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# Exploring the Impact of Globalization on the Environmental Performance of Vietnamese SMEs

## SUMMARY

This study investigates the determinants influencing the environmental performance (EP) of Vietnamese SMEs, focusing on internal factors such as human resources (HR), innovation and technology (IT), financial access capacity (FAC), marketing (MAR), environmental governance capability (EGC), and business culture (BC). The research also explores the moderating role of globalization (GB) on these relationships, using partial least squares structural equation modeling (PLS-SEM) on survey data collected from Vietnamese SMEs. The results indicate that HR, FAC, and IT are the most critical drivers of EP, with GB significantly amplifying their impact. EGC also plays a meaningful enabling role, while MAR and BC demonstrate more complementary effects. Notably, the indirect influence of GB on MAR and BC is statistically insignificant, highlighting the limited moderating role of GB on these factors. This study contributes to the growing body of knowledge on SME environmental performance by examining the interplay between internal factors and globalization, particularly in the context of Vietnam's growing integration into the global economy.
**Keywords:** environmental performance, globalization, sustainability, small and medium-sized enterprises
**JEL-codes:** F15, F61, L25

## INTRODUCTION

Globalization has become an undeniable force shaping the modern business landscape, creating both opportunities and challenges for businesses worldwide (Sitharam & Hoque, 2016). This accelerating trend of global interconnectedness has intensified competition and opened new markets, compelling businesses, particularly small and medium-sized enterprises (SMEs), to integrate into the international arena. While some research suggests that SMEs may even benefit more significantly from internationalization than larger corporations (Hsu et al., 2017), navigating the complexities of globalization requires adaptation and strategic responses. This includes enhancing sustainability practices to remain competitive in the face of heightened global competition and adhering to increasingly stringent international environmental and social standards (Liñán et al., 2020).

The imperative for SMEs to engage with global markets is no longer a matter of choice but a necessity for survival and growth. Restricting operations to domestic markets can significantly limit a firm's potential in today's interconnected world (Sitharam & Hoque, 2016). Internationalization is recognized as a key strategy for enhancing competitiveness and improving production processes, offering access to new technologies, knowledge transfer, and more cost-effective inputs (Braito et al., 2021). Furthermore, accessing global markets allows SMEs to cater to the growing consumer demand for sustainable products, potentially leading to improved environmental and economic performance (Ekanayake, 2020).

In the context of Vietnam, SMEs play a crucial role in the national economy, contributing substantially to GDP and employment (Ministry of Planning and Investment of Vietnam, 2023). However, Vietnamese SMEs face significant challenges in achieving optimal efficiency and innovation. Productivity levels lag behind OECD averages, indicating institutional inefficiencies and a need for improved management and technological capabilities. While a considerable proportion of Vietnamese SMEs engage in some form of innovation, limited R&D investment often results in incremental rather than transformative advancements. Access to finance also remains a major constraint, hindering their ability to invest in necessary improvements.

These challenges are further compounded by the pressures of globalization. While globalization offers opportunities for market expansion, international partnerships, and access to sustainable technologies, it also intensifies competition and necessitates adherence to complex global standards (Le & Tran, 2021). The need for continuous innovation and adaptation to meet diverse market requirements can strain the limited resources of Vietnamese SMEs, potentially hindering their long-term sustainability efforts. Effectively navigating these pressures is crucial for Vietnamese SMEs to achieve sustainable performance in the globalized economy.

This study aims to investigate the impact of globalization on the environmental performance of Vietnamese SMEs by addressing the following research questions: (1) What factors influence the environmental performance of Vietnamese SMEs? and (2) How does globalization impact the environmental performance of Vietnamese SMEs through those factors? By focusing on the Vietnamese context, this research seeks to provide valuable insights that can contribute to the broader understanding of the complex relationship between globalization and SME environmental performance.

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## LITERATURE REVIEW

Sustainable performance offers businesses a holistic view of their achievements, encompassing financial and non-financial objectives across economic, social, and environmental dimensions while prioritizing efficiency and effectiveness (Vincenza Ciasullo & Troisi, 2013; Yadav et al., 2018). It involves implementing strategies that address both current business needs and present and future societal expectations (Ayuso & Navarrete-Báez, 2018). As a crucial element of sustainable development—which aims to meet current needs without compromising future generations—sustainable performance integrates economic, social, and environmental considerations (Adamu et al., 2019).

