct by nineteen items and indicated a positive and significant influence on sustainable firm growth (Hussain et al., 2020). There was a relationship between the human resources (HR) practices and firm performance, and the firm's top managers' social networks played a mediating role in their relationships (Collins, & Clark, 2003). Others have found that MCR influences performance indirectly through organizational performance (Zack et al., 2009).

Market orientation (MKR) is the process by which a business gather market information pertinent relevant to the current and future needs of its customers and share it both internal and externally the organization (Kohli et al., 1993; Sen, 2006) and consists of customer orientation, competitor orientation and inter-functional co-organization (Kohli, & Jaworski, 1990; Narver, & Slater, 1990; Slater, & Narver, 1994). Market-orientated indicates the need for a profit-oriented culture and the creation of superior value for customers, and this results in superior business performance (Narver, & Slater, 1990). Market orientation is important to both direct and indirect competitors in order to achieve optimal organizational performance (O'Dwyer, & Gilmore, 2019). Previous studies measured this construct by twelve items (Narver, & Slater, 1990) and it was mostly used as an independent variable and found its effect on firm growth, such as increased in overall revenue, return on capital and success of new products and services, ability to retain customers, and success in controlling operating expenses (Subramanian, & Gopalakrishna, 2001), and overall firm performance (Buli, 2017; Cano et al., 2004; Lado, & Maydeu-Olivares, 2001). In addition, entrepreneurial marketing had a significant effect on firm performance (Hoque, & Awang, 2019).

Diffusion of innovation theory (DOI) according to Rogers (2003) refers to the "process by which innovation is communicated through certain channels over time among the members of a social system" and an innovation is "an idea, practice, or object perceived as new by an individual or other unit of adoption". While technology is defined as "a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome". Moreover, the DOI theory has mainly focused on the perceived features of technology and the innovativeness of the organization adopting them.

Technological innovation awareness (TIR) is a mediating variable in this study and it refers to ideas and knowledge of new goods, processes, and services that create commercially successful (Madrid-Guijarro et al., 2009; Zastempowski et al., 2020). It's classified into seven elements: planning and commitment of the management capacity, marketing capacity, innovative capacity, knowledge and skills capacity, information and communication capacity, external environment capacity, and operations capacity (Cheng, & Lin, 2012). Schumpeter (1934) defined "Innovation means the introduction of new techniques and organizational models for introducing of new things in industry: products, method of production, market opening, development of raw material sources or other inputs, and creation of new market structures" (Ince et al., 2016). Technological innovation (TI) adoption has two dimensions, individual and organizational characteristics (Thong, & Yap, 1995). Previous studies found that TI is an important source of exploration in management and economic literature and beyond Schumpeter's reviews

in this area (Ahuja et al., 2008; Duran et al., 2016; Hidalgo, & Albors, 2008). It was measured by 6 items (Chege, & Wang, 2020b) and indicated its significant positive impact on business performance and organizational effectiveness (Yoo et al., 2018). The leadership styles and innovation capital also had a significant positive influence on sustainable performance and innovation capital (Hassan et al., 2021). Some studies have shown an indirect effect of technological competency and SME's performance through eco-innovation and open innovation (Valdez-Juárez, & Castillo-Vergara, 2021). Others found it mediated the relationship between firm management and firm performance (Ruiz-Palomo et al., 2019); between government funding for R&D support and business performance (Jin, & Lee, 2020) and between strategic agility and firm performance (Yildiz, & Aykanat, 2021).

From the relevant theories, concepts and previous findings, this study develops a research model (see Figure 1), which explains the link between SMEs' resources and their sustainable growth, both in finance and non-finance, and the mediating effect of technological innovation awareness role on such relationships and sixteen hypothesizes, as follows:

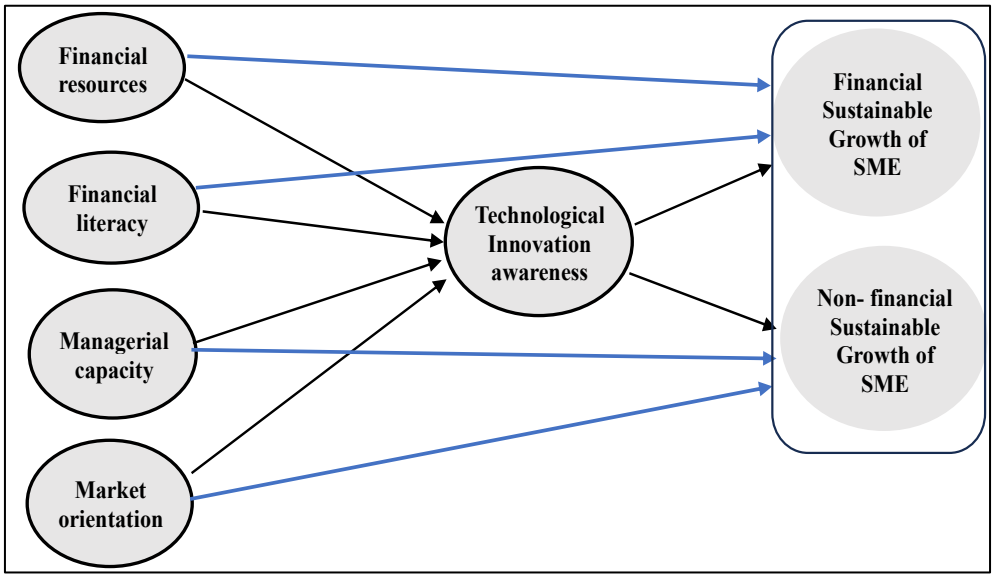

Figure 1. Research model.

