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Article

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Entrepreneurs' competencies and sustainability of small and medium enterprises in Tanzania. A mediating effect of entrepreneurial innovations

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Abstract: Many small and medium enterprises (SMEs) do not often survive beyond five years. The major challenge is the transition from the maturity stage to a sustainable stage. However, apart from a few studies done on SME sustainability with the majority engaged in SME performance, a gap has been identified in the body of literature, especially the exclusion of the mediating effects of key variables. This study, therefore, aims at looking into the mediating role of entrepreneurial innovations on entrepreneurs' competencies and the sustainability of SMEs in Tanzania. The study applied a cross-sectional design, in which a structured questionnaire was adopted to capture information from 384 sampled SMEs. The study used structural equation modeling (SEM) in doing a confirmatory factor analysis and a path analysis. The findings show that entrepreneurs' competencies have positive and significant effects on entrepreneurial innovations, and the effects of entrepreneurial innovation on SME sustainability are also positive and significant. The study further found partial mediation effects of entrepreneurial innovations on entrepreneurs' competencies and SME sustainability. It was found that establishing SME sustainability is the outcome of competencies and innovation. Therefore, this study's findings can help enrich the limited literature on competencies and innovations and increase the chances of SME sustainability. Further, the current study recommends providing key competence-based training that will help equip entrepreneurs with innovative skills for the sustainability of SMEs.

Subjects: Tourism; Development Economics; Business, Management and Accounting

Keywords: SMEs' sustainability; entrepreneurial innovations; entrepreneurs' competencies; professional competencies; social competencies; personal competencies

1. Introduction

Many economies, particularly in developing nations, are dependent on SMEs. They provide economic efficiency and make it easier to exploit idle resources, including commodities, capital, and work, by improving industry efficiency (Makiwa & Steyn, 2020). In addition, they subsidize capital savings significantly by contributing to wealth development and the workforce in all countries (Md. Noor et al., 2013). Also, SMEs are documented to play a critical role in social and economic terms by generating income, social development, and positively impacting poverty reduction (Madanchian et al., 2015). The literature generally agrees that SMEs hold the keys to unlocking and improving global socioeconomic prosperity (Makiwa & Steyn, 2020). Since the United Nations conference that looked at the human environment in 1972, when the phrase "sustainable development" was first used, it has been adopted worldwide with different strategies and

enhanced with additional features such as social, environmental, and economic challenges. As a result, many countries have made sustainable development a primary priority, incorporating it into their strategic mission and vision and referring to it as a key concern for economic development. Apart from being a priority area in the sustainability development strategy, SMEs in developing countries have experienced several challenges that impede their sustainability. However, most SMEs' sustainability challenges are the outcomes of structural adjustment policies rather than their designs. These challenges are consequences of the failures of African socialism that led to the 1970s and early 1980s economic crisis. In this political context, private industry was discouraged from competing with public companies owned by the government, communities, or cooperatives. In today's competitive business environments, assessing business sustainability is critical in order to obtain an accurate picture of robustness (Mashenene & Kumburu, 2020).

On the other hand, SMEs are frequently left defenseless and powerless in the face of rising economic and competitive challenges worldwide, particularly in developing countries (Ismail, 2022). As a result, 70% or more of the SMEs are unsustainable and do not often survive beyond five years (Imran et al., 2019). Therefore, the transition from the maturity stage to a sustainable stage is the biggest challenge faced by SMEs in developing countries. In this case, most SMEs relax after attaining the maturity stage, which is considered a perceived performance in profits, sales, and customer satisfaction, but not sustainability.

Most SMEs either decline or liquidate when they reach maturity (Kwaku & Mawutor, 2016). However, once a new business is established, it is critical to continue to exist and develop into an SME capable of addressing unemployment and promoting innovation by addressing social, economic, and environmental challenges. This has prompted small businesses to re-examine their accountability to the community, realizing that their responsibilities should not be limited to their direct owners alone but should encompass everyone in the community, including society as a whole.

There is no disagreement that the analysis of sustainability elements is important to SMEs. As such, the previously published literature gives weight to the notion that sustainability is an important concern (Imran et al., 2019). SME must preserve and improve natural and human resources for future use. The phrase "sustainability," as referred to in business, means designing business strategies that meet the demands of firms and their stakeholders while simultaneously preserving, protecting, and improving natural and human resources for future needs. This means it encompasses many environmental, social, and economic factors (Karkoulian et al., 2016; Labuschagne et al., 2005). Traditionally, sustainability in SMEs has been measured from the demand side. Material resources and financial progress measures have been applied through business-related metrics such as profitability, income generation, and revenue (Burlea-Schiopoiu & Mihai, 2019). Demand-side policies strive to increase sustainability in the environment, sustainable social aspects, and sustainable economy rather than stabilize the unsustainable path. SME's that believe in the sustainable path tend to apply short-term strategies. The outcomes always serve to shorten the period based on the sustainable activities engaged.

Nevertheless, supply-side economics believes that sustainability in SMEs is about establishing proper strategies for the unsustainable path, focusing more on the firm's ability to progress from internal dynamics. As a result, supply-side economics develops internal innovative structures to produce products and services that set sustainability speed. In contrast, demand-side economics considers current consumers and their current demand for goods and services as the most critical factor for sustainability. To this end, indicators that define the demand-side are currently no longer as important as a criterion for measuring sustainability from the supply side. Therefore, sustainability must be associated with developing strategies and practices that meet the needs of SMEs and their stakeholders while maintaining and improving the natural and human resources required in the future (Karkoulian et al., 2016).

