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# Driving SME growth and learning effectiveness: The role of analyzer orientation, learning capability, and innovation

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**Abstract:** This study, drawing on the Knowledge-Based View (KBV) and Contingency Theory, explores how analyzer strategic orientation, learning capability, technical innovation, administrative innovation, and SME growth and learning effectiveness are interrelated. Analyzing cross-sectional data from 407 founders, cofounders, and managers of trade and service SMEs in Vietnam's Southeast Key Economic Region through PLS-SEM, the research demonstrates that analyzer orientation positively impacts both technical and administrative innovation, thereby bolstering SME growth and learning effectiveness. However, learning capability does not significantly impact technical innovation or growth and learning effectiveness. Instead, learning capability negatively affects administrative innovation. Notably, technical and administrative innovations act as mediators between analyzer orientation and SME growth and learning effectiveness. The study provides practical insights tailored for SMEs navigating dynamic market environments like Vietnam, enriching theoretical understanding of SME strategic management within the trade and service sector.

**Keywords:** analyzer orientation; learning capability; technical innovation; administrative innovation; growth and learning effectiveness

## 1. Introduction

The service sector of Vietnam, which was 42.54% of GDP in 2023, remains the most significant factor in the economy of the country, significantly strengthening in recent years (Statista Research Department, 2024). The dynamic nature of knowledge-based economies in the world today has made Small and Medium Enterprises (SMEs) in service industry, especially in developing nations, not only major economic stakeholders but also significant actors of sustainability (Nghah and Wong, 2020). Their ability to incubate-job-generating innovations and propel economic development and employment make them vital for the economy (Casidy et al., 2020). However, these SMEs face challenges such as adapting to evolving consumer demands in the e-commerce era and bridging the skilled workforce gap (Khan, 2022). While government initiatives that promote innovation in the service sector, digital transformation, and workforce development provide support (Vo et al., 2024), the growth of Vietnamese service SMEs ultimately depends on how effectively they can leverage their strategic orientations to enhance growth and learning effectiveness.

A Balanced Scorecard (BSC) is a strategic planning tool offering a holistic view of company performance, going beyond short-term revenue metrics (Kumar et al., 2022). Unlike larger corporations, SMEs often lack established structures for

innovation and employee development. Given SMEs' dynamic challenges and resource constraints, focusing on the learning and growth perspective is crucial (Nghah and Wong, 2020). Studying SME effectiveness through this lens helps foster adaptability, knowledge-sharing, and continuous improvement, enabling these businesses to thrive and contribute to economic health. Analyzers, according to contingency theory, blend traits of both defenders and prospectors. They operate in stable and changing markets, leveraging opportunities from prospectors while safeguarding core products like defenders (Anwar et al., 2021). This makes analyzers the ideal strategic orientation for SMEs within the contingency theory framework. Additionally, the focus on learning and growth aligns with their need to constantly adapt and innovate.

Under knowledge-based view (KBV), in growth-oriented SMEs, owner-managers act as key knowledge gatekeepers, blending learning capability with business challenges to drive growth (Paoloni et al., 2020). Recognizing innovation as vital for survival, organizations increasingly integrate administrative innovations into their routines, ensuring the regular use of new programs and systems across various processes. This implementation not only influences decision-making at all levels but also impacts governmental initiatives, technological diffusion, and organizational reorganization (Mendoza-Silva, 2021). Technical innovation, particularly in generating value-added outputs, is crucial for SMEs facing challenges due to their limited resources and newness (Mendoza-Silva, 2021). By fostering a robust learning capability, SMEs can differentiate themselves, leverage innovative benefits, and enhance overall learning and growth effectiveness.

Despite recent literature in SME performance mainly relying on traditional financial performance measures (Donkor et al., 2018; El Chaarani et al., 2022), this approach has limitations. The financial metrics, which are largely focused on short-term outcomes like revenue and profit might results in a narrow view, overlooking the vital long-term value drivers and strategic initiatives crucial for sustainable development (Kathuria and Lucianetti, 2024). Previous research in this field has predominantly focused on exploring strategic management frameworks through singular lenses, typically either the KBV (Kallmuenzer and Scholl-Grissemann, 2017) or contingency theory (McAdam et al., 2019). However, relying solely on one theory can result in limited perspectives. There is a notable research gap in examining the integration of these theories, as they have the potential to complement each other (Cooper et al., 2023). Furthermore, research often neglects the service sector, focusing primarily on manufacturing firms (Ato Sarsah et al., 2020; Buli, 2017). This oversight limits our understanding of modern business dynamics, considering the increasing role of services (Casidy et al., 2020). Notably, manufacturing and service industries exhibit distinct characteristics in terms of production and consumption nature, innovation, quality management, and resource allocation (Bouranta, 2020). Previous studies, such as Yusr et al. (2022) on Malaysian SMEs, have explored the impact of TQM and customer knowledge management on product innovation, while Chaithanapat et al. (2022) investigated the role of knowledge-oriented leadership in Thai SMEs. Additionally, Nasution et al. (2021) focused on entrepreneurial orientation and e-commerce adoption in Indonesian SMEs, and Raghuvanshi and Garg (2018) examined innovation capability in Indian MSMEs. However, none have comprehensively

addressed the interrelationships between analyzer orientation, learning capability, innovations and growth and learning effectiveness in service SMEs. These gaps emphasize the critical need for research to pivot towards the service industry, unlocking strategic insights that capture the nuances of contemporary business.

This study aims to fill the existing research gap by developing an integrative model combining the KBV and contingency theory. Specifically, we investigate the interrelationships among analyzer strategic orientation, learning capability, administrative innovation, technical innovation, and growth and learning effectiveness. Our research addresses two central questions: Firstly, do direct relationships exist between analyzer strategic orientation, learning capability, administrative innovation, technical innovation, and growth and learning effectiveness? Secondly, do learning capability, administrative innovation, and technical innovation serve as mediators, both serially and in parallel, in the relationship between analyzer strategic orientation and growth and learning effectiveness, within the context of trade and service-oriented SMEs in Vietnam? Thus, this study aims to offer novelty as follows. The study stands out by combining the KBV and Contingency Theory, presenting a comprehensive framework for understanding strategic management in SMEs. This integration moves beyond traditional single-theory approaches, offering a nuanced view of strategic decision-making. Focusing on the trade and service industry, the research broadens the strategic management literature beyond manufacturing, exploring the unique dynamics of service-based businesses. Emphasizing non-financial drivers of value, the study advocates for a holistic assessment of performance, using variable that assess growth and learning effectiveness. Additionally, it contributes theoretically by examining how learning capabilities and innovations, both sequentially and concurrently, mediate organizational effectiveness. This approach not only fills existing research gaps but also provides practical insights to enhance SME growth and learning effectiveness within Vietnam's trade and service sectors.

