



Effect of Innovativeness, Proactiveness and Risk-Taking on Small Medium Enterprises (SMEs) Performance: Technology Orientation as Mediating Variable in Botswana

1. Goitseone Bridget Khwae,

PhD Research Scholar

Limkokwing University of Creative Technology, Malaysia

Email: gbkhwae@gmail.com

2. Associate Professor Dr. Azadeh Amoozegar

Faculty of PGC

Limkokwing University of Creative Technology, Malaysia

Email: azadeh.amoozegar@limkokwing.edu.my

Article History

Volume 6 Issue 12, 2024

Received: 25 May 2024

Accepted: 25 June 2024

doi:

[10.48047/AFJBS.6.12.2024.1198-1216](https://doi.org/10.48047/AFJBS.6.12.2024.1198-1216)

Abstract

Given the competitive pressures and volatility in the business environment, small businesses face several difficulties necessitating the adoption of strategies such as strategic orientations for business continuity. From the context of a developing nation, this study assesses the effect of innovativeness, proactiveness and risk-taking on SMEs performance with the mediating role of technology orientation in Gaborone, Botswana. Using survey method with cross-sectional design, data was collected from SMEs owners/managers and analyzed through structural equation modelling. The findings showed that innovativeness, proactiveness and technology orientation have significant effect on SMEs performance while risk-taking showed insignificant results. Furthermore, only innovativeness has significant effect on technology orientation. The findings further showed that technology can only mediate the relationship between innovativeness and SMEs performance. The findings of the research can provide valuable insights for entrepreneurs to formulate strategies for enhanced performance and sustainability as well as for researchers interested in exploring entrepreneurial and technology orientation.

Keywords: Innovativeness, Proactiveness, Risk-Taking, Entrepreneurial Orientation, Technology Orientation

1. Introduction

Competitiveness challenges have been a major concern in emerging and developing economies and companies have been striving to endure and increase their performance especially after the pandemic which has created a more complex scenario for SMEs (Ramírez-Solis et al., 2022). SMEs constitute majority of businesses globally and are pivotal in creating jobs and development of global economy (Hossain & Asheq, 2019). In developing economies, formal SMEs can account for 40% of the national income (GDP) (Rahaman et al., 2021). In Botswana, SMEs are still seen as the core driver and cornerstone of the country's economic development and growth (Monyake & Kuruba, 2021), as they account for 50% of private sector employment

and 15-20% of Botswana's GDP (BIDPA, 2020). However, despite their essential socio-economic part and the government support that they get, majority of them continue to fail within a very short time (Monyake & Kuruba, 2021), their survival and sustainability rates are very low in Botswana (Tadu, 2018).

Evidence has indicated that there is a notably high rate of business failures in developing economies attributed to high uncertainties and challenging business environment (Mansi, 2021), with previous past statistics revealing that more than half of all new businesses fail to achieve long term success in both developed and developing economies (Yumboris et al., 2020). In the case of Botswana, the survival record shows that approximately 80% cease operating within five years (BIDPA, 2020; Gaetsewe, 2018; Monyake et al., 2020; Monyake & Kuruba, 2021; Okurut et al., 2015). Scholars have identified various main problems that impede the performance of SMEs, such as lack of entrepreneurial orientation, a weak organizational culture, and reluctance to take business risks (Beshir, 2022; Rajamani et al., 2022). For example, Monyake et al. (2019) noted that the level of innovation and creativity in both emerging and existing small businesses in Botswana is very low.

Considering several difficulties and uncertainties encountered by SMEs, it becomes crucial for them to adopt a more aggressive approach to enhancing performance through striving for development, adoption and implementation of effective business strategies (Masa'deh et al., 2018) such as entrepreneurial orientation. The concept of entrepreneurial orientation plays an essential part in shaping the strategic decisions of SMEs (Gede & Warie, 2024) because it closely aligns with real entrepreneurial conduct (Aloulou & Fayolle, 2005). It has been identified as a crucial factor that improves SMEs performance (Bature et al., 2018; Isichei et al., 2020; Meekaewkunchorn et al., 2021) as it facilitates the development and implementation of various strategies and policies aimed at gaining competitive advantage over rivals (Ferreira et al., 2020). Knight (2000) noted that in the era of globalization, SMEs that adopt entrepreneurial orientation (EO) will achieve superior performance compared to businesses that do not embrace entrepreneurial orientation. A higher level of EO enables enterprises to recognize and capitalize opportunities in a manner that sets them apart from non-entrepreneurial organizations (Irikefe & Bagobiri, 2022).

