




WHAT FACTORS INFLUENCE THE INTERNATIONALIZATION OF SMALL AND MEDIUM ENTERPRISES (SMEs)? A GENDER-BASED APPROACH

Rita Yuni Mulyanti¹ , Lela Nurlaela Wati^{1,*} , Suhana¹ 

¹ Universitas Teknologi Muhammadiyah Jakarta, Jakarta, Indonesia
Corresponding author email: lela@utmj.ac.id

Article Info

Received: Nov 30, 2024

Revised: Dec 20, 2024

Accepted: Feb 10, 2025

Online Version: Feb 17, 2025

Abstract

Small and medium enterprises (SMEs) are crucial to a nation's economy, especially in developing countries; nevertheless, their involvement in international trade, particularly exports, is minimal, with SMEs representing merely 15% of Indonesia's total non-oil and gas exports in 2024. Women manage Indonesian SMEs more than men, yet they encounter difficulties doing foreign activities. This study aims to analyze the elements influencing the internationalization of SMEs and gender-specific roles. The research sample consisted of 190 SMEs, with 137 operated by women and 53 by males. The data analysis employs moderating regression analysis (MRA) with Smart PLS. The study's findings reveal that the critical determinants for the internationalization of SMEs in Indonesia encompass entrepreneurial characteristics (age and experience), SME characteristics, entrepreneurial orientation, and environmental factors. A significant disparity exists between male-managed and female-managed SMEs concerning their characteristics, environmental factors, and regulatory structures. Female SMEs exhibit enhanced agility and compliance with regulations. The characteristics of SMEs and the environmental factors have a more significant impact on the internationalization of male SMEs than female SMEs. This study's novelty is in the elements that facilitate successful internationalization and the contribution of women-led SMEs to enhancing internationalization efforts. Although the study's sample included Indonesian SMEs, the findings may yield more significant implications for the success factors of SME internationalization worldwide concerning gender diversity. This study offers insights for policymakers to enhance SME internationalization by incorporating SMEs into extensive industrial ecosystems and fostering a collaborative environment among industry stakeholders and SMEs within the export product supply chain.

Keywords: Digital Technology, Entrepreneurial Orientation, Environmental Factors, Regulation, SME Internationalization.



© 2025 by the author(s)

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

INTRODUCTION

Small and Medium Enterprises are essential in academic research, policy development, and economic advancement as they stimulate economic growth and generate employment possibilities

(Yadewani et al., 2024). The growth of SMEs in Indonesia is swift, with the total expected to reach 66 million in 2023, reflecting an increase of 7 million from the 59 million recorded in 2015. Small and medium-sized enterprises (SMEs) employ around 117 million individuals, or 97% of the national workforce, contributing roughly 61% to Indonesia's gross domestic product (GDP) in 2023. The proliferation of SMEs can generate employment opportunities and mitigate unemployment while catalyzing economic development. Nevertheless, the growth in the quantity and impact of SMEs needs to align with worldwide endeavors, as SMEs are projected to account for only 15% of Indonesia's total non-oil and gas exports in 2024. Indeed, SMEs are pivotal in advancing the Sustainable Development Goals (SDGs), particularly job creation, innovation, and creativity.

Internationalization, digitalization, and sustainability are the primary avenues for growing small to medium enterprises (SMEs). Contemporary economics underscores the significance of digital transformation as a pivotal catalyst for innovation and corporate revitalization (Denicolai et al., 2021; Triyasmina et al., 2022). The efficiency provided by digital technology is very significant for SMEs that have limited resources; digital technology gives entrepreneurs access to knowledge and international market partners and saves resources (Pergelova et al., 2019; Fitriana, & Waswa, 2024; Maudia, Awodeyi, & Mohammed, 2024; Miharja, Bulayi, & Triet, 2024). Digital technology is also essential for SMEs to reach customers and suppliers across borders.

The increasing adoption and spread of internet-based technology has been proven to provide broad access for the internationalization of SMEs. Pergelova et al. (2019) provides empirical evidence that digital technology positively impacts the internationalization of SMEs. Female entrepreneurs will use digital technology more to access international markets than male entrepreneurs. Women-led SMEs are likelier to internationalize through exports than foreign direct investment (Pergelova et al., 2018). According to Nguyen and Khuu (2018), enterprises led by women exhibit superior growth compared to those led by men, and owners with advanced education levels achieve more growth than those with lesser educational attainment. Women-owned export enterprises attain enhanced financial performance by implementing rigorous export strategies (Sui et al., 2022; Endra, & Villafior, 2024; Saputra, Musonda, & Nikolantonakis, 2024; Risnawati et al., 2024). Women entrepreneurs also positively impact SME product innovation (Zastempowski & Cyfert, 2021). However, Expósito et al. (2022) gave different results where there was no significant difference in the propensity to export between businesses run by men and women. However, SMEs led by women show a lower propensity to import than those led by men. With the rapid advancement of global digitalization, Indonesian SMEs must adopt the digital economy to facilitate economic growth. Integrating digital technology into SMEs' business models has been demonstrated to enhance productivity and ensure long-term sustainability (Varblane & Bormann, 2019; Benkovskis et al., 2020; Munthomimah, Yamin, & Rusdi, 2022; Taurusi, Septi, & Osma, 2024). Technology deployment will bridge the productivity disparity between SMEs and large firms by enhancing capacity for improved competitiveness and innovation (Hasan et al., 2022; Hyskaj et al., 2024; Zakiyah, Boonma, & Collado, 2024).