H1_1: A positive significant relationship between FRR and financial SGSMEs.
H1_2: A positive significant relationship between FRR and non-financial SGSMEs.
H2_1: A positive significant relationship between FLR and financial SGSMEs.
H2_2: A positive significant relationship between FLR and non-financial SGSMEs.
H3_1: A positive significant relationship between MCR and financial SGSMEs.
H3_2: A positive significant relationship between MCR and non-financial SGSMEs
H4_1: A positive significant relationship between MKR and financial SGSMEs.
H4_2: A positive significant relationship between MKR and non-financial SGSMEs
H5_1: TIR mediates the relationship between FRR and financial SGSMEs.
H5_2: TIR mediates the relationship between FRR and non-financial SGSME.
H6_1: TIR mediates the relationship between FLR and financial SGSMEs.
H6_2: TIR mediates the relationship between FLR and non-financial SGSME.
H7_1: TIR mediates the relationship between MCR and financial SGSMEs.

H7_2: TIR mediates the relationship between MCR and non-financial SGSME.

H8_1: TIR mediates the relationship between MKR and financial SGSMEs.

H8_2: TIR mediates the relationship between MKR and non-financial SGSME.

Methodology

Research Design

A survey method with a cross-sectional design was used to collect the data from owners-managers of SMEs. A structured questionnaire instrument was developed in the Lao language, then it was sent to three senior academics of Lao National University for the IOCs, followed by conducting field trials with entrepreneurs (owners/or managers) of SME to improve its reliability and validity. There were some items that were rephrased to be more suitable in the Lao context. There were 32 final items of seven constructs (Table 4, Appendix 1).

Sample size for the study was determined by the rule of thumb under the guidance of the requirements for data analysis techniques. The final sample size of 517 subjects/completed questionnaires, which require 15-20 observations for each independent variable or predictor. The study sample was selected using a random sampling technique from the listed SMEs of the 3rd National Economic Survey in 2019-2020 that have been operating businesses for more than three years, which have experienced receiving a loan from any funding source. Their headquarters are located in four main provinces, Vientiane Capital, Luangprabang, Savannakhet, Champasak, because these provinces account for more than 53 percent of the SMEs within the country.

Measurement of Variables and Data Collection

This study developed measurement and structural models of seven constructs; here there are four SMEs' resource constructs as the predictors, namely: financial resources, financial literacy, managerial capacities, market orientation. The sustainable growth, as the endogenous variable, which composes of two constructs, namely, financial sustainable growth and non-financial sustainable growth. Furthermore, technological innovation awareness, as a mediating construct. These constructs were measured using various dimensions and items as shown in Table 1.

Table 1

Measurement of Constructs in Study Model

Construct	Dimension	Number of items	Source
Financial resource		12	Roxas, and Chadee (2012)
Financial literacy		12	Yang et al. (2018); Ye, and Kulathunga (2019)
Managerial capacity		19	Bogner, and Bansal (2007)
Market orientation		12	Narver, and Slater (1990)
Technological innovation awareness		6	Chege, and Wang (2020a)
Sustainable growth	Financial parameter	6	Ali et al. (2020); Diabate, & Allate et al. (2019); Hussain et al. (2020)
	Non-financial parameter	4	

Data was collected from SME owners or managers whose owners were absent for business because they involved in and responsible for the business activities of firms, in between November 2022 and January 2023 with 523 participating entrepreneurs, the final sample was 517 due to incomplete data, and businesses operating at least three years in order to measure the outcome of business performance. Face-to-face interviews were conducted via a structured questionnaire instrument. Respondents were asked to indicate their agreement or disagreement on a 5-point Likert scale (from "strongly disagree" = 1 to "strongly agree" = 5) to answer the

questions for all study variables.

Data Analysis

Descriptive analysis, frequency and arithmetic means were used. Demographic information was analyzed after being collected for statistical analysis. By the aid of analysis of moment structures computer software version 23.0, data analysis consists of developing measurement models using confirmatory factor analysis (CFA), follow by the structural equation modeling (SEM) techniques, respectively. Furthermore, the mediating role of TIR in the relationship between SMEs' resources and their sustainable growth was examined. Then, to test the mediating effect of the research model, the Baron, and Kenny (1986) approach was tested. In addition, sample data were bootstrapped using 1000 samples to determine the direct effect of SME's resources on TIR of SME, the direct effect of TIR on their sustainable growth, and indirect effect of SME's resources on their sustainable growth. Levels of significance were assessed at bias corrected 95% confidence intervals (CI) for each effect was assessed.

Results and Discussion

Descriptive Analysis

The study sample consisted of 517 entrepreneurs in Lao. Table 1 (Appendix 1) shows that among the respondents, 82 percent were owners, 52.2 percent were males and the majority completed high school level, followed by 29.8 percent have a bachelor's degree, and 12.4 percent have completed a vocational course. The sectoral distribution of participating SMEs, 44.1 percent was involved in trade, then 40 percent and 15.9 percent were engaged in service and manufacturing, respectively. The average operating period of the firm was 9.86 years and the 57.1 percent and 42.9 percent of owner's gender were male and female, respectively. Around three quarters (73.3 percent) had fewer than 5 employees, 25.6 percent had 6-50 employees and 0.8 percent had 51-99 employees. About three quarters (70 percent) of business funding were bank loans, 25.5 percent from financial institutions, 7.7 percent from an informal loan and 3.1 percent from a government fund and 1.9 percent from a village fund.