However, although more studies have been done on the relationship between EO and SMEs performance, the empirical evidence regarding the relationship between them has been inconsistent (Cannavale et al., 2020; Kollmann & Stöckmann, 2014). Majority of researchers have noted a positive impact of EO on performance (Isichei et al., 2020; Olubiyi et al., 2019), whereas some studies noted a negative impact between EO and SMEs performance (Liu & Atuahene-Gima, 2018; Wahyuni & Sara, 2020). According to Mansi (2021) researchers have disputed that the results of EO-performance relationship are context precise and not universal and further highlighted that the results are mixed and need further examining to get context detailed results in different economies to explain and address indecisive arguments. Similarly, previous studies such as Engelen et al. (2015), Shirokova et al. (2016) have shown that entrepreneurial orientation or its specific dimensions may vary across countries. Hence, there is no universal agreement or conclusion concerning the relationship between EO and business performance (Irikefe & Bagobiri, 2022). Therefore, this outweighs the need for further research in a developing country like Botswana.

Additionally, the inconsistency has possibly been due to the oversight of various unidentified moderating variables (Lee & Chu, 2017; Lumpkin & Dess, 2001). In order to achieve optimal and positive impact of the relationship, some researchers have identified the need for moderating and

mediating variables to be added (Abu-Rumman et al., [2021](#)). Therefore, in order to achieve maximum and positive impact on the relationship between EO-performance, this study incorporates technology orientation as a mediator in a least-developed country. Hamaluba & Kesamang ([2019](#)) noted that being up to date with technology is important for every business owner, even those who do not run technology businesses. Furthermore, Isichei et al. ([2020](#)) noted that entrepreneurial orientation can be achieved through improving technology development. Hence the aim of the study, is to examine the effect of entrepreneurial orientation dimensions on SMEs performance using the case of small and medium-sized enterprises in Gaborone, Botswana through the mediating role of technology orientation.

2. Entrepreneurial orientation

Entrepreneurial Orientation is a broadly recognized concept in the fields of entrepreneurship and business strategy (Wales et al., [2020](#)). According to Etim et al. ([2017](#)), entrepreneurial orientation refers to a set of decision-making processes, procedures, guidelines and standards used by business to enhance its capacity for innovation, initiative, and risk-taking. Miller ([1983](#)) conceptualized entrepreneurial orientation as a metric utilized by businesses to introduce, take risks, forecast and emphasize entrepreneurship. Covin and Slevin ([1989](#)) noted that there are three important dimensions of EO, which are innovativeness, proactiveness and risk-taking, which was later expanded by Lumpkin and Dess ([1996](#)) by adding two dimensions; autonomy and competitive aggressiveness. However, an increasing number of scholars have adopted Miller ([1983](#)) perspective, viewing it as a merging of creativity, proactivity, and risk-taking, with possible potential additions and augmentations (Abdulrab et al., [2021](#); Rahaman et al., [2021](#); Covin & Slevin, [1989](#); Isichei et al., [2020](#); Miller, [1983](#)). In line with Miller's unidimensional concept, they argue that for a company to be deemed entrepreneurial, it must demonstrate high levels of innovativeness, risk-taking, and proactiveness concurrently (Gede & Warie, [2024](#)). Therefore, this study bases on Miller (1983) dimensions of EO.

3. Theoretical framework and hypotheses

From the perspective of SMEs performance, the theory of RBV is highly relevant as it focuses on the company's internal capabilities that serve as building blocks in creating competitive advantage and improving company's performance (Barney, [1991](#); Meekaewkunchorn et al., [2021](#)), with resources that are valuable, unique, costly to imitate and non-substitutable (Barney, [1991](#)). It adopts an 'inside-out' view or a firm-specific viewpoint to explain the reasons behind organizations' success or failure in the marketplace (Dickson, [1996](#)). As it states that a company's competitive advantage and superior performance comes from the company's specific resources and capabilities (Kiyabo & Isaga, [2020](#)). It recommends companies to develop a resource bundle that is sufficiently unique and that is hard enough to be copied by their competitors, to make basis for the company to gain a competitive advantage (Pee & Kankanhalli, [2016](#)). As such, it serves as a theoretical framework that many scholars utilize to comprehend the factors influencing business performance, inclusive of strategic orientations (Kyrgidou & Spyropoulou, [2013](#)) such as entrepreneurial orientation (Susanto et al., [2023](#)) and technology orientation (Mahrous & Genedy, [2019](#)). That is, EO is argued as a distinctive resource for organizations to acquire a competitive advantage, resulting in enhanced performance (Susanto et al., [2023](#)) and SMEs that prioritize latest technology can provide unique products that are hard for competitors to replicate (Idrusa et al., [2020](#)). In view of this, this study asserts that having these unique, difficult to imitate resources and employing them will empower SMEs to visualize, formulate strategies and plan to enhance their overall performance and maintain their competitive position.