Additionally, sustainability must involve the company's ability to stay in business for a long time while maintaining sound financial performance and administrative systems that boost productivity and profits (Giovannoni & Fabietti, 2014; Orobia et al., 2020). Furthermore, according to Prabawani (2013), enterprise sustainability must demonstrate the firm's ability to remain in operation for extended periods despite numerous shocks in the business. Finally, the sustainable business model labels the state of the current business and explains the forecast for future objectives. This is expected to ensure the organization's "triple bottom line," a concept that is gyrated around the need to balance three concepts, namely social, economic, and environmental factors (Karkoulian et al., 2016). In addition, as a part of business strategies, different scholars have linked varying levels of resource and information access to different sustainability outcomes. However, very few studies have demonstrated how these resources and business strategies can be utilized to affect the sustainability of SMEs.

Therefore, to ensure the sustainability of an organization, leaders and managers must be aware of the potential consequences of their decisions on resources and make smart choices in implementing business strategies and measures that help the organization perform better (Karkoulian et al., 2016). Aside from that, the rapid advancement of technology, the development of customer demand, new decision tools, and the community have necessitated a reexamination of the operational strategies of organizations based on the competency of owner-managers. However, contrary to its significance, previous studies from developing countries have found that SMEs have limited access to the critical resources they require to grow their businesses. As a result, the vast majority of them die before they have a chance to mature for an extended period. According to the resource dependency perspective, access to information, knowledge, finance, and materials is essential for long-term sustainability (Imran et al., 2019). In addition, competency-based theory teaches that when SMEs have a complete set of competencies, they will have a better chance of utilizing the available resources, recognizing market demands, and spotting new opportunities from economic, social, and environmental perspectives. Kállay (2012) claims that competency-based theory promotes learning by doing, with the learning process serving as the foundation for the firm's internal development and sustainability.

Furthermore, competency enables individuals engage in organizational activities to justify the organization's success in terms of effectiveness and quality (Sanda et al., 2011). It is a particular behavior defined as characteristics that lead to an increase in superior performance efficiency. This mix of skills obtained from internal and external environments is assessed and supported by training and development programs that equip the employees with the necessary knowledge to handle technological advancements (Veliu & Manxhari, 2017).

Additionally, competency is defined by behaviors that an individual exhibits as standards of concert in the organization. These behaviors can be described as modern knowledge, risk assessment, time management, and defining the circle of personal interests. They also mean the ability to deal with a variety of issues in the organization. These abilities are represented in planning, problem-solving, analytical skills, and business-related skills such as orientation. They also include organizational skills, leadership skills, dispute resolution skills, creativity, and incorporating technologies (Mashavira et al., 2019).

lthough the competency above traits are linked to sustainability, it should be noted that when globalization effects increase, competency alone cannot stand as the only and sufficient factor in ensuring SMEs' long-term viability (Byukusenge et al., 2016). For SMEs to achieve sustainability and remain competitive, they must manage their competencies successfully and innovatively. As a result, the long-term viability of SMEs is contingent on their ability to innovate. Developing new goods, processes, and markets is widely regarded as a technique of gaining reasonable performance. It is also widely accepted that new processes, market innovations, and product development are important drivers of business performance (Beaver & Prince, 2002). Several studies have found direct links between competency and SME performance (Barazandeh et al.,

2015; Daradkeh, 2021; Endi Sarwoko, 2013; Sihotang et al., 2020), or between innovations and SMEs' performance (Cuevas-Vargas et al., 2020; Löfsten, 2014; Skovvan Christensen, 2006), without taking into account the mediation effect of innovations on competency and sustainability.

It is important to note that when coupled with competencies, innovations can provide a link that can extricate and uplift entrepreneurial firms for sustainability. Entrepreneurial innovations are linked with several benefits to SMEs; these include opportunities for creative development in SMEs, where the attributes of innovative ideas are critical for offering new product development. Also, learning-based competencies can pave the way for developing new ideas, which may provide chances for creating valuable services and products for customers. On the other hand, innovation can help SMEs maintain stability by allowing for ongoing improvement in production and marketing processes (Maravelakis et al., 2006; Skovvan Christensen, 2006). This innovative way can provide long-term viability, particularly through product re-processing, re-branding, re-engineering, and re-packaging.

Furthermore, entrepreneurial ideas may help to reinforce a company's brand. This has to do with customer image marketing for SMEs. Development branding has become one of the most well-known and important aspects of market leadership because of its link with marketing mix elements. Having a novel approach to marketing that distinguishes SMEs from competitors can open doors to chances that will likely help SMEs stay afloat. Schumpeter's Theory of Innovation also attributes the importance of entrepreneurial innovations to business performance. Schumpeter (1934) looks at innovation as the combination of five innovations: the introduction of new or significantly improved products or services, the introduction of new methods of processing, opening new markets, the development of new sources of supply, and the creation of a new competitive organization. Generally, these five areas are key factors for the success of SMEs, as they tend to offer the chance of making new improvements both internally and externally to the organization. Previous studies have noted that aligning requirements for innovations has a lot to do with the success of SMEs. For example, Korres (2008) found that innovation improves product quality and reduces process costs. Lalicic (2015) noted that combining consumer ideas with creativity may inspire the profitability of businesses. This research enhances knowledge of the literature about the mediating role of entrepreneurial innovations in the relationship between entrepreneur competencies and SME sustainability.