Measurement Model Evaluation

This section presents and discusses the statistical analysis of the data obtained from the study. The data tested the normality by using Skewness and Kurtosis in SPSS and confirmed the normality as the skewness and kurtosis values are below the cutoff +/-3, which are satisfactory and acceptable (Table 2, Appendix 1). Additionally, the estimate found a positive correlation of all reflective items within latent constructs (Coltman et al., 2008). There was no threat of the constructs' multicollinearity in this study due to the Variance Inflation Factor (VIF) value above 3 and lower value (below 0.2) of Tolerance and no Systematic Measurement Errors because of the absence the Common Method variance (CMV) by Harman's single factor test (Podsakoff et al., 2003). Table 3 (Appendix 1) explores the result of Cronbach's Alpha values ranging from 0.798 to 0.930, which fulfils the minimum required levels of reliability and indicates that the measures used in this study are good and reliable.

Confirmatory factor analysis (CFA) technique was used to assess the factor loadings, construct correlations, and model fit indices for the developed models based on sustainable growth of SMEs. Here, after conducting the reliability analysis of the instrument, the confirmatory factor was performed to assess the uni-dimensionality and validity of the measurement model. The estimate of the factor analyses using SEM/SPSS Amos23.0 is shown in

Figure 2, which illustrates the absolute fit, which achieved the required level of CMIN/df = 1.947 provided satisfactory value < 2; GFI = 0.910; CFI = 0.954; TLI = 0.946; SRMR = 0.040 and RMSEA = 0.043 (see Table 2) show acceptable values (Bentler, 1990; Hu, & Bentler, 1998). Therefore, the uni-dimensionality was achieved.

Furthermore, Table 4 (Appendix 1) showed the evidence of the construct reliability (CR), which presents Cronbach's Alpha reliability values at greater than 0.7; the construct validity, which presents the standardized factor loadings of the items provided satisfactory values for convergent validity (above 0.5). The Composite reliability (CR) revealed values (above 0.7). The Average Variance Extraction (AVE) for seven latent constructs found similarly satisfactory values. Table 5 (Appendix 1) explained the discriminant validity of the model which presented the HTMT Ratio of Correlation and analysis displayed and acceptable values below 0.8 (Henseler et al., 2014).

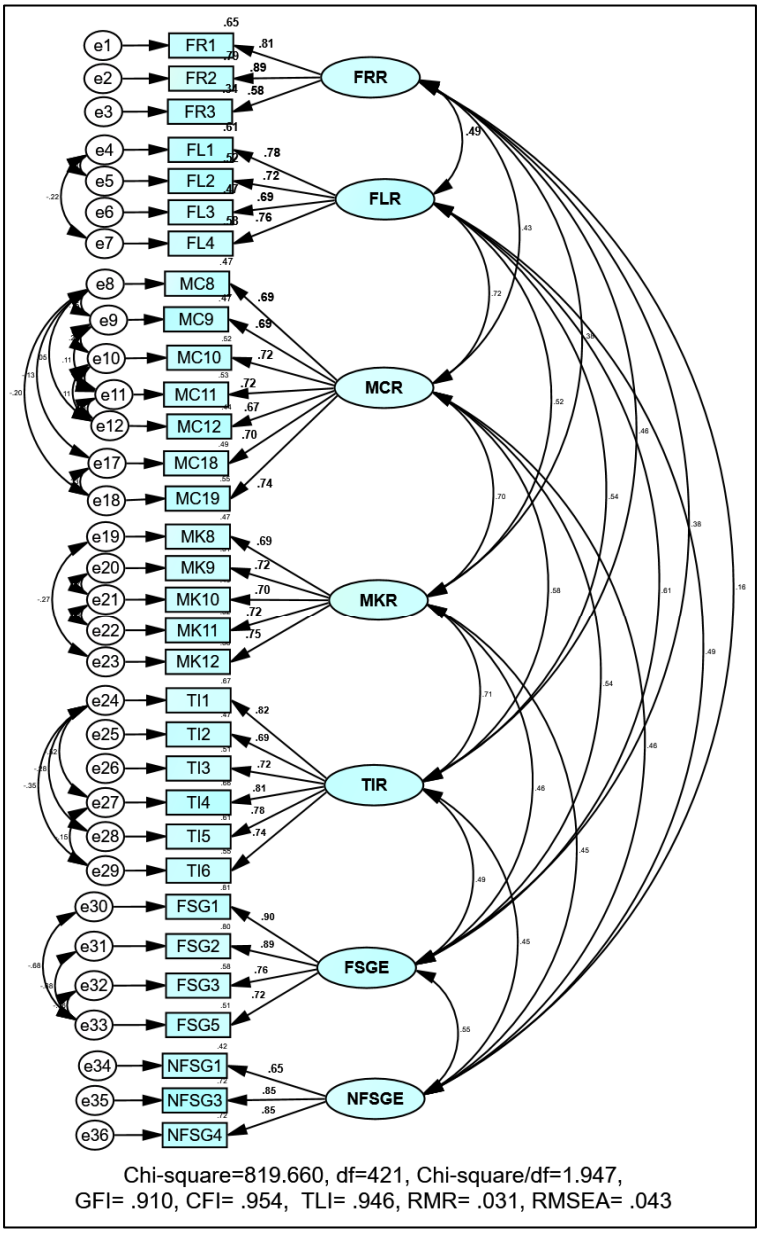

Figure 2. Confirmatory factor model analysis.