3.1 Innovativeness and SMEs performance

Innovativeness refers to the systematic efforts undertaken by individuals or organizations to create new products, processes, and ideas, or to apply inventive methods to existing products, processes, and ideas (Uddin et al., 2014). According to Neneh and Van Zyl (2017), innovativeness in a business generally involves the introduction of new ideas which can allow the business to enhance its product or service offerings. Through innovation, firms can capitalize on new opportunities, meet consumer needs with fresh products and services, and secure a first mover position in the industry (Isichei et al., 2020). Shashi et al. (2019) noted that innovativeness serves as a critical factor for both financial and non-financial success of SMEs. It is considered one of the main factors influencing the company's performance and competitive edge of business (Li et al., 2023) and is able to dictate the future success and survival of the company (Lintukangas et al., 2019). According to Kimutai & Bor (2018), Onyenma (2019) and Falahat et al. (2018), innovativeness has a positive and significant relationship with SMEs performance. Therefore, the study hypothesizes that:

H1: Innovativeness has an effect on SMEs performance

3.2 Proactiveness and SMEs performance

Proactiveness refers to an organization's capacity to anticipate and proactively address consumers' needs by introducing novel products and services that are unprecedented in the industry (Kallmuenzer & Peters, 2018). It entails a future-oriented approach and opportunity-seeking perception that entails the introduction of novel products and services before competitors, as well as taking actions in anticipation of future needs to effect change in the business environment (Adeniyi et al., 2024). Proactiveness has been shown to have a significant influence on SMEs, enabling them to gain a strategic advantage by anticipating customer demands, implementing innovative strategies, and setting higher prices (Anwar & Shah, 2021). Previous studies have proven that there is a significant relationship between proactiveness and firm performance (Hossain & Asheq, 2019; Nuong, 2022). However, Cahill (1996) argued that proactiveness may not automatically predict business performance, but rather a genuine effort to execute new ideas. Therefore, the following hypothesis has been proposed;

H2: Proactiveness has an effect on SMEs performance

3.3 Risk-taking and SMEs performance

Risk taking refers to an organization's inclination to undertake initiatives and engage in activities where the outcomes are uncertain (Kallmuenzer & Peters, 2018). According to Adeniyi et al. (2024) risk taking ability is a crucial entrepreneurial attribute for business creation. Small entrepreneurs consistently operate in a risky environment where they are expected to take calculated risks to venture into new markets or investments, where they use their limited resources, aware that their investments may not yield returns and could even result in losses (Rahaman et al., 2021). Although risk taking represents the subjective likelihood of systemic failure or potential loss, it is also recognized as a personality characteristic which shapes attitudes on entrepreneurship (Al-Mamary & Alshallaqi, 2022). Previous studies have noted a positive association between risk-taking and SMEs performance (Astrini et al., 2020; Games, 2019). However, Alvarez-Torres et al. (2019), Nuong (2022) and Olubiyi et al. (2019) found that risk-taking does not have a significant relationship with firm performance. Therefore, the following hypothesis has been proposed;

H3: Risk-Taking has an effect on SMEs performance

3.4 Entrepreneurial orientation dimensions and technology orientation

Technology orientation (TO) is the firm's capacity to propose or integrate new technology, products, or inventions (Lei et al., 2019). It is evident when companies introduce new ideas, products, and processes (Masa'deh et al., 2018). The rationale behind technology orientation emphasizes that a firm with TO is consistently proactive in research and development (R&D) activities, acquiring the latest technology, and utilizing it in the process of creating new products and services (Polys et al., 2018). For instance, innovativeness helps to develop new technologies, while risk taking behavior supports investment in products and technologies with uncertain returns (Wiklund & Shepherd, 2005). While proactiveness implies that organizations embracing this strategic approach will invest in new technologies to attain first-mover benefits (Do Hyung & Dedahanov, 2014). Prior studies has shown that there is a positive relationship, indicating that entrepreneurial orientation directly have an impact on technology orientation (Hakala, 2011; Wiklund & Shepherd, 2005). Therefore, based on the above discussion, the hypothesis is formulated as follows:

- H4. Innovativeness has an effect on technology orientation
- H5. Proactiveness has an effect on technology orientation
- H6. Risk-Taking has an effect on technology orientation

3.6 Technology orientation and SMEs performance

The development, improvement and utilization of technologies is crucial for development of SMEs (Abdulrab et al., 2021), as it is a key source for business expansion and market progress across different business structures and plays a role in both financial and non-financial performance (Masa'deh et al., 2018). Past studies have emphasize that technology orientation is positively related to SMEs performance (Hamaluba & Kesamang, 2019; Lei et al., 2019). Presently, technology has radically enhanced business performance (Saqib et al., 2017) and SMEs are progressively benefiting from the speed of technology to reach the market quickly and wider (Krammer et al., 2018). However, contrary to the results, Kocak et al. (2017) found that technology orientation has a negative impact on business performance. Therefore, the following hypothesis has been proposed;

- H7. Technology orientation has an effect on SMEs performance.

3.7 Mediating role of technology orientation

Technology orientation has a significant influence on the survival and development of young businesses by playing a bridging role between market activities, entrepreneurial orientation and customer requirements (Hakala & Kohtamäki, 2010; Tian, 2018). Abdulrab et al. (2021) examined how strategic orientations (market and technology orientation) mediate the relationship between entrepreneurial orientation and Saudi SMEs performance. The findings indicated that technology orientation mediates the relationship between entrepreneurial orientation and the performance of Saudi SMEs. Furthermore, the studies of Ullah (2020), Aslam et al. (2022), Wardaya et al. (2019) have also proved that technology orientation have a mediating role between EO and performance. According to Isichei et al. (2020), EO can be attained by exploring external opportunities and enhancing technology development. Through implementing technology orientation within entrepreneurial orientation procedures, the entrepreneur is allowing the transformation of ideas into products (Tian, 2018). This shows that firms with entrepreneurial attitude can get technology to enhance their capabilities to innovate based on available opportunities in the market (Ullah, 2020). Therefore, the combination of entrepreneurial orientation and technological orientation could assist organizations to produce distinctive products, processes or services, making a first mover advantage (Hakala &

Kohtamäki, [2010](#); Ullah, [2020](#)). However, a study by Rudawska ([2020](#)) showed a contrary results. From these findings, this study hypothesizes that;

H8. TO mediates the effect of innovativeness on SMEs performance.

H9. TO mediates the effect of proactiveness on SMEs performance

H10. TO mediates the effect of risk taking on SMEs performance

Based on the literature review and discussions above, Figure 1 shows the proposed conceptual framework of the study.

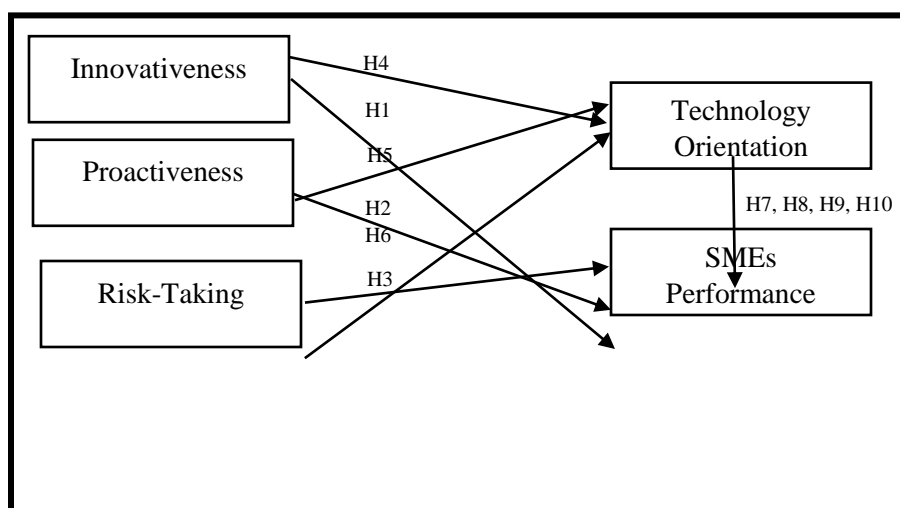


Figure 1. Conceptual Framework

4. Research method

The study considered quantitative and descriptive survey design to systematically and scientifically assess the relationship between entrepreneurial orientation, SMEs performance and technology orientation. A deductive approach was followed, where hypotheses were formulated based on available theories. The study employed cross-sectional research design, allowing the examination of relationships between variables at a specific moment. The population of the study consisted of 6234 SMEs in Gaborone, Botswana operating in various sectors across Gaborone (Statistics Botswana, [2022](#)). Using Cochran (1977) formula, the sample size was made up of 362 SMEs. The respondents were owners/managers as they have knowledge of the overall operational activities of their business and could better understand the company. Simple random sampling method was used, which gives all elements in the population equal chance of being selected and has been noted to have the least biases (Chua, [2019](#)).