In Tanzania, studies on SMEs, innovations, and sustainability have not been thoroughly researched. Most of the variables defining competencies and innovations have been assumed but not measured in several previous studies, especially on their influence on the sustainability of SMEs. Also, they did not concentrate on the substantial individual attributes correlated with SMEs' sustainability. For example, Biteko and Ismail (2020) identified various competencies and suggested that the essential competencies as a competitive advantage in the mining sector have been understudied in previous studies. Likewise, John et al. (2019) indicated that competency had been overlooked in prior research on manufacturing SMEs in Tanzania. Equally, (Iganile, 2019) noted that the entrepreneurial competencies necessary for supporting SMEs' sustainability in Tanzania are rarely covered by past studies. Also, Salim (2015), in a comparative study between Tanzania and China, it was understood that the core competency of small businesses is missing. Still, he didn't quantify the importance of different competencies and innovations concerning sustainability.

Similarly, (Ndesaulwa & Kikula, 2016) investigated the impact of innovations and innovative activities on SMEs' performance by reviewing the worldwide extant empirical research using a desktop and library review without involving path analysis, particularly on competencies that may influence innovations and SMEs sustainability. Other studies on innovations without involving competencies are (Mahemba & De Bruijn, 2003; Ndesaulwa et al., 2017).

This means that competency and innovation attributes have been analyzed as residual factors rather than explanatory factors in the sustainability of SMEs. As a result, mediating relationships are not included at large. Based on this, the extent to which innovations mediate a relationship

between entrepreneurs' competencies and SMEs' sustainability is unknown and remains a significant gap in the literature. Additionally, empirical evidence should examine personal, professional, and social competencies separately and see their effects on entrepreneurial innovations and SME sustainability. This is because sustainability for SMEs encompasses the outcomes of SMEs' actions and reflects the extent to which the SME can maintain the viability and feasibility of its business activities over time while balancing the social, environmental, and economic aspects simultaneously.

1.1. Theoretical review

Various models and theories can be used to explain the sustainability of SMEs. However, in this study, the resource-based view (RBV), the competency-based view (CBV), and Schumpeter's Theory of Innovation (STI) have been used in conjunction with each other. RBV believes that a firm can stand out from its competitors and create a competitive advantage only if it has precious, rare, and unique resources (Penrose, 1959). In general, this theory is based on the premise that success is determined by resources (Barney, 1991; Penrose, 1959). Both tangible and intangible bundles of capital can be created within organizations or purchased on the open market (Olavarrieta & Ellinger, 1997). Therefore, it is acceptable that the theory's strength offers SMEs the ability to identify the extent to which resources are dynamically capable of creating value and generating high performance.

Although the merits presented in the resource-based theory define its applicability in this study because entrepreneurs' competencies are intangible resources, it is argued that the theory does not approach the question of explaining the process by which resources can be effectively utilized. Generally, a key difference between RBV and CBV is the chain of connection within factors. While the RBV argues that superior resources lead to performance variations among businesses, the CBV considers how resources are combined for performance differences. Therefore, resource endowment alone is insufficient to account for sustainability variations among SMEs. The SME itself must be able to employ these resources for market-oriented outcomes. This is only conceivable if action-related competencies are available. Competencies help unlock the potential of resources and allow SMEs to quickly respond to the needs of target markets in a non-random manner (Ng & Kee, 2018). Also, competencies can help to cover the explanatory gap between idiosyncratic resources and the sustainability of SMEs. To this end, RBV appears to be limited, particularly in describing the competency, especially in operational functions of the firm's resources. The way owner-managers are engaged in SMEs requires important competencies to ensure they provide what is required for sustainability.

On the other hand, studies have noted that SMEs require effective innovation capabilities to see success (Diharto & Budiyanto, 2017; Mahemba & De Bruijn, 2003; Ndesaulwa et al., 2017). The original idea behind STI is that any enterprise seeking to make a profit and progress must be innovative in its approach. The theory assumes an entrepreneur as an innovator who creates new combinations. This combination allows created products to reach the market, resulting in economic growth (Schumpeter, 1934). So, a wide range of various productive means must be employed in various ways, including designing and launching new products or improved versions of existing products, adopting new production methods that have not yet been proven in the industry, opening a new market that the specific industry has not yet characterized, and attaining new sources of raw materials or semi-finished goods. As a long-term economic dynamic, innovation, according to Schumpeter, should be recognized as a vital factor. Accordingly, entrepreneurs who possess a varied range of competencies, such as professional, social, and personal aptitudes, should have a competitive advantage in terms of innovation over entrepreneurs who lack sufficient capabilities in these areas. The flow of these theories suggests that innovations may work as a suitable mediating factor in the relationship between entrepreneurs' competencies and SME sustainability. Entrepreneurs' competencies are assumed to be critical factors for gaining proper innovations and hence increasing sustainability. Therefore, entrepreneurs who possess a variety of

traits such as professional, social, and personal competencies are believed to have a competitive advantage over those entrepreneurs who do not have adequate competencies.

1.2. Empirical review

In the literature, the question of the relationship between competencies and innovation among SMEs has been discussed. The competencies of the owners, managers, and employees impact the innovation process (Byukusenge et al., 2021; Gökkaya & Özbag, 2015). Schumpeter's theory of innovation noted that innovations are well explained by new ideas behind product creation and development, new market development, and re-designing existing products in markets. However, these innovations require proper entrepreneurial competencies among SMEs. This is because innovations need actors to have the ability and knowledge to identify opportunities, plan, and understand various problems entrepreneurs face when implementing business strategies in a social, economic, and environmental context (Komarkova et al., 2015). Bakanauskienė and Martinkienė (2011) categorized these competencies to include social, personal, and professional competencies as part of the competency classification.