## **2. Literature review**

### **2.1. Contingency theory and knowledge-based view (KBV)**

The combination of KBV and Contingency Theory for SMEs in the service industry within the current business setting offers complementary perspectives. KBV underscores the importance of internal knowledge resources for differentiation and success in dynamic markets (Fernandes et al., 2022), while Contingency Theory recognizes the need for adaptation to contextual factors, both internal and external, to enhance SME effectiveness (Lukito-Budi et al., 2023). Integrating these theories provides a robust understanding of how SMEs in the service industry can strategically leverage internal knowledge while adapting their strategies to their operating environments, thereby increasing their effectiveness.

### **2.2. Analyzer strategic orientation (AN)**

Miles et al. (1978) typology of organizational strategies provides the foundation for the concept of analyzer orientation. Organizational structures and the external environment of an organization determine the strategic orientations of an organization,

and when taken together, they provide the basis for adaptability to changing environmental conditions by an organization (Chong and Duan, 2022; Miles et al., 1978). Accordingly, businesses are classified into four main groups depending on their strategic management approaches: Prospectors, analyzers, defenders and reactors. Maury (2022) explained that defender organizations typically hold onto their present position and preserve their market share, while prospectors are always looking for new chances to expand and innovate. Within the typology, the analyzer orientation is a tactical method that blends aspects of the prospector and defender orientations (Avci et al., 2011). Analyzer orientation is a term used to describe a strategy approach used by businesses to balance innovation with efficient operations in order to maintain market share and flexibility (Mishra et al., 2023). This strategic perspective, pursuant to Avci et al. (2011), is suitable for businesses operating in industries characterized by either stability or dynamism. It helps them use their resources and competencies effectively to compete in those environments. As a result, the analyzer strategy is an adaptable and flexible approach to strategic management that businesses can apply to deal with the complexity of today's business environments (Chong and Duan, 2022; Yoshikuni and Albertin, 2018).

### **2.3. Learning capability (LC)**

Learning capability reflects an organization's adaptability and its interrelated procedures for identifying employee training needs (Baker et al., 2022). This also includes assessing an organization's unsuccessful endeavors to disseminate lessons learned from its past experiences throughout the entire organization and obtaining new and pertinent information for conducting business (AlSaied and Alkhoraif, 2024). Strategically, learning capability enables businesses to match learning objectives to business goals and equip employees with the know-how and abilities needed to propel the company forward (Hooi, 2021). Learning capability requires organizational commitment to invest in learning and development initiatives to meet strategic objectives (Panda et al., 2014). However, organizational learning capability is not just about acquiring new information but also about encouraging the sharing of insights across all levels of the organization (Achdiat et al., 2023).

The analyzer strategic orientation combines characteristics of defender and prospector strategies, aiming for stability and innovation (Troilo et al., 2014). Analyzers adopt successful market practices while striving for stability. They actively monitor market trends and invest in learning activities to adapt and seize emerging opportunities (Zhou and Wu, 2010). Balancing between exploiting existing capabilities and exploring new opportunities, analyzers rely on a strong learning capability to continuously acquire and apply new knowledge (AlSaied and Alkhoraif, 2024). Thus, we propose:

- H1: Analyzer strategic orientation positively impacts learning capability.

### **2.4. Technical innovation (TI) and administrative innovation (AI)**

Researching the administrative and technical innovation in SMEs, especially within the service industry, is crucial due to its holistic approach, sustainability, adaptability, and emphasis on the human factor (J. S. Kim and Chung, 2017; Pantano

et al., 2022). Unlike product and marketing innovations, which offer immediate gains, administrative and technical innovations contribute to long-term sustainability by enhancing internal processes and fostering a culture of innovation, thereby enabling SMEs to thrive in an ever-evolving business landscape (Chawla et al., 2022). According to Müller et al. (2021), in the context of SMEs, technical innovation involves not only integrating new technology but also inventing new business models. As technical innovation helps businesses stay ahead of the competition, it has become a driver for strategic decision-making in the changing corporate environment (Li et al., 2023; Müller et al., 2021). Additionally, administrative innovation describes changes made to an organization's management processes and structures to boost efficiency and output (Chawla et al., 2022). In today's changing corporate environment, administrative innovation affects the organization's management processes and has a tenuous connection to its primary activities (Ameen et al., 2021). Administrative innovation is essential for an organization's strategy as it drives systematic progress and fosters an environment conducive to growth (Ameen et al., 2021).

Innovations in technology and administration have a critical role in determining an organization's operational effectiveness and strategic direction (García-Morales et al., 2007; Li et al., 2023). Müller et al. (2021) stated that organizations are driven toward modernization and efficiency via technical innovation. In addition, administrative innovation pertains to the introduction of innovative management procedures that fundamentally transform an organization's functioning (Ameen et al., 2021). It is equally significant since it supports an organization's capacity to react to changes brought about by technical breakthroughs (Teece, 2018). As a result, strategists require reliable instruments for capturing inadequate signals and managing dynamic knowledge and incentives to fuel their innovation, since the relationship between strategic orientation and innovation has proven positive (Teece, 2018; Trivedi and Srivastava, 2023). Considering (Miles and Snow, 1978) typology of strategic orientations, there is likely a positive relationship between analyzer orientation and innovation, which is supported by other studies (Al-Ansaari et al., 2014; Tutar et al., 2015). The above arguments become the basis of these hypotheses:

- H2a: Analyzer strategic orientation positively impacts technical innovation.
- H2b: Analyzer strategic orientation positively impacts administrative innovation.