Structural Model

After the issues of uni-dimensionality, validity and reliability of the latent constructs have been addressed, the constructs were modeled into a structure model for analysis using SEM, which is a multivariate technique that combines the aspects of multiple regression and factor analysis to assess the interconnected relationship at once together (Fan et al., 2016; Fornell, & Larcker, 1981). Figure 3 and Figure 4 responded for the research objective. To test the effects of technological innovation awareness (TIR) mediates the relationship between resources and sustainable growth of SMEs. Here, the mediation approach of Baron, and Kenny (1986) was adopted. The general test for mediation is to examine the relation between the predictor and the criterion variables (dependent variable), the relation between the predictor and the mediator variable and the relation between the mediator and criterion variables. A comparison between the direct effect of the predictor on the criteria in the absence and presence of the mediator is the main determinant of the mediation effect. The following estimates were conducted to answer the research hypothesis:

Hypotheses Testing

The AMOS computer software and path analysis was conducted to determine the influence of SME's resources on their sustainable growth and the influence of technological innovation awareness of SME on their sustainable growth. Furthermore, bootstrapping was performed to determine the mediating effect of technological innovation awareness on the relationship between SME's resources and their sustainable growth. The results from the structural model for financial and non-financial sustainable growth, respectively, show the model fits (see Figs. 3 and 4) and standardized path coefficients estimated by the structural equation modelling procedure. The coefficient of Determination (R^2) is 0.419 for financial sustainable growth and 0.329 for non-financial sustainable growth. This indicates 41.9 percent and 32.9 percent of the financial sustainable growth and the non-finance sustainable growth of SMEs, respectively, which can be explained by the exogenous constructs that are the financial resources, financial literacy, managerial capacities and market orientation (see Table 2).

Direct Effect for Sustainable Growth

Results from the model for direct effects of SME's resources on their sustainable growth shows that financial literacy of owners/managers positively and significantly influences sustainable growth of SME both in finance and non-finance ($\beta = 0.406$, $P < 0.001$) and ($\beta = 0.350$, $P < 0.001$), respectively. The results indicate that when the regression weight for FLR in the prediction of sustainable growth is significantly different from zero at the 0.001 level (two tailed), which means the hypothesis H_{2_1} and H_{2_2}, are supported. It also shows that market orientation of SMEs positively and significantly influences their non-financial sustainable growth ($\beta = 0.168$, $P < 0.05$). The result indicated that when the regression weight for MKR in the prediction of sustainable growth in terms of non-financial parameters is significantly different from zero at the 0.05 level (two tailed), which means the hypothesis H_{4_2} is supported (see Table 3).

Table 2

Summary of Fitness Model Indexes

Model	$\chi 2$/df	GFI	CFI	TLI	SRMR	RMSEA
Measurement model	1.947	0.910	0.954	0.946	0.040	0.043
SEM model (FSGE)	1.868	0.921	0.962	0.955	0.0382	0.041
SEM model (NFSGE)	2.024	0.921	0.956	0.947	0.0386	0.045

Notes: -$R^2_{(FSG)}$ = 41.9% and $R^2_{(NFSG)}$ = 32.9 %.

Table 3

The Direct Effects of Study's Variables

Hypothesis	Path Coefficients	Estimate	S.E.	P-value	Result
There is a positive effect of					
H_{1_1}: FRR on FSGE	FSGE < ---FRR	0.040	0.045	0.390	Rejected
H_{2_1}: FLR on FSGE	FSGE < --- FLR	0.406	0.079	0.000	Supported
H_{3_1}: MCR on FSGE	FSGE < --- MCR	0.108	0.091	0.180	Rejected
H_{4_1}: MKR on FSGE	FSGE < --- MKR	0.040	0.090	0.580	Rejected
H_{1_2}: FRR on NFSGE	NFSGE < --- FRR	-0.183	0.054	0.001	Rejected
H_{2_2}: FLR on NFSGE	NFSGE < --- FLR	0.350	0.089	0.000	Supported
H_{3_2}: MCR on NFSGE	NFSGE < --- MCR	0.053	0.107	0.577	Rejected
H_{4_2}: MKR on NFSGE	NFSGE < --- MKR	0.168	0.106	0.053	Supported

Mediation Effect of Technological Innovation Awareness

To test the eight hypothesized mediating relationships, indirect and direct effects were computed by applying a bootstrapping feature that is unique to the Amos software. During the setting up of the "bootstrap" tab, "perform bootstrap" was set at 1000 on a number of bootstrap samples and the "Bias-corrected confidence interval" was checked for 95 BC confidence level. Then, the direct, indirect and total effects were generated along with the standardized estimate and two-tailed significance level. Here, if we had created 1000 bootstrap samples, then we could have inferred the confidence region in the mean without calculating the standard error and assuming a normal distribution for the estimates. A percentile estimate of the 95% confidence interval is computed by ordering the 1000 bootstrap samples' means from lowest to highest, and making the 25th out of 1000 as the lowest bound, and the 975th out of 1000 as the upper bound (see Table 4). Sample bootstrapping results for direct, indirect and total effects for sustainable growth of SMEs are summarized in Table 5. This to assess the presence of TIR role in the relationship between SMEs' resources and their sustainable growth. The results as follows:

Firstly, the estimate revealed a not significant total effect of FRR through TIR on FSGE ($\beta = -0.066$, $P = 0.243$). However, the estimate found a significant indirect effect of FRR on FSGE ($\beta = 0.027$, $P < 0.01$). Therefore, the effect of FRR was an indirect effect on FSGE through TIR. Whereas, the analysis explored a significant the total effect ($\beta = -0.145$, $P < 0.01$), the indirect effect ($\beta = -0.102$, $P < 0.01$) and direct effect ($\beta = -0.178$, $P < 0.01$) of FRR on NFSGE. Therefore, TIR is a partial mediator in the relationship between FRR and NFSGE. Then, the hypotheses H_{5_1} and H_{5_2} are supported.