Environmental performance, a key component of sustainable performance, focuses on minimizing the negative environmental impact of business activities. It encompasses an organization's environmental actions and responsibilities, providing a comprehensive assessment of its ecological footprint (Adamu et al., 2019). Achieving environmental sustainability involves practices like waste reduction, greenhouse gas emission reduction, energy and water conservation, and the use of renewable resources. Research indicates that such environmental initiatives can also yield economic benefits (Styaningrum et al., 2020). For instance, adopting energy-efficient technologies and renewable energy sources can lower energy consumption and carbon emissions, leading to cost savings and improved environmental performance. Similarly, waste reduction, recycling, and circular economy principles minimize resource depletion and promote long-term sustainability (Ayuso & Navarrete-Báez, 2018).

SMEs play a vital role in contributing to sustainable development and driving positive change, particularly in the context of globalization and technological advancements (Westman et al., 2019). Internal factors significantly influence SMEs' sustainability practices, enabling them to improve their sustainable performance and ensure long-term viability and positive environmental and social impact (Yadav et al., 2018). These internal drivers include human resources, technology and innovation, financial accessibility, marketing strategies, environmental management capabilities, and organizational culture.

Employees are crucial for organizational success, with their skills and attitudes strongly influencing performance, particularly concerning sustainability (Afzal & Lim, 2022). Employee demands and improved working conditions can drive SME investment in ecological measures (Adamu et al., 2019). Environmentally focused HR practices, or green HRM, significantly boost SME environmental performance by training staff in sustainable practices, encouraging eco-friendly behavior, and integrating environmental targets into performance reviews (Chaudhary, 2019). Moreover, a global workforce brings diverse viewpoints that stimulate creativity and innovation in sustainable products and processes (Bhatti, 2022). This cultural diversity fosters SME adaptation and innovation, improving sustainability. Access to global talent also strengthens SMEs' capacity to adopt advanced sustainability technologies and best practices, as these professionals offer valuable knowledge and experience for operational optimization and more sustainable methods (Jooss et al., 2023). It can be said that utilizing a global workforce through diverse perspectives and innovation is key to achieving better environmental, social, and economic results for SMEs.

Based on these explanations, this study suggests the following hypotheses:
– H1a: Human resources have impacts on the environmental performance of Vietnamese SMEs
– H1b: Globalization has a moderate impact on the environmental performance of Vietnamese SMEs through human resources

Scholars have emphasized the importance of technological innovation for achieving firm sustainability. Technology enhances SME environmental performance through eco-innovation and sustainable practices. Green technologies and innovations help to lower carbon footprints and waste, while smart technologies improve resource management (El-Kassar & Singh, 2019). Digitalization also encourages circular economy principles, promoting resource reuse and recycling for environmental sustainability (Xin et al., 2023). Globalization enables cross-border transfer of advanced technologies and practices, improving SME sustainability. Access to these technologies and innovations reduces environmental impact and improves resource management ability. Green technology investment notably improves SME environmental performance and efficiency (Bhatti et al., 2022). Globalization-driven digital transformation is essential for SME sustainability, enhancing supply chain management, and improving customer engagement. Digital tool usage increases SME agility in addressing sustainability challenges, and improving environmental, social, and economic outcomes (Wu et al., 2024). Thus, technology access, innovation, and globalization emphasize continuous technological advancement for SMEs' sustainable outcomes.

Based on these findings, this study suggests the following hypotheses:
– H2a: Innovations and technologies have impacts on the environmental performance of Vietnamese SMEs
– H2b: Globalization has a moderate impact on the environmental performance of Vietnamese SMEs through innovations and technologies

Financial accessibility, encompassing access to capital and related services like debt or equity, enables SMEs to confront environmental threats and fulfill costly regulations. Research reveals that SMEs with better financial access have a greater opportunity to adopt sustainable practices and improve their contribution to the environment (Ullah et al., 2021). This financial capability enables SMEs to make essential operational adjustments to satisfy legislative requirements without facing penalties, thus protecting both the environment and their competitive ability (Mazanai & Fatoki, 2012). Globalization increases SME access to a wider range of funding opportunities, which improves their long-term viability. Improved financial accessibility enables funding for modern technology, organizational expansion, and enhanced international competitiveness (Prasanna et al., 2019). Globalization-driven financial accessibility increases SME environmental performance, as foreign finance frequently requires the implementation of environmentally friendly procedures and technologies. This encourages SMEs to adopt sustainable methods and products, hence lowering their environmental impact (Dzikriansyah et al., 2023).