In the dynamic world of service SMEs, fostering strong learning capabilities is akin to equipping a business with an innovation superpower. Actively seeking new knowledge and encouraging employee curiosity exposes SMEs to fresh ideas and the latest tech trends (Loon and Chik, 2019). This continuous learning fuels a problem-solving mindset, enabling the integration of new technologies and the invention of innovative business models and service delivery methods (Thomä and Zimmermann, 2020). For instance, improving distribution channels through social media platforms like Facebook, Instagram, and WhatsApp not only expands marketing reach but also enhances customer engagement. Research has shown that companies possessing strong learning capability are superior at integrating new technologies, managing information, and adjusting to dynamic surroundings (Rajiani and Normuslim, 2023; Thomä and Zimmermann, 2020). In the SME literature, learning capability involves seeking new ideas through intuitive and divergent thinking and disseminating these ideas from individuals to groups and organizations (Chawla et al., 2022). By actively

pursuing new knowledge and management practices from conferences, industry reports, or employee suggestions, SMEs can identify opportunities to enhance administrative efficiency and effectiveness (Achdiat et al., 2023; M. Kim et al., 2021). This continuous learning promotes a culture of experimentation, leading to the adoption of innovative administrative tools for project management and advanced communication platforms for improved collaboration, and then fosters administrative innovation (Ameen et al., 2021; Chawla et al., 2022). Therefore, we hypothesize the following:

- H3a: Learning capability positively impacts technical innovation.
- H3b: Learning capability positively impacts administrative innovation.

## **2.5. Growth and learning effectiveness (GL)**

The Balanced Scorecard was developed by Kaplan and Norton (1992) and has become a comprehensive strategic planning and management tool used by organizations worldwide. It seeks to assess strategic goals, integrate organizational activities, and enhance communication both internally and externally. Learning and growth effectiveness is one of the four pillars within the framework and it highlights the value of corporate culture, staff training, and the capacity to develop and adapt in a fast-changing environment. It implies that an organization's ability to expand and succeed over the long run depends on its ability to invest in its people, their skills, and the systems that support them (Pangarkar and Kirkwood, 2008).

According to Achdiat et al. (2023), innovation is essential for businesses to become learning organizations and acquire a competitive edge. As innovation becomes more and more crucial to organizational performance, companies should consider how to maximize creative outcomes for every dollar spent (Pantano et al., 2022). In particular, technical innovation is essential to the success of organizations since it may improve goods and services and increase operational efficiency (Marion and Fixson, 2021). It promotes a culture that is always shifting and adjusting (Zhang et al., 2023). Moreover, administrative innovation may improve an organization's ability to make decisions, perform better, and adjust to change more quickly (Kim and Chung, 2017). Investing in these forms of innovation enables organizations to build a strong base for sustained success and expansion. Additionally, in the knowledge-based economy, service SMEs can no longer rely solely on traditional success factors like assets or pricing. Instead, their competitive edge lies in the knowledge and skills of their employees (Tzortzaki and Mihiotis, 2014). Similar to knowledge management's emphasis on acquiring, sharing, and utilizing knowledge, strong learning capabilities enable continuous learning and adaptability (Baker et al., 2022). This creates a culture where knowledge sharing is encouraged, allowing employees to learn from each other's experiences and expertise, thus fostering a more knowledgeable and adaptable workforce (AlSaied and Alkhoraif, 2024). This continuous learning environment enhances individual and organizational effectiveness, which is crucial for long-term success. Moreover, in the ever-evolving service sector, SMEs with robust learning capabilities can swiftly adapt to new technologies, consumer trends, and regulations, maintaining their relevance and competitive advantage (Hooi, 2021; Rajiani and Normuslim, 2023). Then, the following hypotheses are proposed:

- H4a: Technical innovation positively influences the organization's growth and learning effectiveness.
- H4b: Administrative innovation positively influences the organization's growth and learning effectiveness.
- H5: Learning capability positively influences the organization's growth and learning effectiveness.

## **2.6. Exploring the mediations in relationship between analyzer orientation and growth and learning effectiveness**

Analyzers balance stability and innovation by adopting effective market practices and prioritizing learning (Chong and Duan, 2022). However, having insights alone is not enough for growth. Learning capability acts as the bridge that translates strategic orientation into actionable growth (Hooi, 2021). By investing in learning programs focused on interpreting data, identifying market trends, and exploring new technologies, service SMEs with an analyzer orientation can leverage their analytical strengths to make informed decisions. This enables them to implement effective growth strategies (AlSaied and Alkhoraif, 2024; Troilo et al., 2014). Although analyzers prioritize stability, a strong learning capability equips them to adapt strategies when market conditions change. Staying informed about new trends and technologies allows them to adjust their offerings and internal processes, ensuring they remain competitive and achieve growth and learning effectiveness (Zhang et al., 2023). Considering the above, the following hypothesis is raised:

- H6: Learning capability mediates the relationship between analyzer and organization's growth and learning effectiveness.

While strategic orientation is key for decision-making, it alone does not ensure growth or learning effectiveness. Organizations need mechanisms to translate analyzer insights into actions. Technical innovation can enhance data analysis and decision-making by extracting deeper insights from market data, customer feedback, and performance metrics (Sun et al., 2022). Technologies like collaboration platforms and knowledge management systems facilitate sharing insights across departments, leading to greater growth and learning (Cui et al., 2020; Shi et al., 2023). Meanwhile, administrative innovation bridges the gap between analyzer strategies and firm growth by restructuring teams and workflows to embed insights into daily practices (Ameen et al., 2021). Encouraging experimentation and streamlined processes fosters a culture of adaptation, allowing organizations to learn from both successes and failures, driving continuous growth (J. S. Kim and Chung, 2017; Singh et al., 2020). Thus, we posit:

- H7a: Technical innovation mediates the relationship between analyzer and organization's growth and learning effectiveness.
- H7b: Administrative innovation mediates the relationship between analyzer and organization's growth and learning effectiveness.

Based on the proposed relationships between analyzer orientation and learning capability (H1), learning capability and technical innovation (H3a), learning capability and administrative innovation (H3b), and the subsequent impact of these innovations on growth and learning effectiveness (H4a and H4b), it is hypothesized that these mediators can operate sequentially. Based on the relationships outlined, learning

capability, technical innovation, and administrative innovation can serially mediate the connection between analyzer orientation and an organization’s growth and learning effectiveness. This leads to the following hypotheses:

- H8a: Learning capability and technical innovation sequentially mediate the relationship between analyzer and organization’s growth and learning effectiveness.
- H8b: Learning capability and administrative innovation sequentially mediate the relationship between analyzer and organization’s growth and learning effectiveness.