Table 4

The Results of Standardized Path Coefficients for Technological Innovation Awareness

Hypothesis	Path	Total Effect (c)	Indirect effect (ab)	Direct Effect (c')
H_{5_1}: FRR on FSGE	FSGE ← TIR ← FRR	0.066	0.027	0.039
H_{6_1}: FLR on FSGE	FSGE ← TIR ← FLR	0.467	0.031	0.437
H_{7_1}: MCR on FSGE	FSGE ← TIR ← MCR	0.120	-0.002	0.122
H_{8_1}: MKR on FSGE	FSGE ← TIR ← MKR	0.162	0.112	0.049
H_{5_2}: FRR on NFSGE	NFSGE ← TIR ← FRR	-0.145	-0.102	-0.176
H_{6_2}: FLR on NFSGE	NFSGE ← TIR ← FLR	0.403	0.282	0.368
H_{7_2}: MCR on NFSGE	NFSGE ← TIR ← MCR	0.057	0.040	0.060
H_{8_2}: MKR on NFSGE	NFSGE ← TIR ← MKR	0.336	0.235	0.205

Table 5

Results of Bootstrapping Tab-Standardized Effects-Two Tailed Significance

Path Coefficients		Total effect (c)		Indirect effect (ab)	Direct effect (c')	Results	Interpret
FSGE ← TIR ← FRR	H_{1_1}	0.243	H_{5_1}	0.015	0.508	Indirect	Support H_{5_1}
FSGE ← TIR ← FLR	H_{2_1}	0.002	H_{6_1}	0.013	0.002	Partial Mediation	Support H_{6_1}
FSGE ← TIR ← MCR	H_{3_1}	0.292	H_{7_1}	0.823	0.275	No relationship	Not support H_{7_1}
FSGE ← TIR ← MKR	H_{4_1}	0.043	H_{8_1}	0.017	0.573	Full mediation	Support H_{8_1}
NFSGE ← TIR ← FRR	H_{1_2}	0.016	H_{5_2}	0.008	0.005	Partial Mediation	Support H_{5_2}
NFSGE ← TIR ← FLR	H_{2_2}	0.002	H_{6_2}	0.012	0.002	Partial Mediation	Support H_{6_2}
NFSGE ← TIR ← MCR	H_{3_2}	0.600	H_{7_2}	0.839	0.633	No relationship	Not support H_{7_2}
NFSGE ← TIR ← MKR	H_{4_2}	0.004	H_{8_2}	0.012	0.094	Full Mediation	Support H_{8_2}

Secondly, the analysis also found a significant total effect (β = 0.467, P < 0.01), the indirect effect (β = 0.031, P < 0.01) and direct effect (β = 0.437, P < 0.01) of FLR on FSGE. Similarly, the estimates found a significant the total effect (β = 0.403, P < 0.01), the indirect effect (β = 0.282, P < 0.01) and direct effect (β = 0.368, P < 0.01) of FLR on NFSGR. Therefore, TIR is a partial mediator in the relationship between FLR and SG of SMEs, both, FSGE and NFSGE Then, the hypotheses H_{6_1} and H_{6_2} are supported.

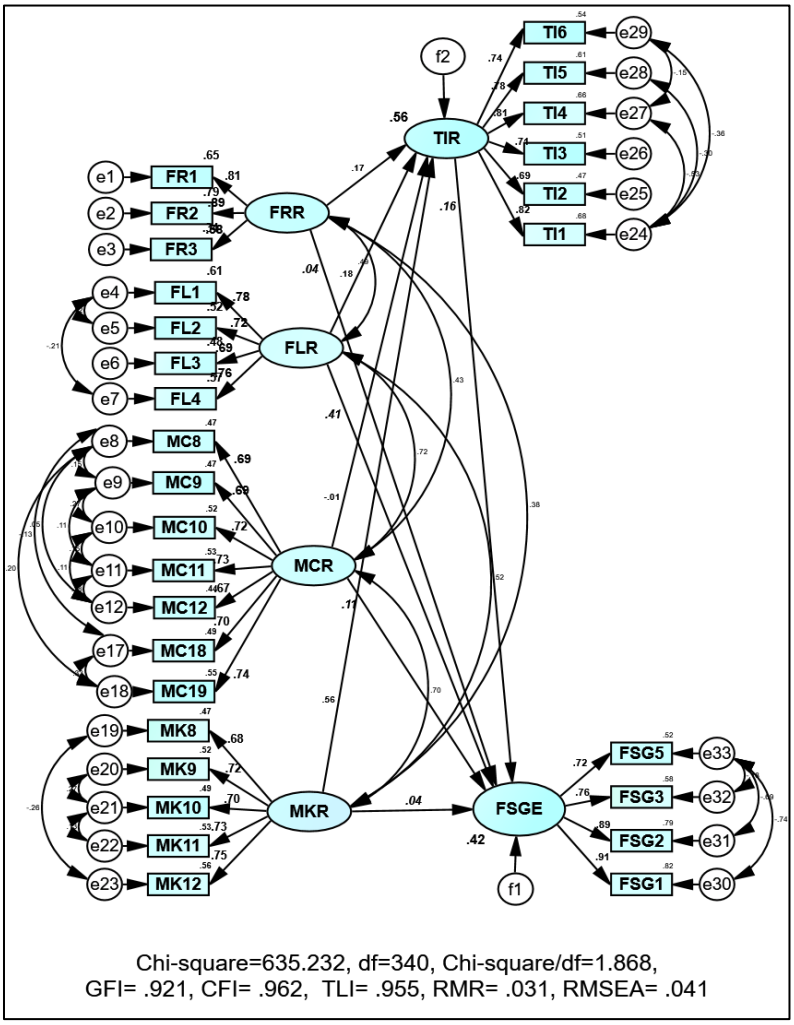

Figure 3. Structure model analysis (Financial sustainable growth).