1.3. Social competencies

The social competencies of entrepreneurs facilitate social skills and social interaction while enabling excellent communication with stakeholders within and outside SMEs (Ismail, 2012, 2012) and hence increase chances for innovations (Mumford et al., 2002). Social competencies also address how entrepreneurs build social relationships by improving relational skills and social relations. It is an alternative way for SMEs to reach their business networks, which are key avenues for innovations. Social networks are important areas for social competencies. This is because they are used when developing a new market strategy, determining a product's fit with the targeted audience, estimating the potential size of the targeted market, and calculating the costs associated with serving a specific market, all of which are associated with innovations (Muller & Peres, 2019). In addition, social competencies allow owner-managers to have open access to government and institutional support and flexibility to adapt to the environment's dynamic change and innovations (Bakanauskienė & Martinkienė, 2011; Muller & Peres, 2019). Failing to have proper social competencies among owner-managers in SMEs results in the lack of proper links with communities, hence reducing innovation capabilities. Based on these arguments, the study expected the following:

H1: Social competencies affect entrepreneurial innovations.

1.4. Personal competencies

Studies on personal competencies in SMEs are vital for the advancement of innovations. Personal competencies assist players in SMEs in gaining an advantage over their competitors in the area of innovation. According to Veliu and Manxhari (2017), obtaining insight into a person's underlying traits, such as a purpose, attribute, or ability, and an aspect of their self-image or social standing, can be beneficial to owner-managers. According to (Wedathanthrige, 2014) the personal competencies of owner-managers have been identified as one of the variables contributing to the innovations of SMEs because the ability to work independently of others' assistance brings new innovative ideas. Furthermore, innovations are linked to the personal competency of self-confidence, which helps entrepreneurs make innovative decisions when facing challenging problems in a competitive business environment. Bakanauskienė and Martinkienė (2011) insisted that these competencies can help recognize managers' emotions and their effects on themselves and other co-workers, increasing the chances for innovative activities. These characteristics affect the decision to start up and the firm's survival and growth (Sembiring, 2016). Therefore, entrepreneurs' competencies are essential to cope with SME challenges and keep up with the constant innovation and change in the business world. This implies that entrepreneurs' duties and aptitudes in attracting other organizational members are vitally crucial considerations to make for SME

innovativeness (Ahmed and Harrison, 2021; Leitch & Volery, 2017). The following is the hypothesis based on the above arguments:

H2: Personal competencies affect entrepreneurial innovations.

1.5. Professional competencies

For SMEs to remain competitive, it is necessary to recognize the significance of innovation in the workplace. Any SME must be consistently innovative and deliver new products or services to its markets (Byukusenge et al., 2016). On the other hand, professional competencies primarily involve planning skills, problem-solving skills, information gathering, analytical thinking, strategic thinking, and effective management (Dafna, 2008; Veliu & Manxhari, 2017). These competencies help owner-managers react to challenges and facilitates entrepreneurial innovations. They are measured as the technical know-how that is important to owner-managers for full economic potential and innovation. Evidence suggests that professional competencies positively affect integrity, creativity, flexibility, innovation capacity, accountability, and moral behavior. They present skills to take the initiative, maintain effective work habits, prioritize, and increase supervision work to bring about high-quality innovative outcomes for SMEs (Hawi et al., 2015). Bird (1995) asserted that professional competencies represent the excellence of accomplishments performed by entrepreneurs.

Additionally, professional competencies are defined as knowledge, abilities, and attitudes that enable entrepreneurs to establish, expand, and innovate their firms while developing and delivering new products and services (Mohammadkazemi et al., 2016). However, in some areas, especially in developing countries, variations in professional competencies have been observed. For example, Yahay and Kheirzadeh (2015) and Anderson (2017) have identified poor organizing abilities as the astonishing growth of SMEs and innovations. Therefore, most SMEs lack professional competencies, which leads to limited marketing strategy and acquisition of new knowledge, which probably leads to poor innovativeness. Therefore, the following hypothesis aims to draw a more accurate link between professional competencies and entrepreneurial innovations.

H3: Professional competencies affect entrepreneurial innovations.

1.6. Entrepreneurial innovations and SMEs sustainability

Sustainability that integrates the environment and social and economic aspects has become a concerning matter for SME strategies (Imran et al., 2019). This is because sustainable SME practices, such as socially responsible business, environmental considerations, and economic considerations, can help SMEs survive in the market while providing jobs, contributing to taxation, and improving prospects for entrepreneurs' well-being. SMEs that implement sustainability concepts such as eco-friendly packaging, sustainable storage, green delivery, fewer paperwork, and employee involvement are more likely to avoid market exit than those that do not. Engaging in innovative activities is one of the important strategies that SMEs may use to achieve sustainability. However, regardless of the noted importance of innovations, there are few studies done in this area. In a literature review, a study by Ndesaulwa and Kikula (2016) found a need for more research on SME innovation. Their research discovered that few studies in Africa specifically focused on the link between innovation and SME success. As a result, it was suggested that additional research be conducted to investigate this association further.