A pre-tested self-administered, structured questionnaire with close-ended questions was used to collect primary data. It consisted of four sections; starting with demographics of participants, entrepreneurial orientation dimensions (innovativeness, proactiveness, risk-taking), Technology orientation and SMEs performance. The questionnaire was adapted from past studies as recommended by Kelley-Quon ([2018](#)), noting that it is important to use a previously validated

questionnaire which ensures that every difference measured between samples can be presumed to be valid and reproducible. The independent variables (innovativeness, proactiveness, risk-taking) comprising of 15 items were adapted from (Hughes & Morgan, [2007](#); Lumpkin et al., [2009](#); Covin & Slevin, [1989](#)). Dependent variable (SMEs performance) was measured using subjective measures adapted from (Ogbolu, [2021](#); Tien, [2021](#)). Mediating variable (technology orientation) was adapted from (Al-Ansari et al., [2013](#); Halac, [2015](#)). All measurements were based on a 1-5 Likert scale, where 1 indicated strongly disagree and 5 indicated strongly agree. In order to ensure confidentiality of respondents, there were no identifying details collected alongside the responses. After collecting data, the data was carefully reviewed and any incomplete, biased or improperly answered data was removed.

The data collected was analyzed through Structural Equation Modeling (SEM) to investigate target relationships and test the hypotheses using SmartPLS version 4.0. The Partial Least Squares Structural Equation Modeling (PLS-SEM) method, utilized in this study, represents a type of SEM that adopts a predictive approach rather than a confirmatory one (Hair et al., [2017](#)). PLS-SEM is effective in evaluating the strength of structural and complex relationships among model constructs, identifying the interaction effect of moderating variables and assessing the theoretical soundness of relationships between variables (Chin et al., [2003](#)). In contrast to other methods of SEM, it is capable of analyzing non-normal, categorical and small sample sizes and can further be successfully utilized to verify models taking into account mediating effects.

5. Results

5.1 Profile of respondents

362 questionnaires were distributed to owners/managers of SMEs in Gaborone, only 289 useable questionnaires were returned, indicating a response rate of 79.8%. The demographic characteristics of the participants and their business were measured using 6 items. These were used as they can affect the resource base and behavior of the company and have been mostly used as control variables in many studies of entrepreneurship (Rudawska, [2020](#)). The respondents comprised of 58.4% females and 41.5% males. Most of the respondents were between the ages of 20-39 at 55%. Based on their education level, the majority of respondents have bachelor's degree at 168 (58.1%). Moreover, 37% of the SMEs have been operating for over 5 years and 87.5% have 1-25 employees. As shown below in Table 1.

Table 1. Demographic Data

Variables		Frequencies	Percentage
Gender	Male	120	41.5%
	Female	169	58.4%
Capacity	Owner	204	70.5%
	Manager	85	29.4%
Age	Below 20	11	3.8%
	20-39	159	55%
	40-49	91	31.5%
	Above 50	28	9.7%
Highest Qualification	Certificate and below	45	15.6%
	Diploma	61	21.1%
	Bachelor Degree	168	58.1%
	Masters and Above	15	5.2%

Firm Age	Less than 1	47	16.3%
	1-2	95	32.9%
	3-4	40	13.8%
	Above 5	107	37%
Number of employees	1-25	253	87.5%
	26-50	14	4.8%
	51-75	7	2.4%
	76-100	15	5.2%

5.2 Measurement model assessment

The measurement model was examined for reflective and latent variables to guarantee the reliability, validity and internal consistency of the model’s constructs. The reliability and internal consistency of the measurement item was assessed using Cronbach’s alpha, composite reliability (CR), average variance extracted (AVE) and discriminant validity. As shown in Table 2 below, all items achieved values above 0.70 (Hair et al., 2017)for both Cronbach’s alpha and CR signifying satisfactory internal reliability. Regarding AVE, the constructs ranges from 0.586- 0.726, which is above the threshold of 0.50(Fornell & Larcker, 1981; Hair et al., 2017), suggesting that convergent validity of the construct is also satisfied.