A research model was developed based on the aforementioned hypotheses (Figure 1 and Table 1).

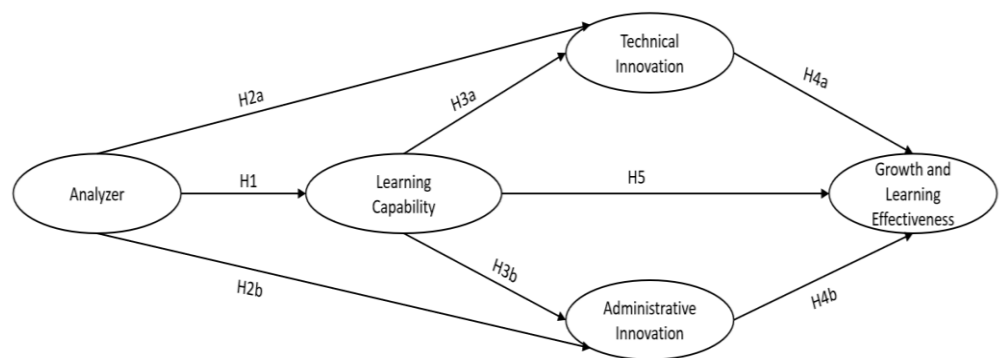


Figure 1. Research model.

Table 1. Hypothesis list.

No.	Hypothesis	Hypothesis statement
1	H1	Analyzer strategic orientation positively impacts learning capability.
2	H2a	Analyzer strategic orientation positively impacts technical innovation.
3	H2b	Analyzer strategic orientation positively impacts administrative innovation.
4	H3a	Learning capability positively impacts technical innovation.
5	H3b	Learning capability positively impacts administrative innovation.
6	H4a	Technical innovation positively influences the organization’s growth and learning effectiveness.
7	H4b	Administrative innovation positively influences the organization’s growth and learning effectiveness.
8	H5	Learning capability positively influences the organization’s growth and learning effectiveness.
9	H6	Learning capability mediates the relationship between analyzer and organization’s growth and learning effectiveness.
10	H7a	Technical innovation mediates the relationship between analyzer and organization’s growth and learning effectiveness.
11	H7b	Administrative innovation mediates the relationship between analyzer and organization’s growth and learning effectiveness.
12	H8a	Learning capability and technical innovation sequentially mediate the relationship between analyzer and organization’s growth and learning effectiveness.
13	H8b	Learning capability and administrative innovation sequentially mediate the relationship between analyzer and organization’s growth and learning effectiveness.

### 3. Methodology

#### 3.1. Survey instrument



The instruments used in this study are adapted from measures previously validated in peer-reviewed journals. The questionnaire was designed based on related literature and assesses various constructs. Specifically, the organization's growth and learning effectiveness are evaluated as the dependent variable, with learning capability, technical innovation, and administrative innovation as mediators, and analyzer as the independent variable.

Analyzer strategic orientation is measured with four items adapted from Andrews et al. (2007) and Avci et al. (2011), with a sample item including, "Our firm develops a strategy to focus first on serving current customers and second on capturing new customers." Learning capability is assessed using five items from Sok et al. (2013), such as, "Within this firm, we have activities, routines, business processes, and behaviors for learning new and relevant knowledge to undertake the firm's business activities." Technical innovation is measured with three items from Chen and Huang (2009), including, "Our firm incorporates technologies into new products." Administrative innovation is measured with four items from Chen and Huang (2009), with a sample item being, "Our firm applies innovative administration in planning procedures." Finally, the organization's growth and learning effectiveness is evaluated with three items from Yoshikuni and Albertin (2018), based on the Balanced Scorecard by Kaplan and Norton (1992), with a sample item stating, "Employees have the essential skills to manage their routines and strategic activities."

To ensure the construct validity of the questionnaire, a pretest was conducted through face-to-face interviews with a representative group consisting of five managers from service SMEs and five business management scholars (Chen et al., 2016). The goal was to identify potential issues with sentence length, phrasing, and specialized terminology that could complicate comprehension. The questionnaire was then back translated into Vietnamese and English by three bilingual experts (Wang et al., 2021). It was divided into two parts, where the first part comprised of 19 items related to its constructs of investigation while the second collected demographic information about the respondents and their companies. Pilot test was then carried out on ten SME managers to ascertain that the revised questionnaire is clear, accurate and specific to research context with a view of enhancing reliability and validity levels.

### **3.2. Sample and data collection**

Trade and service SMEs in Vietnam will be referred to as service SMEs in this paper. Classified under Decree 80/2021/ND-CP, service SMEs are defined as those with up to 100 employees, annual revenues not exceeding 300 billion VND, or total capital not exceeding 100 billion VND. The target population of this study includes founders, co-founders, and managers of service SMEs in Vietnam's Southeast Key Economic Region, specifically in Ho Chi Minh City, Dong Nai, and Binh Duong. These regions were chosen due to their substantial contributions to Vietnam's GDP (32%) and state budget revenue (44.7%) (Vietnam General Statistic Office, 2022). The region's strategic location, advanced infrastructure, and role as a logistics and transportation hub make it essential for trade and service industries (Hong Hiep et al., 2023). By focusing on these key decision-makers, the study aims to gather valuable insights into strategic management within these SMEs.

A survey instrument was employed for data collection to evaluate the proposed relationships. From September 2022 to September 2023, respondents were contacted using judgmental and snowball sampling techniques. The target respondents included founders, co-founders, and managers at various levels of trade and service SMEs in Ho Chi Minh City, Binh Duong, and Dong Nai, all of which had been operating for at least five years to ensure resilience in the current uncertain business environment. Recruitment involved direct online surveys sent via company emails and self-administered questionnaires distributed at events and programs organized by SME associations and relevant agencies, such as the Saigon Exhibition and Convention Center (SECC) and WORLD TRADE CENTER—WTC Binh Duong New City. Ethical standards were maintained by obtaining informed consent from all survey participants. The minimal sample size was calculated using G\*power software version 3.1.9.7 (Xing et al., 2024), with settings of alpha ( $\alpha$ ) = 0.05, medium effect size  $f^2 = 0.15$ , power ( $1 - \beta$  err prob) = 0.8, and four predictors, recommending a sample size of 85. The data collection process yielded 407 usable responses out of 600 distributed questionnaires, achieving a validity rate of 67.8% that ensures reliable generalizability to the target population. Refer to **Table 2** for a summary of the surveyed firms and respondents' profiles.