Although few studies have related innovations and SME's success, in most cases, SME's success has been measured using performance indicators without paying more attention to SME's sustainability indicators. Innovations provide firms with a strategic orientation that involves product and process innovation. This might lead to superior sustainability sales, market share, and

profitability. Several past studies have pointed out the importance of innovations to SMEs' success. For example, Murat Ar and Baki (2011) noted that innovations done in products and processes tend to be stronger predictors of power of SMEs success. This is supported by (Wedathanthrige, 2014) who posted that non-innovative SMEs do not have much success due to fewer efforts at innovation and remain uncompetitive. Also, (Walobwa et al., 2013) noted that owners' tendency to engage in new ideas and creative processes results in the development of new commodities and processes that substantially impact SMEs' success. In this aspect, innovation is necessary for business sustainability since it provides a management style that generates and develops new ideas to meet the needs of today's and future market conditions (Modranský et al., 2020). Based on these arguments, it is reasonable to hypothesize that

H4: Entrepreneurial innovations affect SMEs sustainability.

2. Study methodologies

2.1. Design and sampling

A cross-sectional research design was used in this study. In general, cross-sectional design involves gathering data from a random population sample at a specific point in time. SME owner-managers in Tanzania's SMEs were sampled in the two cities of Dar es Salaam and Dodoma for this research. The study had a sampling frame of about 9210 firms which was developed and established from the statistics found in respective city councils and Small Industries Develoment Organisation (SIDO) in Tanzania wherby, 5200 firms were from Dar es Salaam and 4010 firms were from Dodoma. The sampling frame was developed based on the statistics available in the city councils and supplemented with SIDO (Small Industries Development Organisation) in Tanzania. The study used Slovin's sample formula. The strength of this formula is that it enables sampling of the population with a preferred degree of accuracy, i.e., confidence levels in the statistical test and margins of error (Creswell, 2014). In addition, the study employed a multi-stage sampling procedure as follows:

(1) Two cities, Dodoma and Dar-es-Salaam, were purposefully selected. Dodoma city has been chosen because it is the capital city. Similarly, Dar es Salaam is the largest business city in Tanzania with several SMEs. These cities have a large number of SMEs with sustainability problems. Second, the calculation of the overall sample size was done as follows:

$$n = N/(1 + N(e2))$$

Whereby:

n = number of samples;

N = total population (in this case, N =9210); and

e = error of tolerance (e = 0.05) as recommended by Leavy (2017).

$$n = 9210/(1 + 9210(0.0025))$$

$$n = 9210/(24.025)$$

$$n = 384$$

Thus, sample size (n) = 384 SMEs. As indicated in Table 1, the sample size of 384 SMEs was proportionally allocated to ensure effective representation of cities.

Table 1. Sample size

City	No of SMEs	Proportion	Sample size
Dar-es- salaam	5200	5200/9210x384	217
Dodoma	4010	4010/9210x384	167
Total	9210	9210/9210x384	384

(2) It was necessary to split the sample size to obtain the sampling fraction for each city. As a result, selecting a sample from each city in proportion to the total population ensures that each city is properly represented while increasing statistical efficiency.
(3) Systematic sampling was conducted where sampling fractions of 25 and 24 were used in Dar es Salaam and Dodoma to get the interval and the random start from each city.
(4) Finally, the identified owners of SMEs were approached for an interview using a structured questionnaire. The response rate, in this case, were 100%. This was possible because all SMEs included are registered.

2.2. Study constructs and measurements

The scale was created using the methodology framework for scale development proposed by (Turker, 2009). The methodology used by Turkey involved developing a set of statements to identify competency, innovations, and sustainability indicators. This aims to develop an initial scale that has content validity. Therefore, the study reviewed empirical and theoretical entrepreneurship literature to identify reliable items that scholars had developed and tested. Thus all model propositions were checked with multiple items using a 5-point scale based on the Likert. The items with their sources are presented in Table 2. In these regards, owner-managers were asked to rate how well they thought professional competencies (prc1-prc4), social competencies (soc1-soc5), and personal competencies (pec1-pec5) were correctly measured in their respective constructs, with 1 indicating strong disagreement and 5 indicating strong agreement. On the other hand, entrepreneurial innovations were captured based on the five items (inn1-inn6), and sustainability was measured in this analysis measured sustainability using a five-item (sms1-sm5) from the sustainability practices indicators.

2.3. Data analysis

The data was analyzed using SEM. This multivariate data analysis technique is more powerful at identifying relationships between study constructs by modeling a regression structure for latent variables. In addition, it allows for the inclusion of unobserved or latent variables in causal models. This technique was appropriate for this study because the hypothetical constructs were not directly observable. They were indirectly measured through observed scores or indicators (Kline, 2015).

3. Results and discussion

3.1. Demographic characteristics

Table 3 shows that 79.4 percent of SMEs have been in operation for less than 12 years, and the majority of owner-managers, 73.5 percent, are between the ages of 35 and 46. Furthermore, 91.7 percent of the population has completed at least secondary school. Finally, 84.5 percent of SME owners have 5 to 21 years of experience running a business.