Based on these explanations, this study suggests the following hypotheses:

– H3a: Financial access capacity has impacts on the environmental performance of Vietnamese SMEs
– H3b: Globalization has a moderate impact on the environmental performance of Vietnamese SMEs through financial access capacity

Marketing strategies and competitiveness are key to SMEs' environmental performance. (Yadav et al., 2018). Promoting eco-friendly offerings attracts sustainability-conscious consumers. SMEs utilize social wealth to establish their credibility for environmental stewardship while seeking economic benefits, legitimacy, client attraction, increased revenue, and stakeholder satisfaction. Environmental initiatives promote their green image, leadership, and branding (Yadav et al., 2018). Furthermore, globalization increases SMEs' environmental performance by exposing them to international marketplaces where eco-friendly norms and consumer preferences frequently determine marketing strategies. This global exposure promotes green marketing innovation by enabling SMEs to emphasize their sustainability initiatives as a distinctive selling point. Furthermore, access to foreign markets encourages SMEs to participate in global supply chains that prioritize environmental responsibility, thus increasing their competitiveness and environmental performance. (Le, 2023).

Based on these findings, this study suggests the following hypotheses:

– H4a: Marketing has impacts on the environmental performance of Vietnamese SMEs
– H4b: Globalization has a moderate impact on the environmental performance of Vietnamese SMEs through marketing

A robust environmental management capacity is critical for improving SME environmental and operational effectiveness and driving sustainability (Thanki and Thakkar, 2018). SMEs that have extensive environmental knowledge and proficient organizational leadership are more engaged in adopting performance-enhancing environmental practices (Yadav et al., 2018). Globalization enhances the environmental performance of SMEs by encouraging the adoption of globally recognized environmental management frameworks, such as ISO 14001, to meet international standards and gain competitive advantages. Exposure to global markets pressures SMEs to improve their environmental management capacity to align with stringent environmental regulations and customer expectations. This global interconnectedness fosters knowledge sharing and access to advanced environmental technologies, enabling SMEs to implement more effective and innovative sustainability practices (Graafland & Smid, 2017).

Based on these explanations, this study suggests the following hypotheses:

– H5a: Environmental governance capability has impacts on the environmental performance of Vietnamese SMEs
– H5b: Globalization has a moderate impact on the environmental performance of

Vietnamese SMEs through environmental governance capability

Employee activities are guided by organizational culture, which is the evolution of a company's beliefs, attitudes, behaviors, and daily activities. A sustainability-focused culture is critical for SMEs, encouraging staff to incorporate green procedures into their daily tasks. SME environmental responsibility is derived from the owner or manager's values, social accountability, leadership guidance, and knowledge governance. (Yadav et al. 2018). Innovative, sustainability-focused leadership encourages environmentally friendly procedures and sustainable innovation (Chowdhury et al., 2022). Globalization influences the environmental performance of SMEs by fostering a culture that values sustainability as a competitive necessity in the global marketplace. Exposure to diverse international practices and norms encourages SMEs to adopt sustainability-focused cultural attributes, aligning employee activities with global environmental expectations. This shift promotes cross-border learning and the infusion of innovative green practices, strengthening the firm's commitment to environmental responsibility. Moreover, globalization enables SMEs to benchmark against global leaders, inspiring cultural transformations that prioritize environmental stewardship and sustainable business innovation (Kadam et al., 2019).

Based on these findings, this study suggests the following hypotheses:

– H6a: Business culture has impacts on the environmental performance of Vietnamese SMEs
– H6b: Globalization has a moderate impact on the environmental performance of Vietnamese SMEs through the business culture

*Figure 1* illustrates the research model and hypotheses of the study.

