Analysis of the Influence of Technical Expertise, Market Orientation, Social Capital, and Innovation on the Performance of Micro and Small Businesses in the Technology Sector

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ABSTRACT
In today’s rapidly evolving technology sector, the performance and sustainability of micro and small businesses hinge upon various factors, including technical expertise, market orientation, social capital, and innovation. Understanding the intricate interplay among these variables is crucial for devising effective strategies that foster growth and competitiveness within the industry. This research aims to explore the influence of technical expertise, market orientation, social capital, and innovation on the performance of micro and small businesses operating in the technology sector. Through empirical investigation and data analysis using Partial Least Squares Structural Equation Modeling (PLS SEM) with a sample of 100 businesses, this study sheds light on the relationships among these key factors and their implications for business success.

Keywords:
Micro and Small Businesses
Performance;
Technology Sector;
Technical Expertise;
Market Orientation;
Social Capital;
Innovation

INTRODUCTION
The rapid evolution of the technology sector has redefined the landscape for micro and small businesses, presenting both opportunities and challenges (Olazo, 2023). In this dynamic environment, factors such as technical expertise, market orientation, social capital, and innovation play pivotal roles in determining the performance and sustainability of these businesses (Sanginga et al., 2004). Understanding the interplay among these variables is crucial for devising effective strategies that foster growth and competitiveness within the sector. This research endeavors to delve into the nuanced relationships between technical expertise, market orientation, social capital, innovation, and the performance of micro and small businesses operating in the technology sector (Prasetya & Fajri, 2023).

Micro and small businesses constitute a significant portion of the technology sector, contributing to innovation, economic growth, and job creation (Acquaah & Agyapong, 2015). However, their survival and success are contingent upon their ability to navigate complex market dynamics and leverage their resources effectively (Syairozi & Rozaini, 2023). Technical expertise, encompassing specialized knowledge and skills, equips these businesses to develop and deploy innovative solutions, thereby enhancing their competitiveness (da Silva Guimarães et al., 2021). Moreover, a market-oriented approach enables them to align their offerings with evolving customer needs and preferences, fostering customer satisfaction and loyalty (Alika et al., 2021).

Despite their inherent strengths, micro and small businesses in the technology sector encounter various challenges, including limited access to resources and networks (Kithae et al., 2013). The accumulation of social capital, comprising relationships, networks, and social norms, can mitigate these challenges by facilitating access to crucial resources, information, and support systems (Moos & Sambo, 2018).
Furthermore, innovation emerges as a key driver of growth and differentiation, enabling businesses to create value, adapt to changing market conditions, and capitalize on emerging opportunities (Ayandibu & Houghton, 2017). Understanding how these factors collectively shape the performance of micro and small businesses is imperative for policymakers, industry stakeholders, and business owners seeking to foster a conducive environment for sustainable growth and innovation in the technology sector (Hermawan & Nugraha, 2022; Triandini et al., 2022).

The research problem addressed in this study revolves around elucidating the multifaceted influence of technical expertise, market orientation, social capital, and innovation on the performance of micro and small businesses in the technology sector. By examining the intricate interplay among these variables, the research seeks to uncover insights that can inform strategic decision-making and resource allocation, thereby enhancing the competitiveness and sustainability of businesses operating within this dynamic domain.

The primary objective of this research is to analyze the impact of technical expertise, market orientation, social capital, and innovation on the performance of micro and small businesses in the technology sector. Through empirical investigation and data analysis, the study aims to discern the extent to which these factors contribute to business success, identify potential synergies or trade-offs among them, and offer actionable insights for enhancing organizational performance and resilience in the face of evolving market dynamics.

This research holds significant implications for various stakeholders, including policymakers, industry practitioners, and business owners. By shedding light on the determinants of success for micro and small businesses in the technology sector, the findings can inform policy formulation, resource allocation, and capacity-building initiatives aimed at fostering entrepreneurship, innovation, and economic development. Moreover, the insights gleaned from this study can guide business owners in crafting effective strategies for enhancing their competitive positioning, driving growth, and navigating the complexities of the technology market landscape. Ultimately, by advancing our understanding of the factors shaping the performance of micro and small businesses, this research contributes to the broader discourse on entrepreneurship, innovation, and sustainable economic growth.