The primary difficulty confronting SMEs in Indonesia regarding digitalization is the inadequate financial and digital literacy among business operators. The 2022 National Financial Literacy Survey indicates that the financial literacy rate among Indonesians stands at 49.68%, with women's literacy at 50.33% and men is at 49.05% (OJK, 2023). Indonesia's financial literacy needs to catch up significantly with that of Singapore, Malaysia, and Thailand. Suwarni et al. (2019) found that SMEs experienced failure in the digital market due to the inability of production capacity to meet digital market demand, competition with large companies, and low digital literacy. The challenges faced by SMEs when implementing digital technology are related to the characteristics of SMEs (Marconatto et al., 2022; Ren & Zeng, 2022), in-company size, company age and experience, family influence, gender, environment, internal resources, and digital technology are important factors that influence the internationalization of SMEs (Hasan et al., 2022; Expósito et al., 2022; Lopez-Nicolas et al., 2020; Pergelova et al., 2019; Szabó et al., 2023; Zastempowski & Cyfert, 2021), and impact the productivity, growth, financial performance and legitimacy of small and medium enterprises (Arcuri et al., 2023; Benkovskis et al., 2020; Denicolai et al., 2021; Ingram, 2021; Kolagar et al., 2022; Szabó et al., 2023; Nguyen & Khuu, 2018; Varblane & Varblane; Bormann, 2019).

Although numerous studies exist on SME performance and survival, empirical research about initiating SME internationalization is still being determined. To date, minimal current research has analyzed various factors affecting SME entry into overseas markets. The urgency of this research is the obstacles SMEs face in conducting international trade, mainly digital technology issues, regulations,

digital ecosystems, *host country* policies, low networking, and low knowledge of SMEs in carrying out international transactions. Women-owned SMEs are generally still underrepresented in international activities. To overcome the problems above, this research aims to find a model of SME internationalization in Indonesia that adapts to a societal culture that is more specific to masculine and feminine (gender) culture. This study's novelty is in identifying factors influencing SMEs' participation in international activities related to gender diversity.

LITERATURE REVIEW

Examining how SMEs innovate to engage in international trade in the digital era can enhance the resource-based View (RBV), Knowledge-Based View (KBV), internationalization theory, and the theory of planned behavior. This study explores the factors that influence SMEs in carrying out internationalization activities. The participation of SMEs in international marketplaces is analyzed through the distinct characteristics of owners, managers, or entrepreneurs, employing multiple theoretical frameworks, including the theory of planned behavior. Overseas gender, education, age, experience, and foreign travel significantly influence SMEs' entry into international markets (Expósito et al., 2022; Haddoud, 2021; Lafuente et al., 2018; Masso et al., 2015; Pergelova, 2018). This study employs indices of gender, education, age, and entrepreneurial experience to assess the distinctive variables of entrepreneurs.

Managerial gender roles in small and medium enterprises can influence the tendencies of SME export and import activities (Expósito et al., 2022; Hanoum et al., 2024; Wulandari, Rodriguez, & Afrianda, 2024). His research findings indicated no substantial variation in the inclination to export between enterprises led by males and those led by women. Nonetheless, women-led SMEs exhibit a reduced inclination to import compared to their male-led counterparts. The three elements of entrepreneurial orientation—proactivity, risk-taking, and innovation—are crucial motivators for engaging in overseas markets and are not influenced by the manager's gender. Research (Pergelova, 2018) demonstrates that women-led SMEs exhibit a greater propensity for internationalization through exports rather than foreign direct investment (FDI). This description leads to the formulation of the subsequent research hypothesis:

H1a: Gender influences the internationalization of SMEs

Colovic (2015) determined that a high level of education among entrepreneurs or employees correlates positively with the likelihood of early internationalization. Lafuente et al. (2018) indicated that entrepreneurs' completion of studies enhances the probability of export entry. Serra et al. (2012) similarly discovered that the educational attainment of entrepreneurs or managers influences export behaviors. This description leads to the formulation of the subsequent research hypothesis:

H1b: Education influences the internationalization of SMEs

Female CEOs of a younger demographic typically pursue internationalization via foreign direct investment (Pergelova, 2018). Serra et al. (2012) reported analogous findings, indicating that the age and dedication of managers were crucial determinants influencing export preferences in UK firms. This description leads to the formulation of the subsequent research hypothesis:

H1c: Age influences the internationalization of SMEs

Hambrick and Mason (1984) introduced the upper echelons theory, highlighting SME entrepreneurs' traits and their influence on internationalization. The upper-echelon idea posits that the attributes, values, abilities, knowledge, and experiences of SME entrepreneurs influence their internationalization efforts. Ciravegna et al. (2014) discovered that entrepreneurs with international expertise are more inclined to initiate exports and more likely to pursue foreign business possibilities actively. Networking possessed by SMEs can enhance internationalization and performance, while the company's size and age influence the impact (Manolova et al., 2013). Srivastava and Tyll (2021) demonstrate that organizations across various industries necessitate distinct networking setups to achieve international success. Previously acquired competencies and global experience favorably impact internationalization. Masso et al. (2015) further endorse the beneficial impact of prior foreign experience on internationalization and the velocity of internationalization. This description leads to the formulation of the subsequent research hypothesis:

H1d: Entrepreneurial experience influences the internationalization of SMEs

The characteristics of SMEs, evaluated through indicators such as business experience, the number of enterprises managed, technological accessibility, responsiveness to market changes, adaptability of production methods, international affiliations, partnerships with foreign organizations, workforce size, and growth capital, are more favorable in male-managed SMEs than in those managed by females, except asset and income levels (Sui et al., 2022; Nguyen & Khuu, 2018). Firm size positively influences the export ratio (Gajewski & Tchorek, 2017) and the degree of internationalization (Ruzzier & Ruzzier, 2015); regarding firm age, there is evidence that age influences the company's internationalization level. This description leads to the formulation of the subsequent research hypothesis:

H2: SME characteristics influence SME internationalization

Regarding the attitudes, orientation, and capabilities of entrepreneurs (Wasowska, 2019), it was found that entrepreneurs' orientation positively influences new ventures' internationalization tendencies. Entrepreneurs' export market orientation was further found to affect performance positively (Miocevic & Crnjak-karanovic, 2011). (Benkovskis et al., 2020) found that productivity increases were more significant when export products increased. Haddoud et al. (2020) established that entrepreneurial orientation can augment SMEs' export ambitions, contingent upon favorable export views. Based on the theory and previous research above, the hypothesis and conceptual framework can be described as follows:

H3: Entrepreneurial orientation influences the internationalization of SMEs

Digitalization significantly enhances the international operations of SMEs by facilitating access to worldwide markets via e-commerce platforms, enabling seamless outreach to foreign clients. Implementing technology will close the productivity disparity between SMEs and large corporations by augmenting their ability for enhanced competitiveness and innovation (Hasan, 2022). Digital technology can democratize entrepreneurship by providing access to global market knowledge and facilitating engagement with clients and partners (Pergelova, 2019). Digitalization is crucial for the sustained viability of small and medium enterprises, particularly in emerging nations such as Indonesia. Marconatto et al., (2022) Discovered, that the growth of SMEs is enhanced when these enterprises prioritize technology. The implementation of technology will bridge the productivity gap between SMEs and large organizations by improving capacity and capacities for improved competitiveness and innovation (Hasan & Almubarak, 2016). Pergelova et al. (2019) demonstrate that digital technology positively influences a firm's export ratio. This effect is facilitated by foreign market information and influenced by the CEO's gender. An alternative perspective was articulated by Anwar et al. (2022), where digital capabilities, as measured by digital knowledge-sharing capabilities, digital business capabilities, and digital platform capabilities, cannot directly encourage internationalization. This description leads to the formulation of the subsequent research hypothesis:

H4: Digital technology influences the internationalization of SMEs

Environmental factors that facilitate SMEs, such as streamlined export processes, tax incentives, and the government's enhancement of international standards for SMEs, might motivate them to pursue expansion in foreign markets. Stable macroeconomic and global economic conditions sustained domestic political stability, and diplomatic relations among nations might facilitate international entry to new markets for SMEs. This aligns with the findings of Chang and Webster (2019), which identify environmental factors associated with networks, institutions, and competition as primary predictors of SME entry into international markets. These results corroborate Szabo's (2023) research, indicating that environmental factors significantly influence the internationalization of SMEs. Tolstoy (2019) discovered divergent findings, demonstrating that worldwide network links via the proactive initiation of foreign business relations adversely impact international activities. This description leads to the formulation of the subsequent research hypothesis:

H5: Environmental factors influence the internationalization of SMEs

Government regulations and policies impact entrepreneurial activity (Manesh & Rialp, 2019). Williams and Spielmann (2019) discovered that national legislation adversely affects international market orientation, whereas international legislation positively influences international activity. Chen et

al. (2016) indicated that stringent rules paradoxically promote export behavior. Awareness and adherence of SMEs to national and international regulations ensure 'export compliance' and mitigate potential sanctions, as well as financial and non-financial damages resulting from non-compliance. This description leads to the formulation of the subsequent research hypothesis:

H6: Regulations influence the internationalization of SMEs

Women-owned enterprises still need to be more adequately represented in internationalization efforts. Nevertheless, Sui (2022) found that women-owned export businesses have more financial success by implementing a robust export strategy in Canada. Ren (2022) found that gender diversity on boards slows the rate of firm internationalization, with the negative effect being more pronounced when the average age of female directors is elevated and less significant when female directors have international experience or financial background. Female-led firms have more growth than male-led enterprises (Nguyen, 2018). Pergelova (2019) analyzed SMEs in Bulgaria and claimed that female entrepreneurs will utilize the advantages of digital technology more proficiently than their male counterparts. Small and medium-sized enterprises (SMEs) directed by more seasoned individuals possessing advanced educational qualifications can accelerate SME growth more rapidly (Marconatto, 2022). This description leads to the formulation of the subsequent research hypothesis:

H7: There are differences in entrepreneurial experience in female and male SMEs.

H8: There are differences in SME characteristics in female and male SMEs.

H9: There are differences in entrepreneurial orientation in female and male SMEs

H10: There are differences in digital technology in female and male SMEs

H11: There are differences in environmental factors in female and male SMEs

H12: There are differences in regulations in female and male SMEs

A conceptual framework was developed based on the premise of the determinants of SME internationalization:

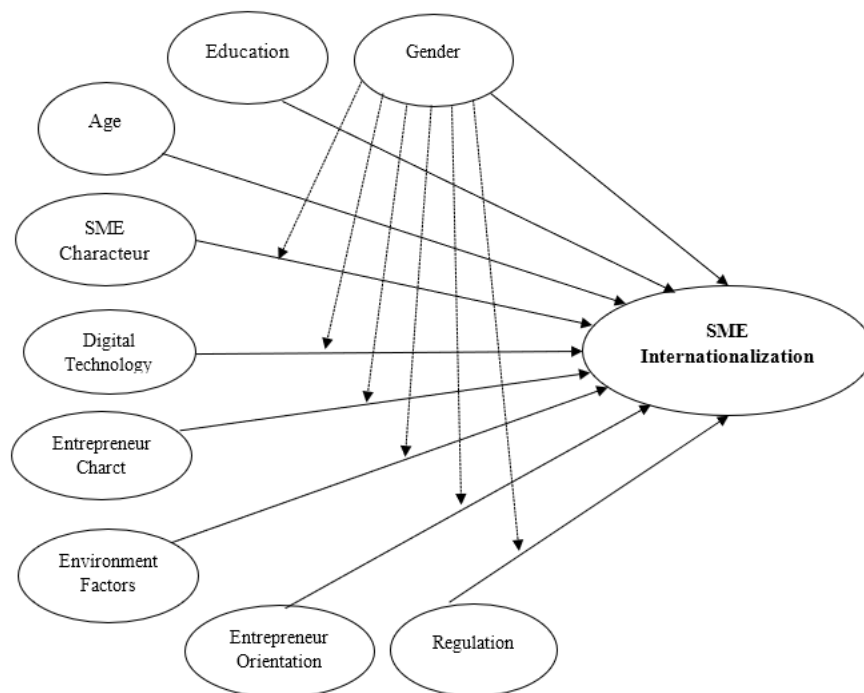


Figure 1. Conceptual Framework

RESEARCH METHOD

This research employs a quantitative methodology with a causal approach to examine the influence between factors. This research was conducted during a six-month period from June to November 2024. The research population consisted of SMEs involved in international operations throughout Indonesia. The sampling utilized the purposive sampling method as described by Hair et al.,

with a ratio of 5 to 10 times the number of indicators. A total of 300 respondents participated, but only 190 completed the questionnaire in its entirety, comprising 135 female-managed SMEs and 55 male-managed SMEs. Owing to the restricted number of respondents engaged in export activity, the research sample comprises SMEs from diverse areas in Indonesia across multiple industrial sectors.

The research implementation commenced with Internationalization training for SMEs that are currently internationalizing or have already done so, conducted either in-person in Jakarta or indirectly via Zoom, comprising four training sessions for SMEs across Indonesia. Data collection via a survey employing a questionnaire for training participants utilizing a Likert scale and rating scale. The research variables include the dependent variable of SME internationalization and the independent variable of entrepreneurial characteristics, which comprises four sub-variables: gender, functioning also as a moderating variable; age of SME entrepreneurs; education; and entrepreneurial experience. The additional independent variables include entrepreneurial orientation, features of SMEs, digital technologies, environmental concerns, and laws. The research variables are quantified using indicators, as illustrated in the subsequent table 1.

Table 1. Description of Research Variables

Variable	Indicator	References
Internationalization of SMEs (Dependen)	The role of digital technology	(Denicolai et al., 2021) Dimitratos et al. (2016)
	Number of strategic partnerships	
	Total foreign direct investment	
	Managerial competence	
	Several new markets entered.	
	Number and variety of international products	
	Number of export destination countries	
	Growth in foreign markets	
	Number of international market segments	
	Export activity	
Characteristics of Entrepreneurs (Independent)	Difficulty entering the market	(Pergelova et al., 2018, 2019; Putra et al., 2023; Susanti et al., 2023; Zastempowski & Cyfert, 2021)
	Export volume and value	
	Number of new business ideas	
	Level of creativity in product/service development	
	Number of risky decisions	
	Percentage of investment in risky projects	
	Number of new products or services	
	Number of patents or intellectual property rights	
	Level of education (Dummy 1=bachelor graduate, 0=not a bachelor graduate)	
	Gender (Dummy 1=Woman, 0=Man)	
Characteristics of SMEs (Independent)	Age (Dummy 1=18-44 years old, 0=above 45 years old)	(Sui et al., 2022; Thu Nguyen & Thanh Khuu, 2018)
	Experience in business (number of years)	
	Number of businesses ever managed.	
	The level of technology available	
	Speed of response to market changes	
	The level of adaptation of the production process	
	Number of international connections	
	Number of collaborations/partnerships with foreign companies	
	Number of employees	
	Asset value, Income	
Entrepreneurial	Amount of capital for expansion	
	Percentage of revenue from new products	

Variable	Indicator	References
orientation (Independent)	Percentage of spending on R&D Number of initiatives for international expansion Speed of response to international market opportunities The level of capital invested in the project is high-risk. The amount of investment in foreign markets is still being determined.	(Jin & Cho, 2018)
Digital technology (Independent)	Percentage of sales via e-commerce Number of international transactions via e-commerce Number of followers/engagement on international social media Number of international marketing campaigns via social media Percentage of business operations using cloud services Operational cost efficiency through the use of the cloud The level of use of automation technology in the production process Time saved through digital automation	(Hidayati et al., 2024; Gaweł & Mińska-Struzik, 2023; Pergelova et al., 2019; Zastempowski & Cyfert, 2021)
Environmental factors (Independent)	Number of export regulations Amount of incentives/government support Impact of exchange rate fluctuations The impact of the global economy on sales Political stability in export destination countries (Macro) Effect of sanctions/embargo The number of cultural adaptations in marketing Amount of cultural training provided Several regulatory audits were successfully passed. The amount of tariffs on export products	(Benkovskis et al., 2020; Child et al., 2022; Yadewani et al., 2024)
Regulations (Independent)	Number of non-tariff barriers Amount of trade support or subsidy Speed of international market access Percentage of compliance with international standards Percentage of products that comply with international standards Number of international certifications	(Audretsch & Belitski, 2021)

Following the data tabulation, a descriptive analysis was performed to ascertain the respondent criteria, calculating the average value for each indicator and research variable according to the gender of SME entrepreneurs. Subsequently, validity and reliability tests were conducted prior to executing a hypothesis test to address the research objectives.