**Table 2.** Profile of firms and respondents ( $N = 407$ ).

Characteristics	Frequency	Percent
<b>Firms</b>		
<b>Number of employees</b>		
Less than 10	118	29.0
10–50	129	31.7
51–100	99	24.3
101–200	61	15.0
<b>Capital</b>		
Less than 10 billion VND	259	63.6
10–100 billion VND	148	36.4
<b>Respondents</b>		
<b>Gender</b>		
Male	169	41.5
Female	238	58.5
<b>Educational level</b>		
High school	14	3.4
College	8	2.0
Bachelor/Engineer	295	72.5
Postgraduate	90	22.1
<b>Job position</b>		
Founder	98	24.1
Co-founder	202	49.6
Manager	107	26.3

## 4. Results

PLS-SEM is ideal for studying the relationships between analyzer, learning capability, technical innovation, administrative innovation, and growth and learning effectiveness due to its several advantages. It excels at exploring new relationships and predicting model outcomes (Hair and Sarstedt, 2021). PLS-SEM handles complex constructs and interactions well, making it suitable for studies with intricate variables (Legate et al., 2023). It also copes effectively with non-normal data distributions and high model complexity, offering better robustness and statistical power than CB-SEM (Hair et al., 2019). When to use and how to report the results of PLS-SEM. These strengths make PLS-SEM a reliable choice for uncovering significant connections in complex research scenarios. The PLS-SEM method and SmartPLS software were employed to estimate both the measurement and structural parameters in the proposed research model, following the guidelines of Ringle et al. (2015).

### 4.1. Common method bias and multicollinearity

This research relies on self-reported surveys where respondents answer questions about multiple constructs. Such a design can introduce bias if a common response style or halo effect influences answers across all constructs (Yüksel and Yüksel, 2007). Testing for common method bias (CMB) is essential in PLS-SEM research to ensure the validity of our findings. To address this, we conducted Harman’s Single Factor Test, which yielded a value of 36.2%, below the recommended threshold of 50% (Kock et al., 2021). This result indicates that CMB is not a significant issue in our data. In addressing the collinearity problem, we referred to the variance inflation factor (VIF) scores. According to Chourasia et al. (2021) and Kock (2015), a VIF score greater than 3.3 at the factor level indicates both collinearity and common method bias issues. None of the VIF scores exceed this threshold, indicating that our model does not suffer from collinearity or bias problems (See **Table 3**).

**Table 3.** Multicollinearity Statistics (VIF).

	AN	LC	TI	AI	GL
AN	-	-	-	-	-
LC	1.000	-	-	-	-
TI	1.005	1.005	-	-	-
AI	1.005	1.005	-	-	-
GL	-	1.025	1.912	1.944	-

### 4.2. Measurement model assessment

**Table 4** shows the results for the reflective measurement model. During reliability testing, we removed the manifest variable LC1 because it did not meet the 0.60 threshold (Hair et al., 2017). We then assessed scale reliability using Cronbach’s Alpha coefficients and composite reliability. After removing LC1, Cronbach’s Alpha values ranged from 0.753 to 0.860, and composite reliability values ranged from 0.840 to 0.905. These values are above the 0.7 threshold, indicating good internal consistency (Hair Jr et al., 2020). Additionally, the average variance extracted (AVE)

values for all latent variables were above 0.50, confirming the convergent validity of the measurement model (Hair et al., 2020).

**Table 4.** Measurement model.

Constructs and items	Factor loading	$\alpha$	CR	AVE
Analyzer (AN)	-	0.839	0.892	0.674
AN1: Our firm implements innovations after analyzing their possible effects on our business.	0.806	-	-	-
AN2: If our firm realizes that present developments are indeed opportunities, it will undertake necessary risks.	0.815	-	-	-
AN3: While our firm deems change as essential, we do not change the status quo in fast and unbalanced way.	0.840	-	-	-
AN4: Our firm develops a strategy to focus first on serving current customers and second on capturing new customers.	0.823	-	-	-
Learning Capability (LC)	-	0.753	0.840	0.570
Within this firm, we have activities, routines, business processes and behaviors for:				
LC2: Improving the firm's knowledge base and skills.	0.742	-	-	-
LC3: Learning new and relevant knowledge to undertake the firm business activities.	0.841	-	-	-
LC4: Analyzing the firm's unsuccessful activities.	0.661	-	-	-
LC5: Communicating the lessons learnt from the organization's past experiences across the entire firm.	0.765	-	-	-
Technical Innovation (TI)	-	0.843	0.905	0.761
TI1: Our firm develops new technologies.	0.869	-	-	-
TI2: Our firm incorporates technologies into new products.	0.888	-	-	-
TI3: Our firm facilitates new processes to improve quality and cost.	0.861	-	-	-
Administrative Innovation (AI)	-	0.860	0.905	0.706
AI1: Our firm is more responsive to environmental changes.	0.778	-	-	-
AI2: Our firm applies innovative administration in planning procedures.	0.842	-	-	-
AI3: Our firm applies innovative administration in process control systems.	0.867	-	-	-
AI4: Our firm applies innovative administration in integrated mechanisms.	0.869	-	-	-
Growth and Learning Effectiveness (GL)	-	0.839	0.903	0.757
GL1: Employees are satisfied with the firm's human capital policies.	0.876	-	-	-
GL2: The firm is recognized by the market as a good place to work.	0.869	-	-	-
GL3: Employees have the essential skills to manage their routines and strategic activities.	0.865	-	-	-

**Table 5.** Discriminant validity (HTMT).

	AN	LC	TI	AI	GL
AN	-	-	-	-	-
LC	0.089	-	-	-	-
TI	0.701	0.113	-	-	-
AI	0.667	0.180	0.813	-	-
GL	0.598	0.081	0.611	0.614	-

After the reliability and convergence validity of reflectively measured constructs are tested successfully, the next step is the analysis of the discriminant validity. The discriminant validity analysis in PLS-SEM involved examining the Heterotrait-

Monotrait ratio of correlations (HTMT). Following the suggested threshold value of 0.90 from Henseler et al. (2015), an HTMT value exceeding the threshold indicates a lack of discriminant validity. The proposed measurement models meet the discriminant validity criterion (Table 5).