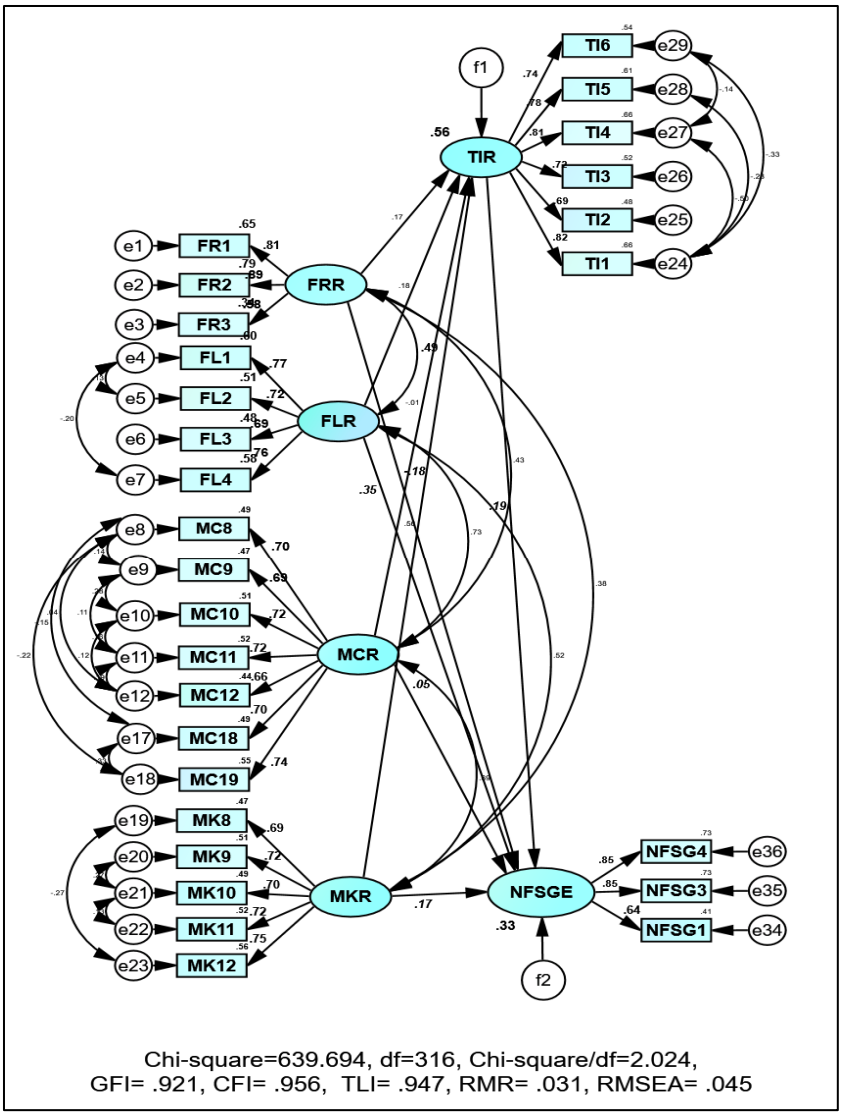

Figure 4. Structure Model analysis (non-financial sustainable growth).

Thirdly, analysis found a significant total effect (β = 0.162, P < 0.05) and the indirect effect (β = 0.112, P < 0.01) and a not significant direct effect (β = 0.049, P = 0.573) of MKR on FSGE. Therefore, TIR is a full mediator in the relationship between MKR and FSGE. Similarly, the estimates found a significant total effect (β = 0.336, P < 0.01), indirect effect (β = 0.235, P<0.01) and direct effect (β = 0.205, P = 0.094) of MKR on NFSGE. Therefore, TIR is a full mediator in the relationship between MKR and both, FSGE and NFSGE. Then, the hypotheses H_{8_1} and H_{8_2} are supported.

Discussion

This study aimed at determining the influence of SMEs' resources on their sustainable growth both in finance and non-finance under the mediation of technological innovation awareness of SME. Measurement and structural models were developed using the original sample, then bootstrapping (1000 samples) was performed to determine the direct effect of SMEs' resources on their sustainable growth, indirect effect of SMEs' resources on their sustainable growth through technological innovation awareness of SME.

During measurement model development, some items of each construct were deleted from models due to low factor loadings, implying that they poorly reflected the construct. However, deleting those items did not affect the constructs' definitions because the retained items reflect the same constructs. Furthermore, the confirmatory factor was performed to assess the uni-dimensionality construct, then later findings show that factor loadings for all items were greater or equal to 0.50, with the absolute fit showing an acceptable value, which means that the uni-dimensionality was achieved (Bentler, 1990; Hu, & Bentler, 1998). Then, the construct reliability (CR), the convergent validity of seven constructs were tested and the model discriminant validity of the model showed acceptable values. The results of the R^2 value of model indicate that the SMEs' resources explained to be 0.419 (41.9 percent) for their finance sustainable growth and to be 0.329 (32.9 percent) for non-finance sustainable growth. According to objectives, results found as follows:

The Relationship Between SMEs' Resources and Their Sustainable Growth

Analyze supported three among eight hypotheses, the relationship between the financial literacy of owners/managers positively influences sustainable growth of SMEs, both finance and non-finance, and the market orientation of SMEs positively influences non-financial sustainable growth. These findings confirm that study resources of SME directly affect their sustainable growth in the Lao context and comply with the RBV that suggests the firm's resources and capacities are controlled by the firm to convert into final products and services for their growth. Similar findings have been reported previously of Adomako et al. (2016); Agyapong, and Attram (2019); Eniola, and Entebang (2017); Huston (2010); Ye, and Kulathunga (2019). In the same way, the result shows that the greater the market orientation, the greater opportunity for SME to achieve non-financial sustainable growth, which in line with the statement that any for success, profits or no profits firms would concentrate on their customers and market orientation, with many previous studies of Agarwal et al. (2003); Buli (2017); Cano et al. (2004); Lado, and Maydeu-Olivares (2001); Subramanian, and Gopalakrishna (2001). However, the study of Kirca et al. (2005) showed that there was no relationship between enterprises' market orientation and their performance.