This research use the First Order Confirmatory method utilizing Smart PLS version 4.1.0.9. The analytical method employed to derive empirical proof of causality is Moderating Regression Analysis. This is a model for evaluating SME internationalization through Moderating Regression Analysis:

$$INT = \beta_1 GENDER + \beta_2 AGE + b_3 EDUC + b_4 EC + \beta_5 CH + \beta_6 EO + b_7 DT + \beta_8 ENV + \beta_9 REG + \beta_{10} GENDER * EC + \beta_{11} GENDER * CH + \beta_{12} GENDER * EO + \beta_{13} GENDER * DT + \beta_{14} GENDER * ENV + \beta_{15} GENDER * REG + \varepsilon \dots (\text{Research Model})$$

Description:

- INT = Internationalization of SMEs
- GENDER = Dummy 1=Woman, 0=Man
- AGE = Entrepreneurs Age
- EDUC = Entrepreneurs Education
- EC = Entrepreneurs Characteristics
- CH = Characteristics of SMEs
- EO = Entrepreneurial Orientation
- DT = Digital Technology
- ENV = Environmental Factors
- REG = Regulations
- β = Regression coefficient
- ε = Error

RESULTS AND DISCUSSION

Analysis of Description of Respondent Characteristics

Table 2. Respondent Characteristic

Characteristics	Total	
	Frequency	%
Age of SME Owner		
18-24 years old	4	2.11
25-34 years old	20	10.53
35-44 years old	70	36.84
45-54 years old	72	37.89
>55 years	24	12.63
Total	190	100
Profit		
< 5 Million	61	32.11
5-10 million	32	16.84
10-20 million	26	13.68
20-50 million	34	17.89
50-100 million	16	8.42
> 100 million	21	11.05
Total	190	100
Marital status		
Not married yet	15	7.9
Marry	154	81.1
Divorced	21	11.1
Total	190	100
Number of employee		
There is not any	18	9.5
1-2 people	83	43.7
3-5 people	83	43.7
5-7 people	2	1.1
>7 people	4	2.1
Total	190	100
Last education		
SD	4	2.11
JUNIOR HIGH SCHOOL	5	2.63
SMA/SMK/MA	66	34.74
S1	107	56.32
S2	7	3.68
S3	1	0.53
Total	190	100

According to the characteristics of the respondents, 190 out of 300 completed the questionnaire and were capable of processing a greater number of SMEs. Of the total respondents, 133, representing 70%, were SMEs managed by women, while 57 respondents, constituting 30%, were SMEs managed by men, both of which had engaged in foreign activities such as exports and were in the process of exporting. The majority of SME owners are aged 45-54 years, at 37.8%, followed closely by those aged 35-44 years at 36.84%. A minimal percentage are either above 55 years or under 34 years. Monthly profits of SMEs fluctuate; the majority report earnings below IDR 5 million, while only 11.05% achieve profits over IDR 100 million monthly. Approximately 81.1% of SME owners are married, while the remainder are single. Approximately 87.4% of SMEs have an average of 1 to 5 dependents.

The educational background of SME owners predominantly consists of bachelor's degree (S1) graduates at 56.3%, indicating that the majority of respondents possess higher education, encompassing both female and male SME entrepreneurs, followed by high school, master's, junior high school, elementary education, and doctoral degrees. Certain SME proprietors possess a certain number of master's and doctoral degrees. This elucidates the phenomena of female-led SMEs, which significantly contribute to the overall number of SMEs and propel the SME sector in Indonesia, as evidenced by figures from the Ministry of Finance indicating that 52% of the 63.9 million SMEs are managed by women. At the small business level, 56% of the 193,000 enterprises are female-owned. Simultaneously, 34% of the 44,700 company participants in medium-sized enterprises are women.

Analysis of Variables Description

Table 3. Description of Research Variables

Variable	Indicators	Mean UKM	
		Women	Man
SME Internationalization (INT)		2.20	2.41
	The role of digital technology	1.43	1.60
	Number of strategic partnerships	1.67	2.11
	Total foreign direct investment	1.09	1.11
	Managerial competence	4.33	4.53
	Several new markets entered	4.64	4.60
	Number and variety of international products	1.27	1.65
	Number of export destination countries	1.41	1.62
	Growth in foreign markets	1.19	1.51
	Number of international market segments	1.67	1.89
	Difficulty entering the market	2.04	2.40
	Export volume and value	1.21	1.49
Characteristics of Entrepreneurs (EC)		2.15	2.44
	Experience (EC1)	2.07	2.33
	Number of new business ideas	2.20	2.45
	Level of creativity in product/service development	3.30	3.29
	Number of risky decisions	1.73	2.16
	Percentage of investment in risky projects	1.61	2.36
	Number of new products or services	1.99	2.07
	Number of patents or intellectual property rights	1.60	1.64
	Education level (EDUC)	0.60	0.61
	Age Group (AGE)	49.2	49.47
	Gender (GENDER)	0.70	0.30
Characteristics of SMEs (CH)		1.68	2.02
	Experience in business (number of years)	1.90	2.35
	Number of businesses ever managed	2.39	2.91
	The level of technology available	1.75	1.91
	Speed of response to market changes	2.05	2.56
	The level of adaptation of the production process	1.99	2.29
	Number of international connections	1.39	1.84
	Number of collaborations/partnerships with foreign companies	1.26	1.73