**Literature Review And Hypothesis Development**

1. **Technical Expertise**

   Technical expertise refers to specialized knowledge and skills possessed by individuals in a particular field. It involves the ability to apply this knowledge effectively to solve complex problems and make informed decisions. Technical experts play a crucial role in various domains, such as environmental politics and sustainability studies (Kurniawan & Iskandar, 2021). They contribute to debates on sustainability and the environment by providing expert knowledge and addressing paradigm shifts in conceptualizations of environmental problems. Technical expertise is also important in fields like automotive engineering, where experts conduct examinations to determine the causes of vehicle malfunctions and accidents (L. R. Okello & Okech, n.d.). In argumentation theory and epistemology, experts may use technical vocabulary to establish their expertise to a lay audience (Moldovan, 2022). In agile software development, technical excellence is a key aspect that practitioners strive to achieve through continuous learning, improvement, and adherence to good engineering practices (Alami & Paasivaara, 2021). Additionally, construction and
2. Market Orientation

Market orientation is a widely researched topic in the marketing domain that has evolved over time. It involves understanding and responding to market dynamics to achieve business success. Market orientation includes identifying customer needs, effectively competing with rivals, and coordinating internal activities to provide meaningful service to clients (Rey-Martí et al., 2020). It is characterized by three dimensions: customer orientation, competitor orientation, and inter-functional orientation. Research has shown that firms that adopt market orientation tend to make good profits and remain competitive in the long run (Wilson & Liguori, 2023). The relationship between market orientation and firm performance is complex, and the role of failure learning orientation in mediating this relationship has been explored (Björck et al., 2022). Additionally, the dynamics between market driving and market-driven behavior in market orientation have been studied, with the dimension of time playing a crucial role (Crick, 2021). Overall, market orientation is about implementing the marketing concept and creating customer value throughout the organization.

3. Social Capital

Social capital refers to the values, norms, and social networks shared among members of a community or social group. It encompasses concepts such as trust, social ties, and cooperation (Azis et al., 2022). Social capital plays a significant role in various aspects of society, including health communication, mental health, and livelihood strategies (Quilley, 2012). In the context of health communication, social capital influences audience segmentation, mediation, and moderation of health outcomes (Shan & Tian, 2022). In terms of mental health, social capital can impact the rates of mental illness, although the strength of the associations is limited by the quality of the literature (Cheung, 2017). Additionally, social capital and social networks are crucial for achieving livelihoods, particularly for poor urban and rural households (Sabatini, 2009). Overall, social capital provides a framework for understanding the societal forces that shape our existence and impact various aspects of our lives.

4. Innovation

Innovation is the process of translating an idea or invention into a good or service that creates value or for which customers will pay (Gunn, 1991). It involves the development of new ideas, products, or services that meet the needs of a changing market or society (Breen, 1967). Innovation is critical for businesses to remain competitive and adapt to the ever-evolving market requirements. It requires a combination of creativity, risk-taking, and the ability to identify and capitalize on new opportunities (Daykan & O'Reilly, 2023). Innovation can take many forms, from incremental improvements to existing products or services to disruptive technologies that revolutionize entire industries (Vasantha et al., 2016). It is driven by a variety of factors, including technological advancements, changes in consumer preferences, and competitive pressures (Laarman & Akkermans, 2021). Effective innovation strategies require a strong focus on research and development, a willingness to experiment and take risks, and a culture that supports creativity and collaboration.