Table 2. Cronbach’s alpha, composite reliability and AVE

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Innovativeness	0.859	0.867	0.898	0.639
Performance	0.857	0.896	0.903	0.701
Proactiveness	0.832	0.863	0.876	0.586
Risk Taking	0.887	0.914	0.916	0.685
Technology Orientatio	0.906	0.915	0.930	0.726

Additionally, the study assessed the discriminant validity of the constructs, using The Fornell–Larcker criterion (Fornell & Larcker, 1981) and the Henseler criterion (Henseler et al., 2015) to evaluate the extent to which each construct is distinct and denote a different latent variable.Under the Fornell–Larcker principle, discriminant validity is confirmed when the Average Variance Extracted (AVE) square root for individual variable exceeds the correlation coefficients of that variable with the other variables. As shown in Table 3 below, the square root of AVE for each construct exceeds the correlation for each construction.

Table 3. Fornell-Larcker criterion

	Innovativeness	Performance	Proactiveness	Risk Taking	Technology Orientation
Innovativeness	0.799				
Performance	0.455	0.837			
Proactiveness	0.188	0.193	0.766		
Risk Taking	0.001	0.009	0.275	0.828	

Technology Orientation	0.772	0.443	0.110	0.069	0.852
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On the other hand, Henseler et al. (2015) proposed that the absence of discriminant validity is better identified through the heterotrait–monotrait relationship (HTMT). The values of HTMT must be below 0.85, to show that the constructs are likely distinct from each other and have sufficient discriminant validity. Given that all values in the table are below this threshold, it indicates that the constructs are sufficiently distinct from each other in terms of the fundamental concepts they represent. Both criteria are satisfied for the constructs under consideration.

Table 4. Heterotrait-Monotrait ratio of correlations (HTMT)

	Innovativeness	Performance	Proactiveness	Risk Taking	Technology Orientation
Innovativeness					
Performance	0.508				
Proactiveness	0.231	0.203			
Risk Taking	0.039	0.057	0.334		
Technology Orientation	0.654	0.484	0.112	0.076	

5.3. Structural model assessment

To assess the external model, the outer loading of individual indicators was evaluated and the presence of collinearity issues was examined using variance inflation factors (VIF). Following Hair et al. (2014), the VIF values cut off point is below 5 and the analysis result indicate VIF value 1 to 3. Thus, the result affirms that this model has no collinearity issues as shown in Table 5 below.

Table 5. VIF

Inno1	2.411
Inno2	1.927
Inno3	3.120
Inno4	2.172
Inno5	2.221
Perf1	1.541
Perf2	2.338
Perf3	3.117
Perf4	2.341
Proa1	1.715
Proa2	1.430
Proa3	3.255
Proa4	3.157
Proa5	1.744
RT1	1.816
RT2	1.757
RT3	2.550

RT4	2.793
RT5	2.763
TO1	3.053
TO2	3.945
TO3	2.923
TO4	2.487
TO5	2.321

The model's explanatory power and in-sample predictive capability was also assessed (Rigdon, 2012) using the coefficients of determination (R^2). Specifically, R^2 enables the evaluation of the extent to which the variance of endogenous variables is explained. Table 6 presents the values of these measures for the specified relationships in the model.

Table 6. R-square value

	R-square
Performance	0.242
Technology Orientation	0.601

From the table above, it can be seen that the R-square value for technology orientation is 0.601, which demonstrate that innovativeness, proactiveness and risk-taking explain almost 60% of the variance of technology orientation while the remaining 40% is explained by other variables outside this research. Furthermore, the R-square value for performance is 0.242, which implies that innovativeness, proactiveness and risk-taking together with technology orientation explain more than 24% of the variance of performance and the remaining 76% is explained by other variables outside this research.

Hypotheses Testing

Bootstrapping results

PLS-SEM bootstrapping was employed to assess the hypothesized relationship between constructs in the research structural model. A bootstrapping procedure with 5000 iterations and a two-sided test with a standard 5% significance level was employed to evaluate the significance of path coefficients and thereby verify hypotheses (Hair et al., 2017). The results of this analysis for direct relationships are illustrated in Table 7 below which shows path coefficients, significance levels and t-values. Innovativeness- Innov, proactiveness- PR, risk taking- RT.