## METHODOLOGY

Partial Least Squares Structural Equation Modeling (PLS-SEM) is a statistical method for modeling complex relationships between observed and latent variables, ideal for exploratory research, small samples, or non-normal data. Its flexibility supports complicated models with various components and interactions, making it appropriate for predictive investigations
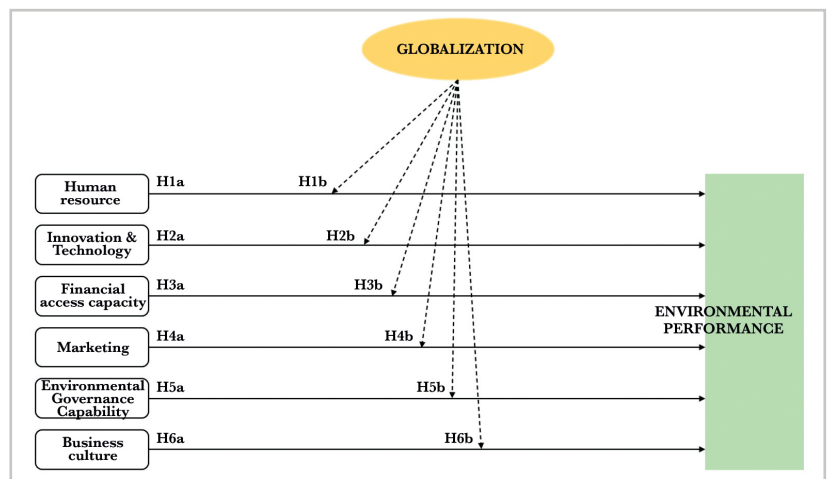


**Figure 1. Research model of the study**
*Source: Authors' own construction*

**Table 1. Loadings of reflecting constructs**

| Constructs | Loadings | Constructs | Loadings | Constructs | Loadings | Constructs | Loadings |
|---|---|---|---|---|---|---|---|
| **Human resource** | | **Innovation & Technology** | | **Financial access capacity** | | **Marketing** | |
| HR1 | 0.842 | IT1 | 0.833 | FAC1 | 0.922 | MAR1 | 0.883 |
| HR2 | 0.797 | IT2 | 0.791 | FAC2 | 0.789 | MAR2 | 0.909 |
| HR3 | 0.848 | IT3 | 0.805 | FAC3 | 0.863 | MAR3 | 0.881 |
| HR4 | 0.882 | IT4 | 0.777 | FAC4 | 0.875 | | |
| HR5 | 0.864 | IT5 | 0.803 | | | | |
| **Environmental Governance Capability** | | **Business culture** | | **Environmental Performance** | | | |
| EGC1 | 0.909 | BC1 | 0.783 | EP1 | 0.863 | | |
| EGC2 | 0.960 | BC2 | 0.840 | EP2 | 0.766 | | |
| EGC3 | 0.944 | BC3 | 0.847 | EP3 | 0.797 | | |
| EGC4 | 0.921 | BC3 | 0.837 | EP4 | 0.809 | | |

*Source: Authors' own calculation*

(Hair et al., 2011). PLS-SEM's adaptability is beneficial for exploratory studies with unknown variable correlations, potential measurement errors, or confounded variables (Chin, 2010; Hair et al., 2019). This study uses PLS-SEM to examine how internal factors, moderated by globalization, influence SME environmental performance.

This study uses survey data from SMEs in Vietnam to investigate their environmental performance. Respondents were identified based on their understanding of environmental performance challenges and their jobs in the SME industry. To deal with the limitations of reaching respondents to the survey, a snowball sampling strategy was adopted (Sedgwick, 2013). The study began by directly contacting Vietnamese SMEs and encouraging initial participants to share the survey within their SME networks. The questionnaire, using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) (Joshi et al., 2015), was designed to collect responses about the internal factors and environmental performance of enterprises. Data gathering from February to June 2024 provided 381 completed questionnaires, with 369 viable results after eliminating invalid answers. The sample size is crucial for PLS-SEM analysis. Following the 10-times rule (Hair et al., 2011), the sample should be ten times the largest number of predictors in the model. With the most complex construct having 11 predictors, the minimum required sample size is 110.

The 'plspm' package in R (Bertrand et al., 2024), was employed to test hypotheses. The 'plspm' package facilitates PLS-SEM and consists of measurement and structural sub-models. The measurement analysis examines relationships between latent constructs and their indicators, evaluating both formative constructs (globalization) and reflective constructs (remaining constructs). Reflective constructs have highly correlated indicators sharing a common underlying construct, while formative constructs have distinct, less correlated indicators (Hair et al., 2020). The structural model examines relationships between latent constructs. Key metrics include path coefficients (quantifying relationship strength and direction, similar to regression coefficients) (Chin, 2010), R-squared ($R^2$, indicating explained variance), and Q-squared ($Q^2$, assessing predictive relevance, with positive values indicating relevance) (Hair et al., 2020).