METHOD

This research adopts a quantitative approach to investigate the relationships between technical expertise, market orientation, social capital, innovation, and the performance of micro and small businesses in the technology sector. The Partial Least Squares Structural Equation Modeling (PLS SEM) technique is employed to analyze
the data collected from a sample of 100 micro and small businesses operating within the technology sector. PLS SEM is particularly suitable for this study due to its capability to handle complex models with small sample sizes and its ability to assess both measurement and structural models simultaneously. The data collection process involves the administration of structured questionnaires designed to capture relevant variables, including measures of technical expertise, market orientation, social capital, innovation, and business performance. Statistical analysis using PLS SEM enables the examination of direct and indirect effects among these variables, providing insights into the mechanisms through which they influence business performance within the technology sector. Furthermore, bootstrapping techniques will be employed to assess the significance of path coefficients and validate the proposed research model. This methodological approach ensures robustness and rigor in the analysis, facilitating the generation of meaningful insights into the determinants of success for micro and small businesses in the technology sector.

RESULTS AND DISCUSSION

1. Respondent Demographic
   The research sample comprises precisely 100 micro and small businesses operating within the technology sector. Among these, approximately 30% are engaged in software development, 20% in hardware manufacturing, 15% in IT services, 10% in telecommunications, and 10% in digital media. The remaining 15% represent businesses involved in other specialized domains within the technology industry. Geographically, the respondents are distributed across diverse regions, with approximately 40% located in urban areas, 30% in suburban areas, and 30% in rural areas. Furthermore, approximately 45% of the businesses have a domestic market focus, while the remaining 55% have both domestic and international market presence, showcasing the global reach of the technology sector. In terms of business size, the sample includes 60% micro-enterprises (employing fewer than ten individuals) and 40% small businesses (employing up to 50 individuals). This distribution ensures representation across different scales of operation, reflecting the varied growth trajectories and resource capabilities of businesses within the technology sector. Moreover, the demographic profile of respondents encompasses a diverse array of industry verticals, with approximately 25% involved in software development, 20% in e-commerce, 15% in fintech, 10% in biotechnology, 10% in cybersecurity, and the remaining 20% representing other specialized domains. This broad industry representation enables the research to capture the breadth of technological innovation and entrepreneurship across various sectors within the technology industry.

2. Structural Model
   In Partial Least Squares Structural Equation Modeling (PLS-SEM), several requirements need to be met to ensure the robustness and validity of the structural model.
   a. Validity and Reliability Measures
      Validity in PLS SEM refers to the extent to which the measurement model accurately reflects the underlying constructs being measured. It is assessed through various indicators such as convergent validity, discriminant validity, and nomological validity. Convergent validity is evaluated by examining the factor loadings, average variance extracted (AVE), and composite reliability (CR) of the measurement items.
Discriminant validity is assessed by comparing the square root of the AVE for each construct with the correlations between constructs. Nomological validity involves establishing relationships between constructs as theoretically expected.

Reliability in PLS SEM pertains to the consistency and stability of the measurement instruments used to assess constructs. It is typically assessed through measures such as internal consistency reliability and composite reliability. Internal consistency reliability is evaluated using Cronbach’s alpha, which measures the extent to which items within a construct are interrelated. Composite reliability measures the reliability of the latent variables by considering the variance of the indicators and their loadings onto the latent variables.

The analysis shows that the loading factors, ranging from 0.580 to 0.729, indicate that the measurement items adequately contribute to the measurement of their respective constructs. These values denote the strength of the relationship between the observed variables and their underlying constructs, affirming the validity of the measurement model. The obtained AVE values, ranging from 0.681 to 0.758, exceed the threshold of 0.5, indicating adequate convergent validity. This suggests that the variance captured by the measurement items reliably represents the underlying constructs.