3.2. Validity and reliability

It was determined that the measurement items were a valid proxy for the SME's competency constructs. On the other hand, all items had loadings > 0.5, indicating good convergent validity (Tabachnick & Fidell, 2012). Additionally, all variables have a Cronbach's Alpha Coefficient (α) > 0.7, meaning that the study's constructs are internally reliable and consistent (Tabachnick &

Table 2. Validity and reliability of items

Construct	Items	Cronbach's Alpha	Loadings	CR.	AVE	Source
Professional competencies (PRC.)	**prc1**: I can develop and establish long-term directions for the firm, e.g., on the projects, business scale, objectives, or goals	0.868	0.811	0.876	0.641	(Ahmad et al., 2010; Man et al., 2002, Man et al., 2008; Silveyra et al., 2021)
	prc2: I have a management plan to support the production of quality products		0.733			
	prc3: I routinely look for less environmentally damaging materials and processes		0.912			
	prc4: I can determine strategic actions by weighing costs and benefits		0.732			
Social competencies (SOC)	**soc1**: I understand how our environmental performance impacts on our business	0.913	0.932	0.934	0.741	(Ahmad et al., 2010; Hazlina Ahmad et al., 2010; Man et al., 2002, Man et al., 2008; Silveyra et al., 2021)
	soc2: I network with other local entrepreneurs and business owners		0.923			
	soc3: I have a website, which is updated regularly(at least monthly		0.754			

(*Continued*)

Table 2. (*Continued*)

Construct	Items	Cronbach's Alpha	Loadings	CR.	AVE	Source
	soc4: I make use of social media tools to promote our business		0.831			
	soc5: I'm good at developing long-term trusting relationships with others		0.851			
Personal competencies (PEC.)	**pec1**: I take time to communicate regularly with our key stakeholders	0.818	0.792	0.924	0.709	(Ahmad et al., 2010; Hazlina Ahmad et al., 2010; Lerner & Almor, 2002; Man et al., 2002, Man et al., 2008; Orobia et al., 2020; Silveyra et al., 2021)
	pec2: I'm good at verbally communicate with others effectively		0.872			
	pec3: I'm good at interacting with others		0.912			
	pec4: I'm good at understanding what others mean by their words and actions		0.784			
	pec5: I am familiar with a certain industry		0.843			
Entrepreneurial innovation (INN)	**inn1**: To ensure that our consumers are satisfied, our organization makes modest adjustments to existing products.	0.929	0.882	0.965	0.777	(Byukusenge et al., 2016), (Alegre & Chiva, 2013)
	inn2: The personnel of our firm is dedicated to the innovation of new product developments.		0.781			

(*Continued*)

Table 2. (*Continued*)

Construct	Items	Cronbach's Alpha	Loadings	CR.	AVE	Source
	inn3: We are still capable of developing new product items to remain competitive.		0.867			
	inn4: Our firm is constantly looking for innovative ways to improve the present manufacturing process.		0.912			
	inn5: On our new markets, we commercialize products that are new to our clients.		0.987			
	inn6: In our new markets, we take advantage of new business prospects.		0.882			
	inn7: Our company's ways of operating are innovative.		0.871			
	inn8: Over the last five years, we've boosted the number of new products we've introduced.		0.856			
Sustainability (SMS)	**sms1**: Is your organization/company involved in improving the community/world in the non-business environment?	0.915	0.713	0.935	0.744	(Imran et al., 2019; Karkoulian et al., 2016)

(*Continued*)

Table 2. (*Continued*)

Construct	Items	Cronbach's Alpha	Loadings	CR.	AVE	Source
	sms2: Do you agree that sustainability is important to your organization?		0.882			
	sms3: Is there an existing sustainability plan for your organization?		0.941			
	sms4: Do you think that having a sustainability manager/officer for your company is important?		0.924			
	sms5: Do you think your institution treats your employees fairly (such as involvement, reward, respect, participation in decision making?		0.832			

Table 3. Respondents profile

Items	Frequency	Percentage (%)
SMEs years operations		
5–8 years	186	48.4
9–12 years	119	31
13–16 years	41	10.6
More than 17 years	38	10
Total	***384***	***100***
Age of the owner-manager		
23–28	14	3.6
29–34	52	13.5
35–40	210	54.7
41–46	72	18.8
47 and above	36	9.4
Total	***384***	***100***
Level of Education		
Primary level	32	8.3
Secondary level	199	51.8
College level	153	39.9
Total	***384***	***100***
Owner-manager experience		
5–10	196	51
11–21	129	33.5
22 and above	59	15.5
Total	***384***	***100***

Table 4. Square root of AVE

Construct	SOC	PEC	PRC	INN	SMS
SOC	**0.861**				
PEC	0.590	**0.842**			
PRC	0.520	0.620	**0.800**		
INN	0.610	0.240	0.290	**0.881**	
SMS	0.390	0.210	0.490	0.370	**0.862**

Fidell, 2012). Furthermore, all variables have a construct reliability (CR) value > 0.7, indicating that the instruments were reliable. Moreover, all three constructs have an average variance extracted (AVE) value of > 0.5, indicating convergent validity in the data (Bagozzi & Yi, 1988), Table 2.

The Fornell and Larcker criteria were used to explain the discriminant validity. In this method, Fornell and Larcker compared the Average Variance Extracted (AVE) square root with the correlation of latent constructs. The AVE square root for each construct under comparison should be greater than the correlations of other constructs (Fornell & Larcker, 1981). The square roots of AVE for PRC, SOC, PEC, INN, and SMS were greater than the correlated coefficient between the variable and the other variables, indicating that the data were discriminant valid, according to Table 4.