## Mesurement Model Evaluation
### Individual-item reliability
In PLS, individual item dependability is measured using indicator loadings, which represent the correlation between each indicator and its latent construct. To be maintained, the loading threshold must be at least 0.707 (Barroso et al. 2010).

*Table 1* shows the loadings for the reflective constructs. The analysis indicates strong measurement validity for most constructs, with consistently high indicator loadings above 0.707, demonstrating well-defined and appropriate measures. This indicates that all reflective constructs have great values of convergent validity, considering the indicators effectively represent their relevant constructs.

### Convergent validity
Convergent validity is essential for construct and overall outcome validity and reliability. Convergent validity can be verified by indicator loadings of more than 0.70 and AVE ratios greater than 0.50. AVE measures a portion of a construct's variance explained by its indicators as compared to error variance (Hair et al., 2019). An AVE greater than 0.50 suggests that the construct accounts for more than half of the variance in its indicators.

*Table 2*'s AVE values demonstrate strong convergent validity, with all values exceeding the 0.50 threshold. This indicates that the constructs effectively capture a significant portion of their indicators' variance, confirming strong convergent validity.

**Table 2. The average variance extracted from reflecting constructs**

| Constructs | AVE | Constructs | AVE |
|---|---|---|---|
| **HR** | 0.72 | EGC | 0.87 |
| **IT** | 0.64 | BC | 0.68 |
| **FAC** | 0.75 | EP | 0.66 |
| **MAR** | 0.79 | | |

*Source: Authors' own calculation*

### Construct reliability
Construct reliability assesses measurement consistency by using composite reliability and/or Cronbach's alpha (Straub et

### Table 3. Construct reliability of reflecting constructs

| Constructs | Cronbach's alpha | Composite Reliability | Constructs | Cronbach's alpha | Composite Reliability |
|---|---|---|---|---|---|
| HR | 0.90 | 0.93 | EGC | 0.71 | 0.96 |
| IT | 0.86 | 0.90 | BC | 0.85 | 0.90 |
| FAC | 0.89 | 0.92 | EP | 0.83 | 0.88 |
| MAR | 0.87 | 0.92 | | | |

*Source: Authors' own calculation*

al., 2004). Composite reliability is a more precise estimate in PLS-SEM than Cronbach's alpha because it considers actual indicator loadings instead of assuming equal loadings (Hair et al., 2011). Higher construct reliability indicates greater construct reliability. Values of 0.7 or above are generally acceptable, with values exceeding 0.8 signifying excellent reliability (Barroso et al., 2010).

*Table 3* presents Cronbach's alpha and composite reliability values. With composite reliability values all exceeding 0.8 and Cronbach's alpha values mostly above 0.8 (EGC at 0.71 being the exception), the model demonstrates strong construct reliability. These results confirm reliable measurements of the model's constructs, fostering their feasibility for future examination and application in practice.

### Discriminant validity

Discriminant validity guarantees the conceptual individuality of conceptions. This is evaluated using the Fornell-Larcker (1981) criterion, which compares the shared variance of a construct with its indicators to that of other constructs. A greater score for the former suggests a stronger discriminant validity. The data in *Table 4* show that the Fornell-Larcker criterion validates the discriminant validity of the measurement model.

### Table 4. Discriminant validity of reflecting constructs

| | HR | IT | FAC | MAR | EGC | BC | EP |
|---|---|---|---|---|---|---|---|
| HR | 0.85 | | | | | | |
| IT | 0.37 | 0.80 | | | | | |
| FAC | 0.59 | 0.58 | 0.86 | | | | |
| MAR | 0.48 | 0.49 | 0.55 | 0.89 | | | |
| EGC | 0.53 | 0.62 | 0.71 | 0.39 | 0.93 | | |
| BC | 0.24 | 0.23 | 0.38 | 0.57 | 0.27 | 0.83 | |
| EP | 0.24 | 0.15 | 0.40 | 0.16 | 0.10 | 0.08 | 0.81 |

*Source: Authors' own calculation*

### Multicollinearity

Multicollinearity across formative indicators might reduce measurement model accuracy due to data duplication. The Variance Inflation Factor (VIF) was used to determine this. A VIF below 5, preferably below 3, implies appropriate multicollinearity (Hair et al., 2011).