The Mediating Effect of Technological Innovation Awareness on the Relationships Between SMEs' Resources and Their Sustainable Growth

Evidence confirmed six of eight hypotheses, the technological innovation awareness mediates the relationship between financial resources, financial literacy of owner/manager and market orientation on sustainable growth, both in finance and non-finance parameters through TIR. The findings are in line with previous research (Ali, 2023; Ruiz-Palomo et al., 2019; Zehir et al., 2015). The results explored the important role of technological innovation awareness in business operations in the context of Lao. Therefore, those who are concerned with technological innovation are more likely to achieve sustainable business growth. For example, the findings of direct effect don't reveal the influence of SMEs' financial resources and market orientation on their sustainable growth. However, these relationships differ when they adopt technological innovation in their business operations. This means that the influence of financial resources and market orientation, on sustainable growth through their awareness of technological innovation.

Conclusions, Implication, and Recommendation

Conclusion

Based on the findings and discussion, this study concludes that while the owners-managers of SMEs aware

of the value of business' resources and capabilities, it leads to advantages for achieving sustainable business growth. Moreover, the study also showed a consistency which assumes that SMEs who value their business resources and capabilities with the use of technological innovation will drive sustainable business growth.

Contribution of the Study

These findings indicate contributions to important theories and concept namely: the resource-based view, the diffusion of innovation (DOI), The concept of sustainable growth firms, and to practical engagement. First, by providing the interrelation of an entrepreneur's perspective on business sustainable growth, this study makes the most significant contribution to the literature and supports the paradigm of SME's management. Second, entrepreneurs might benefit from understanding the importance of SME's resources in operating businesses to boost the business productivity and sustainable growth. Therefore, stimulating these aspects of capacities will eliminate the issues faced by entrepreneurs, and prioritizing resources has cost benefits in increasing productivity and growing businesses in an efficient, effective, and sustainable manner. Therefore, the need to use these sustainable growth measures for SMEs in Lao context and other least developed countries. However, from this point, to the best knowledge of the authors, no study has attempted to obtain empirical evidence on sustainable growth measures of SMEs in Lao PDR that distinguishes this study from past studies.

Implication of Findings

This study results led to understand the perception of SMEs' owners-managers about their business' resources and sustainable growth in the Lao context. This study has proved the influence of the financial literacy of entrepreneurs and market orientation on business sustainable growth compared to other resources in the study, and also indicates technological innovation awareness mediates on the relationship between some of study's resources and sustainable business growth of SMEs, which explore today's entrepreneurial ecosystem. These findings inform that the RBV is suitable to explain both physical and competence resources of firms. Therefore, entrepreneurs ought to invest not only in physical resources but also in intangible resources, as well as increase the adoption of technology innovation and digital in business operations, in order to improve businesses' resources to achieve sustainable business growth.

In practice, the results of the study inform SME owners and managers understand the importance of awareness of technological innovation (TIR) in business operations as well as of concern their businesses resources and competencies, which are the fundamental key indicators of business success during a turbulent competitive business environment. Because TIR helps enhance the efficiency of available business resources. Moreover, the results of this study also provide information to authorities, agencies and other partners can find out how to increase support for various interventions, programs and/or initiatives to empower SMEs to increase the adoption of technology innovation and digital in business operations and to support in improve businesses' resources management in both terms of tangible and intangible to achieve business sustainable growth.

Limitation of the Study

This paper applied the cross-sectional study, however, which is opposite to the longitudinal approach. It provides a better position to explore the causal relationship conclusion. Therefore, the results of the current study may not conclude as similar and consistent over time. Furthermore, the data was compiled after the covid-19 pandemic (Many businesses reduced their workforce). Meanwhile, this study sample frame was selected from the 3rd national economic survey 2019-2020 (pre-pandemic survey). As a result, the number of SME workers is lower than usual. Moreover, the study sample was not evenly divided into business sectors equally, so results

could not be compared across sectors.

Recommendations

This paper only considers the sustainable growth of SMEs and similar studies can be done for large enterprises due to available financial records, so we can analyze the data in other ways. In the same way, the sustainable growth rate (SGR) of an enterprise/organization should be considered as the dependent variable if these businesses have good financial data available. Additionally, qualitative methods such as in-depth interviews with authorities/regulators and focus group discussion (FGD) among entrepreneurs could be conducted. To gain a comprehensive understanding of the factors necessary for sustainable business growth and studying comparative methods could apply to determine the level of sustainable growth of different business sectors.

Abbreviation

TIR: Technological Innovation awareness.

FRR: financial resources.

FLR: financial literacy.

MCR: managerial capacities.

MKR: market orientation.

SGSMEs: sustainable growth of SMEs.

FSGE: financial sustainable growth.

NFSGE: non- financial sustainable growth.

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Competing Interests

The authors declare that they have no competing interest.