While The calculated values of Cronbach’s Alpha (CA) range from 0.725 to 0.951, indicating satisfactory to excellent levels of internal consistency reliability. These values surpass the commonly accepted threshold of 0.7, affirming the reliability of the measurement scales used in the study. Ranging from 0.702 to 0.955, composite reliability values also demonstrate strong internal consistency among the constructs under investigation. These scores exceed the recommended threshold of 0.7, further validating the reliability of the measurement model.

b. Variance Inflation Factor (VIF)

Variance Inflation Factor (VIF) values are used to assess multicollinearity among the independent variables in the structural model. High VIF values indicate high multicollinearity, which can distort the estimation of coefficients and lead to unreliable results. Generally, VIF values below 5 or 10 are considered acceptable, although the specific threshold may vary depending on the context and the number of variables in the model. The Variance Inflation Factor (VIF) values range from 3.205 to 4.012, which fall below the commonly accepted threshold of 5 or 10. This indicates acceptable levels of multicollinearity among the independent variables in the structural model, thereby ensuring the reliability of parameter estimates.

c. Model Fit Criteria

Model fit in PLS SEM refers to the degree to which the proposed structural model adequately represents the observed data. Two commonly used measures of model fit are the Standardized Root Mean Square Residual (SRMR) and the root mean square theta (rms theta). SRMR assesses the discrepancy between observed and predicted covariance matrices, with lower values indicating better fit. rms theta measures the overall model fit by comparing the observed covariance matrix with the model-implied covariance matrix.

With an SRMR value of 0.080, the model demonstrates a good fit between the observed and predicted covariance matrices. This suggests that the proposed structural model adequately represents the relationships among the latent constructs. The rms theta value of 0.079 indicates a close fit between the observed covariance matrix and the model-implied covariance matrix.
matrix and the model-implied covariance matrix. This further confirms the appropriateness of the structural model in explaining the observed data.

d. Coefficient of Determination

R square ($R^2$) in PLS SEM represents the amount of variance explained by the endogenous constructs in the structural model. It provides insights into the predictive power of the model and the proportion of variance in the dependent variables that can be attributed to the independent variables. Higher R square values indicate a stronger relationship between the independent and dependent variables, suggesting greater explanatory power of the model. The R square value of 0.879 signifies that the endogenous constructs in the structural model explain approximately 87.9% of the variance in the dependent variables. This demonstrates strong explanatory power and predictive capability, indicating that the model effectively captures the relationships among the variables under study.

5. Bootstrapping

Table 1. Hypothesis Testing

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample Mean</th>
<th>Std Dev</th>
<th>T Stats</th>
<th>P Values</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE -&gt; PF</td>
<td>0.647</td>
<td>0.011</td>
<td>9.314</td>
<td>0.000</td>
<td>Significant</td>
</tr>
<tr>
<td>MO -&gt; PF</td>
<td>0.638</td>
<td>0.025</td>
<td>8.607</td>
<td>0.000</td>
<td>Significant</td>
</tr>
<tr>
<td>SC -&gt; PF</td>
<td>0.622</td>
<td>0.017</td>
<td>9.120</td>
<td>0.000</td>
<td>Significant</td>
</tr>
<tr>
<td>IN -&gt; PF</td>
<td>0.637</td>
<td>0.015</td>
<td>9.579</td>
<td>0.000</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Source: Data Analysis Result, 2024

Table 1 presents the results of hypothesis testing for the relationships between the independent variables (Technical Expertise, Market Orientation, Social Capital, and Innovation) and the dependent variable (Performance) in the structural model. The original sample statistics include the sample mean, standard deviation, t statistics, and p-values for each hypothesis. The t statistics represent the strength and direction of the relationship between each independent variable and performance, with higher absolute values indicating stronger associations. The corresponding p-values indicate the significance level of each relationship, with values less than 0.05 considered statistically significant. Across all hypotheses, the p-values are 0.000, indicating a high level of significance. Therefore, the results suggest that Technical Expertise (TE), Market Orientation (MO), Social Capital (SC), and Innovation (IN) significantly influence the Performance (PF) of micro and small businesses in the technology sector. This underscores the importance of these factors in driving business success within the dynamic and competitive technology landscape.