### 4.3. Structural model assessment

See Table 6 for the hypothesis testing results. The analysis shows that AN has an insignificant impact on LC ( $p$ -value > 0.05), leading to the rejection of H1. However, AN demonstrates significant direct impacts, with a slightly stronger effect on TI ( $\beta = 0.588$ ;  $t$ -value = 13.103;  $p$ -value < 0.001) compared to AI ( $\beta = 0.562$ ;  $t$ -value = 12.393;  $p$ -value < 0.001), supporting both H2a and H2b. For H3a, the impact of LC on TI is not supported. Conversely, H3b is accepted, as LC negatively impacts AI ( $\beta = -0.115$ ;  $t$ -value = 2.652;  $p$ -value < 0.01). Both H4a and H4b are supported, showing that TI and AI positively influence GL. Although both effects are significant, AI has a stronger impact on GL ( $\beta = 0.246$ ;  $t$ -value = 3.773;  $p$ -value < 0.001) compared to TI ( $\beta = 0.202$ ;  $t$ -value = 3.020;  $p$ -value < 0.01). Lastly, H5 is rejected, indicating that LC does not significantly impact GL.

According to Hair et al. (2017),  $f^2$  values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects of an exogenous latent variable, respectively. Table 5 displays these  $f^2$  values. The analysis reveals relatively substantial  $f^2$  effect sizes for the relationships between AN → TI (0.530), and AN → AI (0.476). Conversely, small  $f^2$  effect sizes are observed for the relationships between LC → AI (0.020), AI → GL (0.044), and TI → GL (0.030).

**Table 6.** Hypotheses testing.

Relationships	Original Sample	$T$ Statistics	$P$ Value	Decision	$f^2$
Direct effects					
H1: AN → LC	-0.071	1.134	0.257	Rejected	-
H2a: AN → TI	0.588	13.103	0.000***	Accepted	0.530 (substantial)
H2b: AN → AI	0.562	12.393	0.000***	Accepted	0.476 (substantial)
H3a: LC → TI	-0.047	1.201	0.230	Rejected	-
H3b: LC → AI	-0.115	2.652	0.008**	Accepted	0.020 (small)
H4a: TI → GL	0.202	3.020	0.003**	Accepted	0.030 (small)
H4b: AI → GL	0.246	3.773	0.000***	Accepted	0.044 (small)
H5: LC → GL	0.008	0.178	0.858	Rejected	-
Mediating effects					
H6: AN → LC → GL	-0.001	0.125	0.901	Rejected	-
H7a: AN → TI → GL	0.119	2.912	0.004**	Accepted	-
H7b: AN → AI → GL	0.138	3.511	0.000***	Accepted	-
H8a: AN → LC → TI → GL	0.001	0.575	0.565	Rejected	-
H8b: AN → LC → AI → GL	0.002	0.860	0.390	Rejected	-

Notes:  $t$ -value  $\geq 3.29$  considers significant level at \*\*\* $p < 0.001$ ;  $t$ -value  $\geq 2.57$  considers significant level at \*\* $p < 0.01$  and  $t$ -value  $\geq 1.96$  considers significant level at \* $p < 0.05$ .

For indirect effects, the results indicate that the impact of AN on GL is mediated

by both TI and AI, as accepted in H7a and H7b. Specifically, AI mediates this relationship more significantly than TI, as evidenced by the stronger  $\beta$  value for H7b ( $\beta = 0.138$ ;  $t$ -value = 3.511;  $p$ -value < 0.001) compared to H7a ( $\beta = 0.119$ ;  $t$ -value = 2.912;  $p$ -value < 0.01). Despite the lack of a direct effect of AN on GL, it significantly enhances GL indirectly through these innovation pathways. Hypotheses H6, H8a, and H8b were rejected, indicating that the indirect paths through LC do not significantly impact GL (Table 6 and Figure 2).

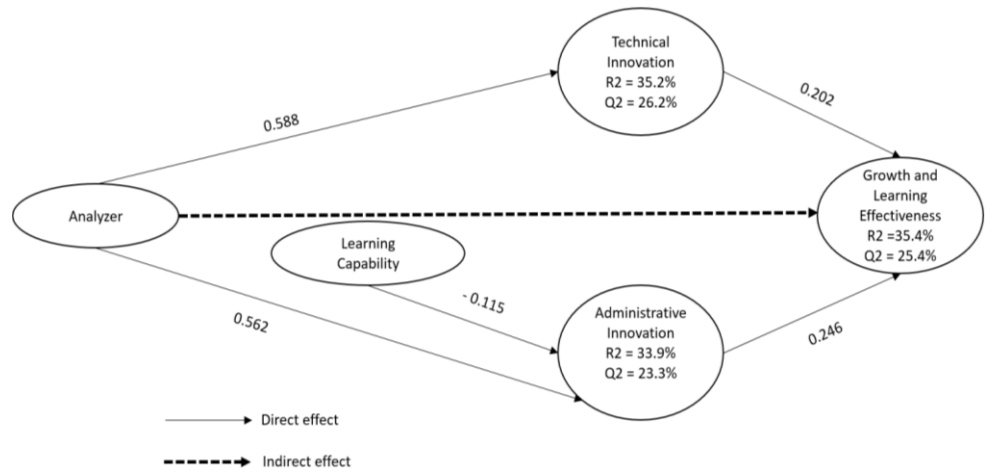


Figure 2. Path analysis results.

The predictive accuracy of the model was assessed using the explained variance ( $R^2$ ), where higher values indicate more accurate estimates. Chin (1998) recommends  $R^2$  values for endogenous latent variables as follows: 0.67 is substantial, 0.33 is moderate, and 0.19 is weak. The  $R^2$  values for TI, AI, and GL were 0.352, 0.339, and 0.354, respectively (see Table 7). These values suggest that the model provides a moderate level of predictive accuracy for the constructs involved. According to Hair et al. (2013), Stone-Geisser’s  $Q^2$  values are obtained through the blindfolding procedure, and a model is considered to have predictive relevance when  $Q^2$  values are greater than 0. From Table 6, the results of the blindfolding procedure indicate that TI ( $Q^2 = 0.262$ ), AI ( $Q^2 = 0.233$ ), and GL ( $Q^2 = 0.254$ ) all have predictive relevance, as their  $Q^2$  values are above 0.