The results demonstrate that there are no substantial multicollinearity difficulties. All VIF values for indicators of globalization construct (GB1 to GB11) ranged from 1.08 to 1.60, significantly below the suggested threshold, demonstrating that each indicator contributes independently to the GB construct and confirming the formative measurement model's reliability.

### Table 5. Multicollinearity test

| Indicator | VIF | Indicator | VIF |
|---|---|---|---|
| GB1 | 1.13 | GB7 | 1.27 |
| GB2 | 1.12 | GB8 | 1.37 |
| GB3 | 1.33 | GB9 | 1.23 |
| GB4 | 1.31 | GB10 | 1.60 |
| GB5 | 1.39 | GB11 | 1.15 |
| GB6 | 1.08 | | |

*Source: Authors' own calculation*

### The significance and relevance of each formative indicator

Outer weights are critical in formative PLS-SEM measurement models, as the indicators define the construct, unlike reflective models (Diamantopoulos & Winklhofer, 2001). These weights quantify each indicator's contribution to the construct, making their assessment essential. Bootstrapping generates a distribution of outer weights, which allows for the calculation of standard errors, t-values, and confidence intervals. A significant outer weight (typically $t > 1.96$ for 95% confidence) demonstrates indicator relevance. Evaluating the bootstrapped outer weights, along with their standard errors, t-values, and confidence intervals, is vital for validating the measurement model. While 500 bootstrap resamples are commonly sufficient—particularly with the sample size of 369 used in this study—1000 resamples were employed to enhance reliability. This approach is particularly advantageous in complex models or when higher accuracy is required (Hair et al., 2019).

### Table 6. Outer weights, t-values, and p-values of the formative indicators

| Indicator | Outer weight | t-value | p-value |
|---|---|---|---|
| GB1 | 0.10 | 2.35 | 0.02 |
| GB2 | 0.13 | 2.79 | 0.01 |
| GB3 | 0.11 | 2.47 | 0.01 |
| GB4 | 0.13 | 3.06 | 0.00 |
| GB5 | 0.22 | 4.41 | 0.00 |
| GB6 | 0.11 | 2.96 | 0.00 |
| GB7 | 0.38 | 8.52 | 0.00 |
| GB8 | 0.29 | 7.16 | 0.00 |
| GB9 | 0.18 | 4.05 | 0.00 |
| GB10 | 0.10 | 2.35 | 0.02 |
| GB11 | 0.19 | 5.05 | 0.00 |

*Source: Authors' own calculation*

*Table 6* shows all indicators significantly contribute to the globalization construct, supporting its validity and reliability. The

high significance levels reinforce confidence in the GB formative measurement model's robustness.

## STRUCTURAL MODEL EVALUATION

### R-squared and Q-squared

$R^2$ assesses a model's prediction performance by calculating the percentage of variance in dependent variables explained by independent variables. $R^2$ values vary from 0 to 1, with 1 indicating perfect prediction. According to Hair et al. (2011), $R^2$ values of 0.75, 0.50, and 0.25 imply high, moderate, and low prediction accuracy, respectively.

**Table 7. $R^2$ and $Q^2$ values**

| Index | Construct EP |
|---|---|
| $R^2$ | 0.846 |
| Adjusted $R^2$ | 0.844 |
| $Q^2$ | 0.960 |

*Source: Authors' own calculation*

$Q^2$ is an important indication of a model's predictive reliability. Using a sample reuse approach eliminates some data, assesses model parameters with the remainder, and forecasts the excluded data. A smaller difference between expected and actual values indicates greater $Q^2$ and better predictive accuracy. A $Q^2$ value over zero indicates predictive importance for the concept. Hair et al. (2011) found that $Q^2$ when combined with $R^2$, offers a full assessment of a model's analytical and predictive capabilities.

The model's excellent $R^2$ and $Q^2$ values highlight its dependability and potential for precise forecasting and decision-making.

### Estimated results

The result of the research model is presented in figure 2. The results show that human resources play the most critical role in enhancing the environmental performance of Vietnamese SMEs, with the highest path coefficient of 0.73 (p < 0.001). This underscores the importance of skilled and engaged employees in implementing sustainable practices and driving eco-friendly initiatives. Financial access capacity also has a significant positive influence (path coefficient = 0.68, p < 0.001), emphasizing the need for sufficient financial resources to invest in green technologies, adopt sustainability-focused innovations, and meet international environmental standards. Similarly, innovation and technology are strong contributors (path coefficient = 0.61, p < 0.001), highlighting the role of advanced tools and solutions in improving environmental outcomes.