3.3. Measurement model fitness

Before testing the hypothesized relationships, the study conducted a confirmatory factor analysis for a pooled measurement model. As a result, the GFI, NFI, GFI, and CFI scores are 0.971, 0.903, 0.949, and 0.982, respectively, indicating that the model correctly predicts over 90% of the variance in the results (values should be greater than 0.9). Also, x^2/df and RMSEA are 2.006 and 0.03 respectively (x^2/df and RMSEA should be < 3, and < 0.08, respectively), (Hooper et al., 2008).

4. Results and discussion

4.1. Social competency and entrepreneurial innovations

As illustrated in Table 5, the study examined the direct effect of social competencies on entrepreneurial innovations. The study revealed that this relationship is significant, β = 0.105, p = 0.034; thus H1 was supported. To evaluate the inner model, the coefficient of determination R^2 was found to be 68%. This means about 68% of the variance of entrepreneurial innovations is explained by social competencies. A plausible explanation is that social competencies enable owner-managers to carry out social interactions well, form close relationships, get along with others, and respond to inflexible social settings.

Furthermore, given the complex inter-relationships typical in society, social competencies provide numerous emotional processes, cognitive abilities, and social awareness, personal, cultural, and traditional values. These attributes are important for innovations that help maintain equilibrium in the social, environmental, and economic arenas rather than the short-term gain obtained by implementing quick fixes and individual initiatives. Also, owner-managers who possess sufficient social competencies, such as social perception, social expressiveness, social adaptability, persuasiveness, and impression management, have a good chance of increasing innovation in SMEs. Furthermore, these competencies can assist owners-managers in finding and assessing business opportunities, collecting the necessary resources, and leveraging them to generate value. As a result, this will help SMEs increase their innovative activities and improve employee and customer satisfaction. In addition, social competencies offer the aptitude to bring social connections, build social relationships with customers, provide skills to make social connections with suppliers, build social relationships with other companies and financial institutions. Besides, owners' social coalition with the government and other professional organizations are important aspects of innovations. These results align with Alegre and Chiva (2013), who noted that intra organizational knowledge sharing through social networking could increase organizational innovation chances.

4.2. Personal competency and entrepreneurial innovations

The model results reveal that entrepreneurial innovations increase positively and significantly with increased personal competencies (β = 0.521, p = 0.000); thus, H2 was supported. In addition, about 76% of the variance of entrepreneurial innovations is explained by personal competencies. The most likely explanation is that personal competencies provide the ability to motivate oneself, sustain a high level of energy, perform at a high level, react to constructive feedback, preserve a positive attitude, and prioritize tasks to manage time in a way that matches opportunities and challenges. These competencies can help SMEs increase their chances of creating entrepreneurial innovations. Additionally, there is a direct relationship between innovation, self-control, and resilience, industry understanding, and personality. In most cases, the owner-manager of an SME who possesses below-average personal attributes is adverse to innovation. This is supported by Gökkaya and Özbag (2015), who stated that managers should raise awareness of the crucial role that managerial abilities play in fostering innovation in their organizations.

4.3. Professional competency and entrepreneurial innovations

This study established the positive and significant direct effect of professional competency on entrepreneurial innovations with β = 0.129, p = 0.006, and R^2 = 73%; thus, H3 was supported. Hence owner-managers with professional competencies have strategic planning abilities, market

Table 5. Standardized regression model results

Hypotheses	Regressed Variables	Estimate	Standard Error	Critical Ratio	R-Square	p-value	Decision
H_1	SOC→INN	0.105	0.048	2.187	0.681	0.034	Supported
H_2	PEC→INN	0.521	0.082	6.354	0.762	***	Supported
H_3	PRC→INN	0.129	0.058	2.223	0.733	0.006	Supported
H_4	INN→SMS	0.239	0.095	2.515	0.893	***	Supported

Notes: ***Denotes $p < 0.001$

orientation, problem-solving skills, and analytical skills to improve entrepreneurial innovations. Given the opportunity and the constraints that must be overcome, owner-managers must possess these competencies to meet their SMEs' current obstacles and ambiguous demands through innovative techniques. The results are consistent with Byukusenge et al. (2021), who asserted that specific abilities, behaviors, functional knowledge, and attitudes are required for managers to govern an organization successfully. These attributes have the ultimate power to make an entrepreneur have control of their business, resulting in innovations.

Additionally, a study by (Hawi et al., 2015) found a positive and statistically significant association between decision making, problem-solving, planning competencies, customer focus, strategy, and innovations. Therefore, the more the entrepreneurs are equipped with professional competencies, the more the SMEs see the entrepreneurial innovations. Further, Szczepańska-Woszczyna and Dacko-Pikiewicz (2014) posted that the ability of top managers to engage in strategic thinking, create goals, and motivate staff while also developing their commitment is crucial to the promotion and enhancement of innovation in SMEs. Thus, professional competencies are critical for SMEs to enhance their innovations. These skills enable owner-managers to track progress against strategic objectives, prioritize work in accordance with the innovations, identify needs for re-engineering, product development, and resolve problems or opportunities, align current actions, evaluate results based on strategic objectives, re-design the company to meet objectives better, and regulate strategic advisability (Nikitina et al., 2020; Prystupa et al., 2020).