Table 7. Model strength.

Dimensions	$R^2$	$Q^2$
TI	0.352	0.262
AI	0.339	0.233
GL	0.354	0.254

#### 4.4. Unobserved heterogeneity test

When using the PLS-SEM model, Finite Mixture PLS (FIMIX-PLS) is a suitable method to evaluate unobserved heterogeneity (Sarstedt et al., 2011). In exploratory research with heterogeneous data, determining the potential number of segments is crucial. For our study, with a sample size of 407 and a minimum required sample size of 84 (Subsection 3.2), we provisionally define four segments.

We performed the FIMIX-PLS procedure in four runs, with 1, 2, 3, and 4 segments respectively. To identify the optimal number of segments, we examined fit indices. Sarstedt et al. (2011) recommend using AIC3 and CAIC together to determine the segment number, with the lowest absolute values indicating the best fit. They also suggest considering the joint AIC4 and BIC values.

Sarstedt et al. (2020) note that if the criteria point to a specific segment solution or create various results, unobserved heterogeneity does not significantly influence the data. The results summarized in **Table 8** show that all indexes (AIC, AIC3, AIC4, BIC, CAIC, HQ) converge on the four-segment solution, and the criteria values differ across segments. Additionally, segment 4 is sufficiently large for modeling purposes, comprising 10.1% of the sample. Therefore, we conclude that unobserved heterogeneity does not significantly affect our data.

**Table 8.** Fit indices based on number of segments.

Information criteria	Segment 1	Segment 2	Segment 3	Segment 4
AIC (Akaike’s Information Criterion)	4140.289	3720.627	3569.822	3378.691
AIC3 (Modified AIC with Factor 3)	4152.289	3745.627	3607.822	3429.691
AIC4 (Modified AIC with Factor 4)	4164.289	3770.627	3645.822	3480.691
BIC (Bayesian Information Criteria)	4188.394	3820.847	3722.157	3583.14
CAIC (Consistent AIC)	4200.394	3845.847	3760.157	3634.14
HQ (Hannan Quinn Criterion)	4159.326	3760.288	3630.107	3459.6
MDL5 (Minimum Description Length with Factor 5)	4476.817	4421.728	4635.496	4808.938
LnL (LogLikelihood)	-2058.144	-1835.313	-1746.911	-1638.345
Segment size	0.435	0.354	0.111	0.101

## 5. Discussion and implications

### 5.1. Discussion

This study investigates the interrelationships among analyzer strategic orientation, learning capability, technical innovation, administrative innovation, and SME growth and learning effectiveness, drawing on the KBV and Contingency Theory. The robustness test conducted with FIMIX-PLS suggests that there is no indication of unobserved heterogeneity in this study, which confirms the reliability of our structural model. Additionally, the data presented in **Table 7** shows that the  $R^2$  value for the Growth and Learning (GL) variable is 0.354, further bolstering the model’s moderate explanatory power.

The study’s finding challenges the notion that analyzer orientation fosters learning capability (H1). Analyzer SMEs’ tendency to imitate established practices might limit their investment in developing a strong learning culture (Naranjo-Valencia et al., 2011). Their focus on short-term stability could lead to neglecting employee development and knowledge exploration (Castro and Moreira, 2024). In essence, analyzer SMEs may be stuck in a cycle of knowledge exploitation rather than exploration. Consistent with expectations, the hypotheses H2a and H2b are confirmed, demonstrating that an analyzer strategic orientation positively impacts both technical and administrative innovation. Our findings align with previous research, which

underscores the significance of analyzer orientation in driving innovation (Trivedi and Srivastava, 2023). Analyzer SMEs excel at monitoring market trends and adopting proven technologies, leading to incremental technical innovation. This calculated approach minimizes risks and optimizes resource allocation, enhancing overall efficiency (Müller et al., 2021). Similarly, in administrative innovation, these SMEs benchmark industry best practices to streamline operations and adopt practical, proven solutions with clear benefits (Behl et al., 2023).

Contrary to expectation, H3a is rejected, showing that learning capability does not significantly impact technical innovation in SMEs. This suggests that while learning is essential, it may not directly drive innovation without other factors like resource availability or an effective knowledge management system (Azeem et al., 2021). The findings imply that simply having the ability to learn and absorb new knowledge is insufficient for fostering technical advancements. The acceptance of H3b, showing a negative impact of learning capability on administrative innovation, contradicts the literature's expectation of a positive relationship. This negative impact may be due to information overload; a constant influx of new information can make it challenging to identify and prioritize administrative improvements (Pascual-Fernández et al., 2021). Employees might struggle to see the bigger picture and propose streamlined processes, hindering effective innovation. Instead, a more integrated approach involving strategic planning and efficient resource management might be necessary to translate learning capabilities into tangible innovations (Do et al., 2022).

The acceptance of H4a and H4b indicates that technical and administrative innovations boost SME growth and learning effectiveness. This supports earlier studies on the importance of innovation for SME success (J. S. Kim and Chung, 2017; Marion and Fixson, 2021). Technical innovation improves services and operational efficiency (Marion and Fixson, 2021). Administrative innovation enhances decision-making and adaptability (Rahmah et al., 2020). Therefore, investing in these areas strengthens the foundation for sustained growth and learning effectiveness. The rejection of H5 indicates that learning capability alone does not positively influence a SME growth and learning effectiveness. Despite the benefits of a strong learning culture in boosting productivity and competitive advantage (Zhang et al., 2023), practical challenges such as insufficient resources, bureaucratic hurdles, lack of leadership support, and resistance to change can impede the effective implementation of acquired knowledge (Agrawal et al., 2024). Therefore, simply having the learning capability is not enough; organizations need the right conditions and resources to translate learning into actionable growth.