Variable	Indicators	Mean UKM	
		Women	Man
	Number of employees	1.11	1.36
	Asset value, Income	1.53	1.47
	Amount of capital for expansion	1.33	1.40
Entrepreneurial Orientation (EO)		1.84	2.03
	Percentage of revenue from new products	2.27	2.35
	Percentage of spending on R&D	2.04	2.13
	Number of initiatives for international expansion	1.61	1.87
	Speed of response to international market opportunities	2.27	2.35
	The level of capital invested in the project is a high-risk	1.75	2.27
	The amount of investment in foreign markets is uncertain	1.10	1.22
Digital Technology (DT)		1.56	1.67
	Percentage of sales via e-commerce	1.90	2.22
	Number of international transactions via e-commerce	1.17	1.33
	Number of followers/engagement on international social media	1.53	1.58
	Number of international marketing campaigns via social media	1.50	1.60
	Percentage of business operations using cloud services	1.18	1.25
	Operational cost efficiency through the use of the cloud	1.25	1.31
	The level of use of automation technology in the production process	1.98	1.95
	Time saved through digital automation	1.95	2.11
Environmental factors (ENV)		1.75	1.85
	Number of export regulations	1.46	1.76
	Amount of incentives/government support	1.70	1.44
	Impact of exchange rate fluctuations	1.72	2.27
	The impact of the global economy on sales	2.04	2.09
	Political stability in export destination countries (Macro)	3.13	3.04
	Effect of sanctions/embargo	1.66	2.02
	The number of cultural adaptations in marketing	1.43	1.56
	Amount of cultural training provided	1.38	1.56
Regulation (REG)		1.48	1.57
	Several regulatory audits successfully passed	1.26	1.36
	The amount of tariffs on export products	1.21	1.45
	Number of non-tariff barriers	1.24	1.31
	Amount of trade support or subsidy	1.66	1.24
	Speed of international market access	1.78	1.95
	Percentage of compliance with international standards	1.59	2.15
	Percentage of products that comply with international standards	1.52	1.62
	Number of international certifications	1.30	1.44

According to the average values of the research variables presented in Table 3, internationalization activities in male SMEs, as assessed by indicators such as technological role, strategic partnerships, foreign direct investment, managerial competence, new market, product variation indicators, number of export countries, growth in foreign markets, international market segments, market entry challenges, export volume value, and surpass those of female SMEs. The characteristics of SMEs, as assessed by indicators such as business experience, the number of enterprises overseen, technological availability, responsiveness to market fluctuations, adaptability of production processes, international connections, collaborations with foreign entities, employee count, and expansion capital,

are superior in male-managed SMEs compared to those managed by females, except asset and income levels. Male SMEs have exceptional performance in digital technology, particularly in e-commerce adoption, digital marketing, cloud technology utilization, and automation technology compared to female SMEs. The attributes of entrepreneurs indicate that male SMEs possess superior experience and educational attainment compared to female SMEs. This suggests that male SMEs outperform female SMEs regarding new business concepts, innovation in product development, frequency of high-risk decisions, the proportion of investment in hazardous ventures, the number of new products or services, and the number of patents or intellectual property rights.

Environmental factors assessed by government legislation and incentives, macroeconomic conditions, and cultural influences in male SMEs are superior to those in female SMEs. This indicates that male SMEs exhibit greater preparedness and resilience in adapting to alterations in the external environment, including regulatory changes, global economic influences, exchange rate variations, political circumstances, embargoes, and cultural factors in export destination nations. Male SMEs exhibit superior entrepreneurial orientation, as evaluated by creativity, proactivity, and risk-taking, compared to female SMEs. This indicates that male SMEs exhibit more significant revenue and expenditure on new products, initiatives for international expansion, responsiveness to global market opportunities, capital investment in high-risk projects, and investment in uncertain foreign markets compared to female SMEs.

The mean value of regulatory variables, as assessed by regulatory hurdles and legal frameworks, is more significant in male and female SMEs. Nevertheless, government policies regarding women's SMEs are more substantial, indicating that the Indonesian government has exerted tremendous efforts to facilitate the internationalization of women-managed SMEs, evidenced by increased trade support or subsidies and expedited access to international markets for these enterprises. Compared to female SMEs, male SMEs exhibit a superior average across all research variables, including SME internationalization activities, SME characteristics, digital technology, environmental factors, entrepreneurial characteristics, and regulations. This indicates that female SMEs continue to need help engaging in foreign activities, particularly with digital technology, legislation, digital ecosystems, host country policies, limited networking, and insufficient understanding of SMEs executing international transactions.

Validity and Reliability Test

The results of validity testing show that there are indicators whose outer loading value is below 0.5, namely the CH1, CH2, CH3, CH9, ENV5, INT3, INT4, INT5, and INT10 indicators, so these nine indicators must be dropped. The following are the results of validity and reliability testing for the first-order confirmatory model of SME internationalization in Indonesia after the drop:

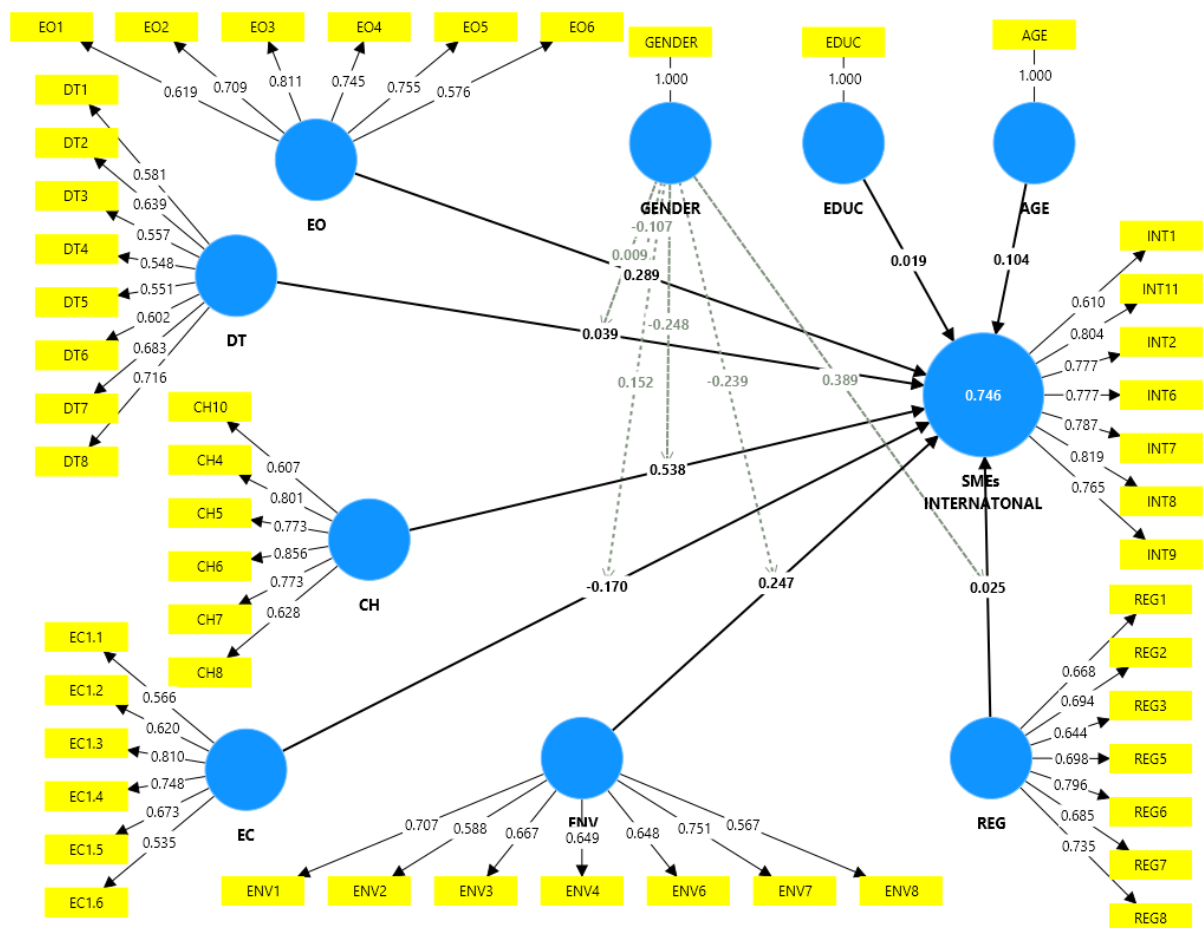


Figure 2. Validity Testing Results

Figure two indicates that the outer loading values for all indicators surpass 0.5, confirming all indicators' validity. A construct is deemed reliable in a study if its construct reliability value exceeds 0.7. The subsequent table presents the reliability testing outcomes for the research variables.

Table 4. Result of Reliability Test

Variable	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
SMEs Internationalization	0.881	0.889	0.908
Entrepreneurial experience	0.758	0.785	0.824
SME characteristics	0.836	0.854	0.881
Entrepreneurial orientation	0.800	0.825	0.856
Digital technology	0.763	0.770	0.826
Environmental factors	0.781	0.799	0.840
Regulations	0.830	0.837	0.873

The reliability output indicates that the variables of SME internationalization, entrepreneurial experience, SME characteristics, entrepreneurial orientation, digital technology, environmental factors, and regulations exhibit Cronbach's alpha and Composite Reliability values exceeding 0.7, thereby confirming that the indicators for each variable possess good reliability and effectively measure the construct.

Research Hypothesis Test

We are testing the hypothesis of the Internationalization of SMEs in Indonesia using a *first-order confirmatory* model with the reflective indicator. The following are the results of hypothesis testing using Moderating Regression Analysis (MRA), where gender is a moderating variable to see the role of women in SME Internationalization.