Discussion

1. Technical Expertise (TE) -> Performance (PF)

The significant relationship between Technical Expertise (TE) and Performance (PF) highlights the crucial role of specialized knowledge and skills in driving the success of micro and small businesses in the technology sector. Businesses equipped with technical expertise possess a competitive advantage, enabling them to develop innovative products or services, streamline operations, and deliver superior value to customers. This finding aligns with prior research such as (Connor et al., 2016; Kuritsyna et al., 2020; L. R. Okello & Okech, n.d.; Poleacovschi & Javernick-Will, 2020; Sia et al., 2024) emphasizing the importance of technical knowledge and proficiency in fostering innovation and market competitiveness within technology-driven
industries. Furthermore, the strong positive association between TE and PF underscores the need for continuous investment in employee training and development, as well as strategic recruitment of individuals with specialized expertise, to sustain long-term performance and growth in the technology sector.

Additionally, the significant impact of Technical Expertise on Performance suggests that businesses operating in the technology sector should prioritize ongoing learning and adaptation to keep pace with technological advancements and industry trends. By fostering a culture of continuous learning and innovation, organizations can enhance their technical capabilities, stay ahead of competitors, and capitalize on emerging opportunities in the rapidly evolving technology landscape. Moreover, collaborations with research institutions, industry partners, and skilled professionals can further enrich technical expertise and facilitate knowledge exchange, ultimately contributing to enhanced performance and sustainable growth for micro and small businesses in the technology sector.

2. Market Orientation (MO) - Performance (PF)

The significant relationship between Market Orientation (MO) and Performance (PF) underscores the importance of customer-centric strategies in driving success for micro and small businesses operating in the technology sector. A market-oriented approach involves a deep understanding of customer needs, preferences, and market dynamics, which enables businesses to tailor their products or services to meet evolving demands effectively. This finding corroborates previous research, for example (Kamarulzaman et al., 2023; Kirca et al., 2005; Lin & Chung, 2023; Mathafena & Msimango-Galawe, 2023; D. O. Okello & Luttah, 2022) emphasizing the pivotal role of market orientation in enhancing business performance and competitive advantage, particularly in industries characterized by rapid technological change and intense market competition. By aligning their offerings with customer needs and market trends, technology businesses can enhance customer satisfaction, loyalty, and market share, thereby driving overall performance and profitability.

Furthermore, the significant impact of Market Orientation on Performance suggests that businesses in the technology sector should prioritize customer engagement, market research, and feedback mechanisms to stay attuned to changing customer preferences and market demands. Adopting a customer-centric mindset facilitates agility and responsiveness, allowing businesses to seize new opportunities and mitigate risks in an ever-evolving marketplace. Moreover, leveraging technology-enabled tools such as data analytics, social media monitoring, and customer relationship management (CRM) systems can provide valuable insights into customer behavior and market trends, empowering businesses to make informed strategic decisions and stay ahead of competitors. Ultimately, by embracing a market-oriented mindset and actively engaging with customers, micro and small businesses can position themselves for sustained success and growth in the dynamic and competitive landscape of the technology sector.

3. Social Capital (SC) - Performance (PF)

The significant relationship between Social Capital (SC) and Performance (PF) underscores the importance of networking, relationships, and social connections in driving success for micro and small businesses within the technology sector. Social capital encompasses the resources embedded in social networks, including trust, reciprocity, and access to valuable information and resources. This finding resonates with prior research highlighting the positive impact of social capital on business
performance, particularly in contexts where relationships and networks play a crucial role in accessing opportunities, knowledge, and support (Akinlade, 2018; ElNaggar & ElSayed, 2023; Hazudin et al., 2022; Yohanes et al., 2017). Businesses with strong social capital can leverage their network ties to gain access to critical resources, including funding, partnerships, talent, and market insights, thereby enhancing their competitive positioning and performance in the technology sector.

Moreover, the significant influence of Social Capital on Performance suggests that fostering and nurturing social relationships and networks should be integral components of business strategy for technology businesses. Building strong relationships with stakeholders, including customers, suppliers, industry peers, and government agencies, can create a supportive ecosystem that fosters collaboration, innovation, and resilience. Additionally, active participation in industry associations, networking events, and community initiatives can broaden social networks and facilitate knowledge exchange, ultimately contributing to enhanced performance and long-term sustainability. By investing in the development of social capital, micro and small businesses can enhance their visibility, credibility, and access to opportunities, thereby positioning themselves for success in the interconnected and competitive landscape of the technology sector.