Accepting H7a and H7b suggests that technical and administrative innovation play a role in linking analyzer strategies to SME growth and learning effectiveness. Technical innovation enhances data analysis and decision-making by extracting deeper insights from market data and customer feedback (Sun et al., 2022). Collaboration platforms and knowledge management systems facilitate insight sharing, fostering growth and learning (Cui et al., 2020; Shi et al., 2023). Administrative innovation restructures teams and workflows, embedding insights into daily practices and promoting adaptation and continuous growth (Rahmah et al., 2020). Interestingly, administrative innovation mediates this relationship more significantly than technical



innovation. Analyzer SMEs prefer administrative innovations for their stability and efficiency, as they offer incremental improvements with lower risk, whereas technical innovations, even incremental ones, may disrupt workflows or involve unfamiliar technology (Laubengaier et al., 2022). Administrative innovations' impact on efficiency and cost reduction is easier to measure within SMEs, allowing for quicker feedback and adjustments, while technical innovations might pose challenges in measurement, especially for Vietnamese trade and service SMEs lacking advanced analytics capabilities (Rahimi and Oh, 2024). The rejection of H6, H8a, and H8b suggests that learning capability does not mediate the relationship between analyzer and SME growth and learning effectiveness, nor does it sequentially mediate the relationship when combined with technical or administrative innovation. Analyzer SMEs' inclination towards imitating established practices may limit their investment in fostering a strong learning culture, potentially neglecting employee development and knowledge exploration (Castro and Moreira, 2024; Naranjo-Valencia et al., 2011). Consequently, these SMEs might find themselves trapped in a cycle of knowledge exploitation rather than exploration.

Comparing our findings with relevant studies in other countries, we find several parallels. For instance, Yusr et al. (2022) in Malaysia found that total quality management (TQM) practices and customer knowledge management improve marketing capabilities, which in turn enhance product innovation performance. This aligns with our emphasis on strategic orientation and innovation driving growth and learning effectiveness. In Thailand, Chaithanapat et al. (2022) highlighted the importance of customer knowledge management and knowledge-oriented leadership in boosting innovation quality and firm performance, which mirrors our findings on the significance of strategic orientation and learning capabilities. Nasution et al. (2021) in Indonesia showed that entrepreneurial orientation and knowledge management positively influence e-commerce adoption, supporting our view that strategic capabilities are key for technological advancement and innovation. Similarly, (Raghuvanshi and Garg, 2018) identified knowledge management as crucial for innovation capability in Indian MSMEs, echoing our focus on learning capabilities and innovation. These comparisons underscore the potential applicability of our research model across various emerging economies, providing a strong framework for addressing SME challenges and promoting growth and learning.

## **5.2. Theoretical implications**

By combining the KBV and Contingency Theory, this study presents a framework for understanding strategic management in SMEs, moving beyond the typical reliance on a single theoretical perspective. This integration offers a nuanced view that recognizes the complex nature of strategic decision-making (Cooper et al., 2023). Furthermore, by shifting the focus to the trade and service industry, the study contributes to broadening the scope of strategic management literature beyond the traditional manufacturing domain. This expansion allows for a deeper exploration of the unique dynamics and challenges inherent in service-based businesses, thus enriching our understanding of contemporary business environments (Casidy et al., 2020). Additionally, by emphasizing non-financial value drivers, the study

underscores the importance of holistic performance assessment, prompting a re-evaluation of conventional measurement metrics (Kathuria and Lucianetti, 2024). Moreover, this research contributes theoretically by examining the innovations both in sequence and in parallel, the study reveals that only administrative and technical innovations serve as parallel mediators, while learning capability does not play a mediating role. This finding suggests that analyzer SMEs can achieve success through efficient innovation practices alone, even in the absence of extensive prior learning, highlighting the critical importance of innovation capabilities in driving organizational effectiveness (Cui et al., 2020; Laubengaier et al., 2022).

### **5.3. Practical implications**

To drive success in trade and service SMEs, firms need to adopt a strategic approach that emphasizes careful analysis of innovations and balanced change (Mishra et al., 2023). Start by implementing innovations only after understanding their potential effects on the business, ensuring any risks are well-calculated. Focus first on serving current customers while gradually expanding to new ones. Invest in developing and incorporating new technologies to improve service quality and operational efficiency (Müller et al., 2021). Also, prioritize innovative administrative practices to stay responsive to market changes and optimize internal processes (Chawla et al., 2022). This approach ensures that employees are satisfied with human capital policies, the firm is recognized as a good workplace, and employees possess essential skills. By blending strategic analysis with practical innovation, SMEs can build a strong foundation for continuous growth and learning.

While the study specifically focused on Vietnamese SMEs in the trade and service sectors, the findings may also be applicable to economically developing countries with similar characteristics, such as Thailand, Indonesia, Malaysia, the Philippines, and India (J. Kim and Wood, 2020). These nations share commonalities in their economic development stages, expanding service sectors, and market dynamics (Yan and Yu, 2021). Challenges like limited access to resources, technology adoption barriers, and underdeveloped innovation capabilities are prevalent in these regions (J. Kim and Wood, 2020; Yan and Yu, 2021). Therefore, the insights from this study could be instrumental in informing strategies to enhance SME growth and learning effectiveness in these countries. By leveraging the unique framework of strategic orientation, learning capabilities, and innovation (both technical and administrative), SMEs in these emerging economies can better navigate their specific challenges.

## **6. Conclusion**

Using the KBV and Contingency Theory, this study examines the relationships between analyzer strategic orientation, learning capability, technical innovation, administrative innovation, and SME growth and learning effectiveness. The study found that analyzer orientation positively impacts both technical and administrative innovation, which enhances SME growth and learning effectiveness. However, learning capability does not significantly affect technical innovation or directly influence growth and learning effectiveness. Additionally, learning capability

negatively impacts administrative innovation. Technical and administrative innovations mediate the relationship between analyzer orientation and SME growth and learning effectiveness, however learning capability does not. This underscores the importance of focusing on innovation to drive growth and learning effectiveness in SMEs. The research delivers notable theoretical contributions within the field of SME strategic management. Moreover, it offers practical implications tailored specifically for trade and service SMEs operating in dynamic market landscapes like Vietnam.

This study has several limitations that future research could address. Firstly, since data for the cross-sectional study is only collected at a single point in time, establishing causation is challenging. Longitudinal studies are recommended for monitoring changes over time and better understanding cause-and-effect linkages. Secondly, the research lacks control variables such as industry and firm age, which could influence growth and learning effectiveness. Future studies should incorporate these control variables to provide a clearer picture of the relationships between analyzer orientation, learning capability, innovation, and effectiveness. Lastly, one limitation of our study is the lack of observed heterogeneity analysis. In future research, with a larger sample size, it would be valuable to explore how relationships vary among micro, small, and medium enterprises. This exploration could inform targeted policy recommendations tailored to the specific characteristics and needs of different types of SMEs.

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