Table 7. Structural model: direct effect

Hypotheses	Path	β	T- Values	P- values	Decision
H1	Innov-->Perf	0.093	2.675	0.007	Supported
H2	PR-->Perf	0.055	2.207	0.027	Supported
H3	RT-->Perf	0.078	0.105	0.916	Not Supported
H4	Innov-->TO	0.026	29.455	0.000	Supported
H5	PR-->TO	0.040	0.449	0.653	Not Supported
H6	RT-->TO	0.044	1.423	0.155	Not Supported
H7	TO-->Perf	0.078	3.021	0.003	Supported

Source: Data processing using SmartPLS 4.0

Based on the table, it can be concluded that innovativeness and proactiveness variables have a significant effect, where each variable's t-statistic value is >1.96 and the p- value is <0.05.

Therefore, H1 and H2 are accepted, which means that innovativeness and proactiveness have a significant influence on SMEs performance in Gaborone. However, risk taking showed no effect on SMEs performance as its t value is greater than 1.96 and its p-value greater than 0.05. Therefore, the outcome of the study shows that the performance of SMEs in Gaborone is not significantly affected by risk taking actions. Furthermore, the results show that only innovativeness has a significant positive effect on Technology orientation. Therefore, H4 is supported. While both proactiveness and risk taking are not statistically significant, therefore, H5 and H6 are not supported in this study. Furthermore, the results showed that the path factor of the effect of technology orientation on SMEs performance is positive, hence H7 has been confirmed.

Moderating effect

In order to validate the mediating impact of technology orientation, the bootstrapping method was employed. This approach has been employed and recommended for studies that assesses indirect effects (Hayes, 2009). The findings in Table 6, shows that innovativeness has a positive indirect effect on SMEs performance through technology orientation ($\beta = 0.062$, $t = 2.943$, $p < 0.05$). Therefore, H8 is confirmed. In the case of proactiveness, the results showed that it has insignificant indirect effect on SMEs performance through technology orientation ($\beta = 0.010$, $t = 0.420$, $p > 0.05$). Likewise, risk taking showed an insignificant indirect effect on SMEs performance through technology orientation ($\beta = 0.012$, $t = 1.251$, $p > 0.05$). Therefore, H9 and H10 are not confirmed.

Table 8. Structural model: mediation analysis

Hypotheses	Path	β	T-Values	P-values	Decision
H8	Innov-->TO--> Perf	0.062	2.943	0.003	Supported
H9	PR-->TO--> Perf	0.010	0.420	0.674	Not Supported
H10	RT-->TO--> Perf	0.012	1.251	0.211	Not Supported

6. Discussion and conclusion

Based on the results, innovativeness showed a positive effect on the performance of SMEs. This result is consistent with past researches, that supported a positive relationship between innovativeness and SMEs performance (Falahat et al., 2018; Kimutai & Bor, 2018; Onyenma, 2019). In essence, the finding verified that embracing innovativeness by SMEs could lead to enhanced performance as it assists SMEs to become pioneer in introducing new creative products and services especially in a competitive market like Gaborone. Similarly, the results revealed that proactiveness has positive effect on SMEs performance. The results aligns with past studies that indicated that proactiveness have a positive impact on performance (Hossain & Asheq, 2019; Nuong, 2022). Proving that proactiveness is crucial for achieving superior performance as it entails recognizing, exploiting business opportunities and becoming the first-mover in the marketplace.

The results further showed that risk-taking does not have an effect on SMEs performance in Gaborone. Despite the importance of risk-taking in business environment and the potential benefits associated with it, such as fostering innovation and seizing new opportunities, empirical evidence suggests that in the context of SMEs in Gaborone, the influence of risk-taking on business outcomes is limited. Implying that the performance of SMEs in Gaborone is not significantly affected by risk taking actions. This result is supported by previous studies of (Alvarez-Torres et al., 2019; Nuong, 2022; Olubiyi et al., 2019) that also noted that risk taking

does not have a positive relationship with SMEs performance. Suggesting that instead of taking bold and risky decisions, the management is more likely to favor stability (Putra et al., 2020). Although risk taking is not significant, it remains a concern for SMEs particularly in the era of competitiveness, to ensure survival.

Secondly, the results show that innovativeness positively impacts technology orientation. This observation between innovativeness and technology orientation aligns with the findings of past researches of Tian (2018), Singh and Hanafi (2019), Hamaluba and Kesamang (2019) who concluded that innovation has a significant impact on technology. Highlighting the importance of innovation on technology orientation especially in today's rapidly evolving business environment. This means that when SMEs introduce novel ideas, methods, it enhances efficiency, effectiveness and functionality, often leading to the development of new technologies that revolutionize their industries. The results further indicated proactiveness and risk-taking have an insignificant relationship with technology orientation in Gaborone. Which shows that SMEs owners/managers in Gaborone may be hesitant to take risk in introducing technology in their daily business activities and not determined in proactively adopting emerging technologies before they become mainstream. It further implies that SMEs in Gaborone may prioritize stability, cautious decision-making and traditional business practices over taking risks to implement new technology and forward-thinking approaches of using technology as the first advantage movers in the market. Which could explain the reason why most of SMEs in Gaborone cease operating within five years.