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Appendix 1

Table 1

Respondents and SMEs Profiles

		Frequency (N = 517)	Percentage (%)	Means	S.D.
1. Respondents profile					
Position in business	(1) Owner	424	82.01%		
	(2) Manager	93	17.99%		
Gender	(1) Male	273	52.80%		
	(2) Female	244	47.20%		
Age of respondents (Years)				43.5	9.769
Level of Education	(1) Primary-High school	282	54.55%		
	Vocational education	64	12.38%		
	(3) Bachelor degree	154	29.79%		
	(4) Master degree	15	2.90%		
	(5) PhD.	2	0.39%		
2. SME's Profile					
Age of business (Years)				9.86	5.545
Entrepreneur's gender	(1) Male	295	57.1%		
	(2) Female	222	42.9%		
Entrepreneur's education	(1) Primary-High school	280	54.2%		
	Vocational education	68	13.2%		
	(3) Bachelor degree	151	29.2%		
	(4) Master degree	15	2.9%		
	(5) PhD.	3	0.6%		
Type of business	(1) Manufacturing	82	15.9%		
	(2) Trade	228	44.1%		
	(3) Service	207	40%		
Size of business (Income)	(1) Small size	407	78.7%		
	(2) Medium size	110	21.3%		
Size of business (Assets)	(1) Small size	395	76.4%		
	(2) Medium size	122	23.6%		
				5.37	6.806
Number of employees (person)	Less than 5	379	73.3		
	6-50	134	25.9		
	51-99	4	.8		
Location of business	Urban	349	67.5%		
	Rural has road	168	32.5%		
Sources of funding * means N = 517.	Commercial bank*	362	70%		
	Financial institution*	132	25.5%		
	Government fund*	16	3.1%		
	Village fund*	10	1.9%		
	Others: cousin and/or informal source*	40	7.7%		

Table 2

Descriptive Statistics of Constructs in Model

Variables	Min	Max	Mean	Std. D	Skewness	Kurtosis	VIF	Tolerance
FRR	1	5	3.63	0.567	-0.083	0.272	1.623	0.616
FLR	2.17	5	3.66	0.609	-0.154	-0.581	2.396	0.417
MCR	2.21	5	3.75	0.586	0.020	-0.697	2.686	0.372
MKR	1.92	5	3.70	0.599	-0.052	-0.458	2.499	0.400
TIR	1	5	3.56	0.697	-0.098	0.066	2.245	0.445
FSGE	1.67	5	3.640	0.656	0.058	-0.462	-	-
NFSGE	2	5	3.759	0.710	0.067	-0.837	-	-

Notes: FRR-financial resource, FLR-financial knowledge, MCR-managerial capacity, MKR-market orientation, TIR- technological innovation; FSGE-financial sustainable growth, NFSGE- non-financial sustainable growth.

Table 3

The Summary of Cronbach's Alpha Results for the Measurement Model

Constructs	No. of Items	Cronbach's Alpha > 0.70
Technological innovation awareness	6	0.878
Financial resources	12	0.850
Financial literacy	12	0.892
Managerial capacities	19	0.930
Market orientation	12	0.888
Financial sustainable growth	6	0.846
Non-financial sustainable growth	4	0.798

Table 4

Summary of Construct Validity, and Construct Reliability (Cronbach's Alpha)

Constructs/Items	Construct Validity			Construct Reliability
	Factor loadings	Composite reliability (CR)	AVE	Cronbach's Alpha
	> 0.5	> 0.7	> 0.7	> 0.7
1. Financial resource (FRR)		0.810	0.590	0.765
FR1-Start-up capital available	0.810			
FR2-Adequate financial resources/Satisfactory level with enterprise's finance	0.886			
FR3-be able access/additional capital when necessary.	0.579			
2. Financial literacy (FLR)		0.830	0.550	0.822
FL1-The ability to analysis firm's financial performance periodically	0.778			
FL2-Firm prepares monthly income statement	0.723			
FL3-Firm Can compute the cost of loan capital	0.684			
FL4-Firm have saving account	0.760			
3. Managerial Capacities (MCR)		0.870	0.500	0.883
MC8-Being effective communicators of business information	0.690			
MC9-Create collaborative behaviors within a team	0.687			
MC10-Have the ability to persuade others	0.720			
MC11-have a combination of technical, cognitive and interpersonal skills that enable them to effectively coordinate and organize their teams.	0.725			
MC12-well-participate within the organization and monitoring business skills	0.667			
MC18-encourage the staff to take responsibility for the team's performance	0.699			
MC19-Interested in the long-term development and progress of our team member	0.743			

To be continued

4. Market orientation (MKR)		0.840	0.510	0.842
MK8-Business has a target to create the product competitiveness	0.686			
MK9-There is a good coordination across the inside of our business	0.716			
MK10-interparty, among section/person in our business shares information	0.702			
MK11-In our business, there is coordination between division in formulating marketing strategy	0.716			
MK12-All parts in our business participate in the creation of added value for customers.	0.686			
5. Technology innovation awareness (TIR)		0.890	0.580	0.878
TI1-Our business introduced new line of products/services	0.804			
TI2-Our business invested in R&D new line of products/services	0.694			
TI3-Our business used new technology in the production/service process	0.721			
TI4-Our business used new methods/procedures in production and service delivery	0.808			
TI5-Our business has marketed new products/services	0.779			
TI6-Our business market share has increased due to the new branding of our product	0.740			
6. Financial sustainable growth (FSGE)		0.890	0.660	0.846
FSG1-Sales volume increased	0.740			
FSG2-Profit volume increased	0.899			
FSG3-Total assets increased	0.895			
FSG5-Ability to repay creditors	0.765			
7. Non-financial sustainable growth (NFSGE)		0.83	0.620	0.821
NFSG1-Market share/size increased.	0.681			
NFSG3-Number of satisfactory customers increased.	0.655			
NFSG4-Reputation in public increased	0.844			

Table 5

Results of HTMT Ratio

HTMT Ratio	**FRR**	**FLR**	**MCR**	**TIR**	**MKR**	**FSGE**	**NFSGE**
FRR							
FLR	0.497						
MCR	0.410	0.719					
TIR	0.478	0.560	0.602				
MKR	0.379	0.516	0.705	0.726			
FSGE	0.404	0.659	0.562	0.544	0.485		
NFSGE	0.166	0.496	0.452	0.466	0.453	0.587	

Notes: FRR = financial resource; FLR = financial literacy; MCR = Managerial capacities; MKR = Market orientation; TIR = Technology innovation awareness; FSGE = financial sustainable growth; NFSGE = non-financial sustainable growth.