Environmental governance capability, though slightly less influential, has a meaningful positive effect (path coefficient = 0.40, p < 0.001), reflecting the importance of adopting frameworks like ISO 14001 to enhance resource efficiency and manage environmental impacts. Marketing shows a weaker yet significant effect (path coefficient = 0.17, p < 0.05), indicating its complementary role in promoting eco-friendly offerings. Business culture, with the lowest path coefficient (0.13, p < 0.05), suggests that while sustainability-focused organizational culture fosters environmentally responsible behavior, its direct impact is less prominent compared to other factors.

Globalization significantly moderates these relationships, with human resources showing the strongest indirect effect (0.43, p < 0.001). Global exposure enhances the value of employee skills, knowledge, and engagement in sustainability practices. Financial access capacity also benefits from globalization (indirect effect = 0.46, p < 0.001), enabling SMEs to leverage global resources for green initiatives. Innovation and technology exhibit a notable indirect effect (0.35, p < 0.001), as globalization facilitates access to advanced tools and global knowledge sharing. Environmental management capacity sees a moderate indirect effect (0.18, p < 0.05), suggesting globalization encourages structured environmental systems. However, marketing and firm culture show statistically insignificant indirect effects, indicating that globalization's moderating role on these factors is limited.

In summary, human resources, financial accessibility, and technology are the most critical drivers of environmental performance for Vietnamese SMEs, with globalization amplifying their impact. Environmental management capacity acts as an enabler, while marketing and firm culture play supportive roles. To maximize sustainability, SMEs should prioritize investments in human capital, financial resources, and technological innovation while leveraging globalization for enhanced environmental performance.

## CONCLUSION

This study employs PLS-SEM to evaluate the influence of internal factors on environmental performance and the mediating role of globalization, based on a survey of Vietnamese SMEs. The findings reveal that human resources, financial accessibility, and technology are the primary drivers of environmental performance, with globalization enhancing their impact. Environmental management capacity supports these efforts while marketing and firm culture play secondary roles. Notably, the indirect effects of globalization on marketing and firm culture are insignificant, suggesting a limited moderating role in these areas. To improve sustainability, SMEs should focus on strengthening
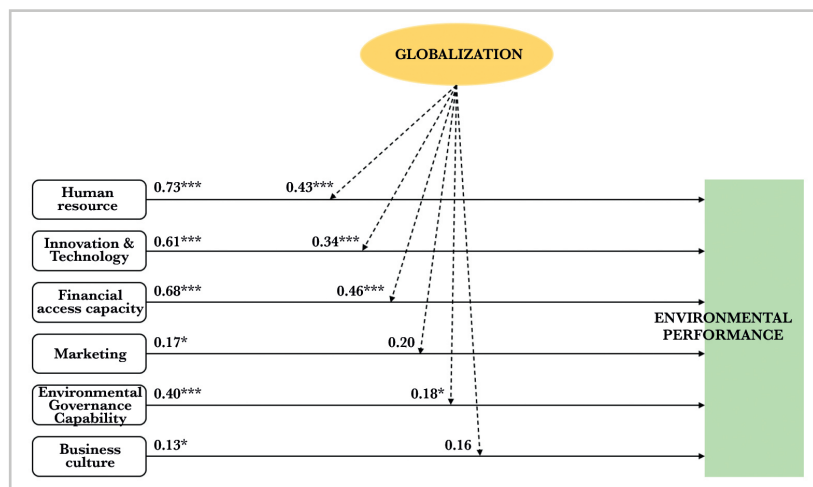


***: p < 0.001; **: p < 0.01; *: p < 0.05

**Figure 2. Estimated result**

*Source: Authors' own calculation*

human capital, financial resources, and technological innovation, while effectively leveraging globalization.

This study adds to the expanding research on SME environmental performance by exploring the relationship between internal factors and globalization, with a focus on Vietnam's increasing integration into the global economy. The findings provide practical insights for policymakers and business leaders seeking to improve SMEs' environmental performance. By focusing on key influencing factors and harnessing the advantages of globalization, stakeholders can foster sustainable practices that support both economic growth and adherence to global environmental standards.

Given the study's limitations, future research could explore larger sample sizes to ensure more robust results. Additionally, future studies could examine the effects of globalization and internal factors on other dimensions of sustainable performance, offering a more holistic view of SMEs' sustainability strategies.

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