Furthermore, on the mediating role of technology orientation, the results showed that technology orientation is important for enhancing SMEs performance through innovativeness only. This finding aligns with previous studies of Hamaluba and Kesamang (2019), who suggested that technology orientation is a booster for the SMEs performance as it stimulates innovation in business practices and organizational models. That is, SMEs in Gaborone that embrace technology are better positioned to develop new products and services and effectively respond to market demands, leading to superior performance. Meanwhile, according to the results of the study, technology orientation is not important for enhancing the performance of SMEs from engaging in risky activities and employing proactive attitudes. This verifies that the effect of technology orientation differs based on the specific dimension of EO. The insignificant results contradicts the findings of Okoli et al. (2021) and Bature et al., (2018). According to Okoli et al. (2021), proactive businesses try to remain ahead of their competitors through the help of new technology and marketing new product or service. This insignificant results could be due to organizational culture and readiness. Most of the SMEs in Gaborone have been noted to still depend on traditional methods for running their business (Maseko, 2018), hence they may not be willing to take risks in investing in technology and not interested in proactively seeking out new technologies to stand out from their competitors. Furthermore, this could be attributed to resource constraints as many SMEs may have limited resources to invest in technology especially in a developing nation. While technology can optimize processes and improve efficiency, it may not provide the necessary capabilities or resources to manage the specific risks associated with certain activities, such as market volatility or regulatory changes. Other reasons may include, strategic alignment, human factor, and the balance of risk/reward.

6.1 Theoretical and practical Implications

This study aimed at examining the effects of EO dimensions (innovativeness, proactiveness and risk-taking) on SMEs performance and how technology orientation works as a mediator variable in this relationship, providing empirical confirmation within the context of small businesses in

developing country, Botswana. This study develops a conceptual framework incorporating three key dimensions of Entrepreneurial Orientation (EO), technology orientation and SME performance. Therefore, it adds to the entrepreneurship literature by examining the indirect impacts of three dimensions of entrepreneurial orientation on SMEs performance through technology orientation. Understanding the underlying relationships among these variables will enhance the body of literature and provide entrepreneurs with insights into the mechanism of SMEs performance from a perspective of developing nation. Furthermore, the study hypothesised a mediating role of technology orientation on EO (innovativeness, proactiveness, risk taking) and performance, following the studies of Abdulrab et al. (2021) and Aslam et al. (2022). However, the results only confirmed one mediation path, which is Innov-->TO-->PERF. Therefore, this outcome adds to existing literature, that not all dimensions of entrepreneurial are mediated by technology orientation, from a perspective of a developing nation.

The outcomes of this study are of significant managerial relevance. They validate the importance of entrepreneurial orientation and technology orientation in boosting SMEs performance. They suggest that both entrepreneurial orientation and technology orientation are pivotal for performance. These findings urge entrepreneurs to cultivate entrepreneurial behaviors and invest in technology orientation within their companies, given that all examined variables (innovativeness, proactiveness, and technology orientation) exhibited a positive influence on performance, except for risk-taking. Consequently, the results advocate for managers to adopt, enhance, and leverage technology orientation systems within their organizations to achieve superior performance outcomes.

6.2 Limitations and Future Research Directions

The research has several limitations. Firstly, its findings pertain specifically to Gaborone SMEs, limiting their direct applicability to SMEs in different regions in Botswana. Secondly, the cross-sectional design utilized offers merely a momentary glimpse of the entrepreneurial orientation-technology orientation relationship as data is collected at one point in time, prompting the need for longitudinal investigations to apprehend the evolving characteristic of both entrepreneurial and technology orientation and their impact on SMEs performance as they are dynamic and subject to change. Moreover, the influence of Entrepreneurial Orientation (EO) on SMEs performance could be enhanced by incorporating additional unit analyses, like lower and middle management levels, to gain diverse perspectives on the role of EO within SMEs. As inclusion of owners and top-level management as the sole unit of analysis may potentially lead to inflated survey responses. Therefore, future research could benefit from broadening the scope of unit analysis to mitigate this issue.

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