4.4. Entrepreneurial innovations and SMEs sustainability

The results in Table 5 shows that entrepreneurial innovation has $\beta = 0.239$, $p = 0.000$, and $R^2 = 89\%$. This suggests that hypothesis H4 was supported. The plausible explanation is that entrepreneurial innovations are crucial in eliciting owner-managers' positive behavior towards sustainability in SMEs. Therefore, entrepreneurial innovations are upheld by owner-managers, particularly by upgrading workforce skills in SMEs, which can result in increasing their sustainability. Furthermore, improving innovative workforce skills by generating new knowledge through collaborations with external partners in environmental, social, and economic ways can lead to the long-term development of SMEs. On the other hand, the adoption of ICT in SMEs is related to the digital revolution in SMEs, which is key for daily activities in SMEs. Moreover, ICT as a major innovation activity is important for SME sustainability because of its well-known importance in communication and simplification of work. This implies that it is necessary to ensure that SMEs have the proper entrepreneurial innovations that can help employees and managers execute their assigned duties and responsibilities while observing the sustainability dimensions related to the environment, social and economic aspects. Different past studies have supported these findings by posting different facts about the importance of innovation in SMEs. For example, a study by Ngibe and Lekhanya (2019) noted that for small businesses to be sustainable, leaders with innovation are supposed to start realizing that business innovation is a central element for the growth of SMEs. Thus, owners and managers are supposed to be inventive with ideas and methods to establish highly valued new products and services for the continuous sustainability of SMEs. Similarly, a study by Msomi et al. (2020) concluded that SMEs should design and develop crucial innovative strategies for business sustainability. They should determine the most innovative business implications for SME's sustainable growth.

5. SOBEL test for the strength of mediator variable

The strength of mediation was determined using the SOBEL test, and the results were interpreted using Baron and Kenny (1986) techniques and circumstances for basic mediation testing. During the SOBEL test, all items used to define SOC, PEC, and PRC were combined to form entrepreneurs' competencies (ENC). ENC was used as the independent variable in the SOBEL test. Procedures included: (a) independent variables should influence dependent; ENC→SMS (b) independent variables should influence mediator; ENC→INN (c) mediator variables should influence the dependent variable; INN→SMS and (d) after controlling the effect of the mediator variable, the effect of the independent variable on the dependent variable (ENC→INN→SMS) should no longer be significant

Table 6. SOBEL test statistics

Variables	Coeff (β)	S.E	t-test	Sig(two)
ENC→SMS	0.3545	0.0976	3.6321	.0000
ENC→INN	0.2343	0.0863	2.7149	.0000
INN→SMS	0.6743	0.1988	3.3918	.0000
ENC→INN→SMS	0.1578	0.0748	2.1077	.0011

indicating a full mediation, or if it is still significant but substantially reduced then it indicates partial mediation. The results in SOBEL test in Table 6, show that there was a significant direct effect of ENC on SMS with β = 0.3545, there was also a significant direct effect of ENC on INN with β = 0.2343 and there was a significant direct effect of INN on SMS with β = 0.6743. However, in the same way, when mediating variable (INN) is in the relationship, the effect of ENC on SMS drops to 0.1578 but remain significant, hence confirming a partial mediation effect. Thus, ENC and INN are accurate drivers of SMS. In addition, the partial mediation of INN has two basic justifications. First, although entrepreneurs in Tanzania use their entrepreneurial competencies to improve the sustainability of SMEs without necessarily relying on the contribution of innovation, it should be noted that the total effect on SMS does not only go through the entrepreneurial competencies but also through entrepreneurial innovations. This means entrepreneurs in Tanzania ensure that their firms are dedicated to the innovation of new product developments; they are capable of developing and commercializing new products to remain competitive; and their firms are constantly looking for innovative ways to improve the present manufacturing process. Moreover, entrepreneurs' competencies are applied to improve entrepreneurial innovations, which in turn increases SMEs' sustainability. Further, the findings show that entrepreneurs have a clear grasp of entrepreneurial competencies and their related strategies that directly impact the sustainability of SMEs.

6. Conclusion, implication, and limitations

Overall, the findings of this study confirmed that all three competencies included have positive and significant results with entrepreneurial innovations. As a result, the findings of this study provide substantial evidence to support the hypotheses used. Therefore, it is vital to ensure that SMEs have all the necessary entrepreneurial competencies required for innovations and sustainability of SMEs. The most significant takeaway from these findings is that governments, researchers, development practitioners, and policymakers must understand or consider SME's competencies in facilitating innovations. Therefore, training related to competencies is supposed to be provided to SME owner-managers to manage the social, economic, and environmental aspects of their business sustainably. Similarly, providing owners-managers with business competency training-related programs would assist them in innovating through re-designing of their products, introducing new methods and production techniques, and being proactive about globalization ahead of their competitors.

Furthermore, from a theoretical standpoint, the study provides implications for successfully applying resource-based theory, competency-based theory, and Schumpeter's theory of innovation. Combining three theories provides a foundation for employing more than one theory as an influential factor in the sustainability of SMEs. In terms of methodology, the study used various constructs and latent variables to assist other researchers in discovering a new way to combine and define competencies, entrepreneurial innovations, and sustainability of SMEs in future research.

On the other hand, this study has some limitations. For example, it used a cross-sectional design to collect data from respondents through a structured questionnaire; various conclusions can be drawn using a longitudinal design. Also, although this study used sustainability items that previous studies have recommended, future studies may include other sustainability measures such as SMEs' age and market share. Furthermore, this analysis did not include entrepreneurial innovations as the mediator variable; future studies may test the moderation effect of this variable to see

variations. Apart from that, other mediator variables may be included, for example, dynamic capabilities and financial accessibility. Finally, there is also a chance to study the reverse relationship between SME sustainability and innovation. This is because there is a possibility that sustainable SMEs can also determine entrepreneurial innovations in the future.

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