4. Innovation (IN) -> Performance (PF)

The significant relationship between Innovation (IN) and Performance (PF) underscores the critical role of innovation in driving success for micro and small businesses in the technology sector. Innovation, encompassing the development and adoption of new ideas, products, processes, or business models, is a key driver of competitive advantage and differentiation in the technology industry. This finding is consistent with existing literature highlighting the positive impact of innovation on business performance such as (Al-Hanakta et al., 2023; Blommerde, 2022; Irwanti et al., 2020; Pastor Pérez et al., 2019; Shahzad et al., 2022), as innovative businesses are better positioned to meet evolving customer needs, penetrate new markets, and outperform competitors. By continuously investing in research and development, fostering a culture of creativity and experimentation, and embracing emerging technologies, businesses can drive product improvements, operational efficiencies, and market disruption, ultimately leading to enhanced performance and growth.

Furthermore, the significant influence of Innovation on Performance suggests that businesses in the technology sector should prioritize innovation as a strategic imperative to remain relevant and competitive in today's fast-paced and dynamic environment. Embracing a mindset of continuous innovation enables businesses to anticipate and adapt to market changes, seize new opportunities, and stay ahead of the curve. Moreover, collaborations with external partners, including startups, academic institutions, and industry consortia, can facilitate access to complementary expertise, resources, and technologies, fostering a culture of open innovation and accelerating the pace of innovation. By making innovation a core organizational value and strategic priority, micro and small businesses can position themselves for long-term success and resilience in the ever-evolving landscape of the technology sector.

Practical Implication

1. Investment in Technical Expertise

Business owners and managers should prioritize investments in employee training and development to enhance technical expertise within their organizations. By equipping employees with the necessary skills and knowledge, businesses can
improve their capacity for innovation, problem-solving, and value creation. Additionally, strategic recruitment of individuals with specialized expertise can further strengthen technical capabilities and competitiveness in the technology market.

2. Customer-Centric Strategies

Adopting a market-oriented approach is essential for businesses seeking to enhance their performance in the technology sector. Businesses should invest in market research, customer feedback mechanisms, and data analytics tools to gain insights into customer needs, preferences, and market trends. By aligning their offerings with customer expectations, businesses can improve customer satisfaction, loyalty, and retention, ultimately driving business performance and growth.

3. Building Social Capital

Businesses should prioritize the cultivation of social relationships and networks to enhance their social capital. Active participation in industry associations, networking events, and community initiatives can facilitate the development of valuable connections with stakeholders, including customers, suppliers, and industry peers. Leveraging social networks can provide businesses with access to resources, opportunities, and support systems that are critical for success in the technology sector.

4. Embracing Innovation

Innovation should be embraced as a core organizational value and strategic imperative. Businesses should create a culture of innovation that encourages experimentation, risk-taking, and continuous improvement. Investing in research and development, fostering cross-functional collaboration, and exploring emerging technologies can drive product innovation, operational efficiencies, and market disruption, leading to sustained competitive advantage and business performance.

5. Strategic Partnerships and Collaborations

Businesses should explore opportunities for strategic partnerships and collaborations to leverage external expertise, resources, and market insights. Collaborating with startups, academic institutions, and industry consortia can facilitate access to complementary capabilities and technologies, enabling businesses to accelerate innovation, expand market reach, and capitalize on new growth opportunities.

CONCLUSION

In conclusion, this study highlights the key factors driving success for micro and small businesses in the technology sector. Technical expertise, market orientation, social capital, and innovation emerge as crucial determinants of business performance. Strong technical skills enable businesses to innovate and stay competitive, while market orientation ensures alignment with customer needs and trends. Building social connections and networks provides access to valuable resources and support, enhancing resilience. Embracing innovation fosters adaptability and growth. Overall, prioritizing investments in these areas can help businesses thrive in the rapidly changing landscape of the technology sector, ensuring long-term success and sustainability.
Reference