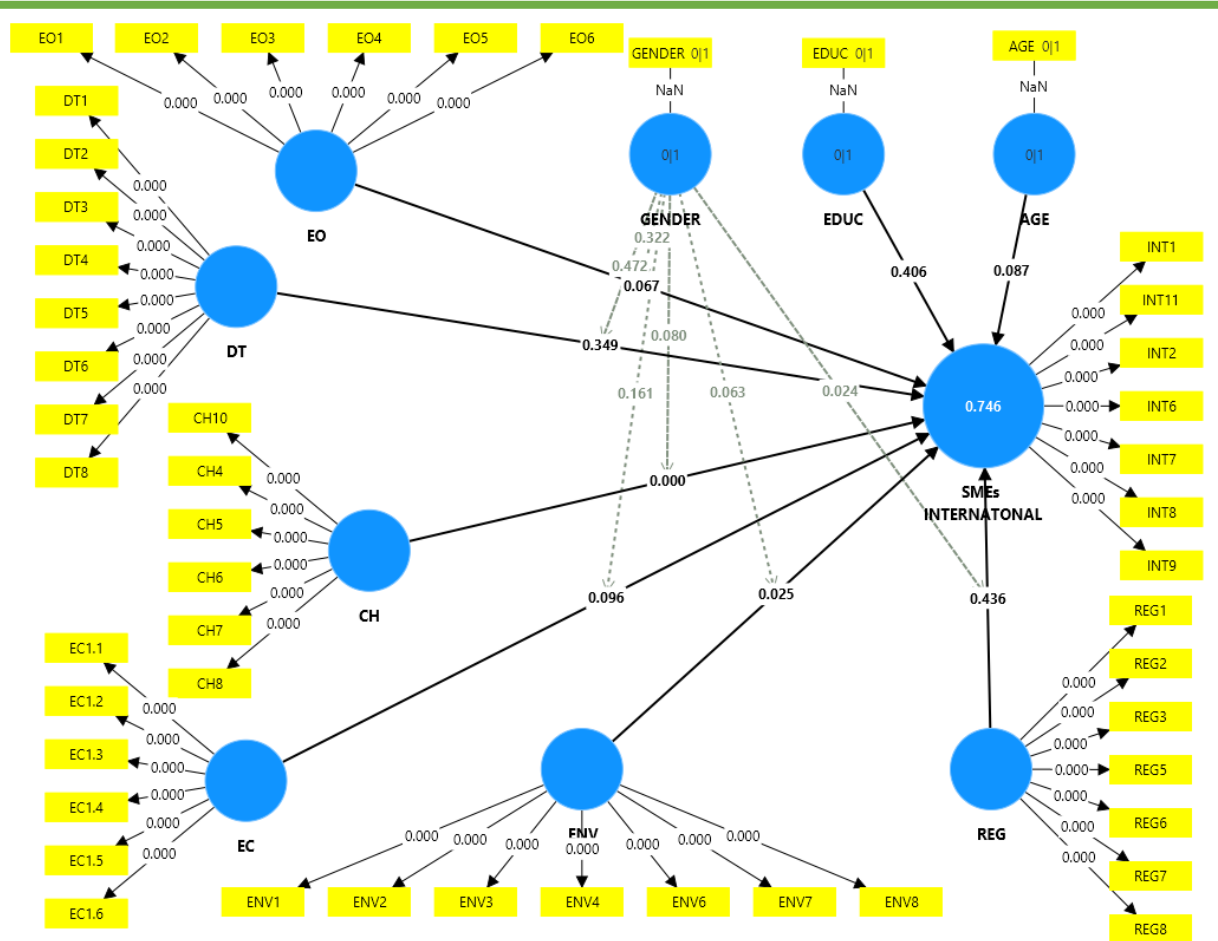


Figure 3. Hypothesis testing results

Testing the internationalization model hypothesis uses Moderating Regression Analysis as follows Table 5.

Table 5. Result of Hypothesis Test

Hypothesis		Coeff	Female SME's T statistic	P value	f ²
SMEs Internationalization					
H1a	Gender	-0.099	1.134	0.128	0.007
H1b	Education	0.019	0.237	0.406	0.000
H1c	Age	0.104	1.360	0.087*	0.009
H1d	Entrepreneurial experience	-0.170	1.307	0.096*	0.018
H2	SME characteristics	0.538	3.792	0.000***	0.166
H3	Entrepreneurial orientation	0.289	1.498	0.067*	0.032
H4	Digital technology	0.039	0.389	0.349	0.001
H5	Environmental factors	0.247	1.959	0.025**	0.026
H6	Regulations	0.025	0.162	0.436	0.000
Moderation of Gender					
H7	Entrepreneurial experience	0.152	0.991	0.161	0.009
H8	SME characteristics	-0.248	1.408	0.080*	0.02
H9	Entrepreneurial orientation	-0.107	0.461	0.322	0.003
H10	Digital technology	0.009	0.071	0.472	0.000
H11	Environmental factors	-0.239	1.527	0.063*	0.02
H12	Regulations	0.389	1.985	0.024**	0.039
R ²			0.746 (74.6%)		
Adjusted R ²			0.724 (72.4%)		

Notes: Significant level, *p < 0.1. **p < 0.05. ***p < 0.01

This study employs R-square to assess the model's goodness of fit. The R-square value of the SME internationalization model is 0.746, indicating that 76.4% of SME internationalization is influenced by the entrepreneur's characteristics, including gender, education, age, and experience, as well as SME characteristics, entrepreneurial orientation, digital technology, environmental factors, regulations, and the interaction between gender and entrepreneur experience, SME characteristics, entrepreneurial orientation, digital technology, environmental factors, regulations, and the remaining 0.254 is influenced by other factors outside the research model. Effect Size, or f-square, is employed to assess the extent of influence among research variables. An f^2 value of 0.35 indicates a large effect size, 0.15 denotes a medium effect, and 0.02 signifies a tiny effect (Cheah et al., 2018). The most significant aspect is the characteristics of SMEs, while other factors exhibit minimal impact.

The study's findings reveal that the critical determinants for the internationalization of SMEs in Indonesia include the age of the SME owner/manager, entrepreneurial characteristics, SME characteristics, entrepreneurial orientation, and environmental factors. Conversely, gender, education, digital technology, and regulation are not determining factors for SMEs engaging in international activities. Substantial disparities exist between SMEs operated by males and those managed by women regarding SME characteristics, environmental factors, and regulatory influences. The impact of SME characteristics, including business experience, the number of enterprises managed, technological resources, responsiveness to market fluctuations, adaptability of production processes, international connections, collaborations with foreign entities, workforce size, and expansion capital on SME internationalization is more pronounced in male-led SMEs than in female-led ones.

Female SMEs exhibit more adaptability and enhanced regulatory compliance. In contrast, the impact of environmental factors on foreign operations is more pronounced in male-led SMEs. This indicates that male SMEs possess superior resilience in both micro and macro environments and can swiftly acclimate to the local culture of the host nation. There exists parity in entrepreneurial traits, entrepreneurial mindset, and digital technologies concerning the internationalization of SMEs led by both men and women. The findings of this hypothesis test endorse gender equality, indicating that women serve as drivers and contribute to the internationalization of SMEs in Indonesia.

The research results show that gender does not significantly affect the internationalization of small and medium enterprises in Indonesia. This indicates no difference between SMEs owned/managed by women and men in SME internationalization activities. Businesses owned by women's SMEs are well represented in export activities, although based on a comparison of the average international activity of SMEs as measured by availability of technology, number of strategic partnerships, number of direct investments, and managerial competence, number of new markets and international product variety, number of export destination countries, growth in foreign markets, number of global market segments, ease of entering the market, volume and value of exports is better for male SMEs than for women. Research results support the idea (Expósito et al., 2022) that there are no significant differences in international activities, especially in exporting, between SMEs run by men and women. However, SMEs led by women show a lower propensity to import than those led by men. The results of this study are different from previous findings, where (Sui et al., 2022) conducted research by comparing the financial profits generated by small and medium enterprises (SMEs) with export businesses in SMEs owned by women and men. Women-owned export enterprises demonstrated enhanced financial success through rigorous export strategy (Sui et al., 2022). Female gender characteristics of SMEs also positively impact product and process innovation of small and medium enterprises (Zastempowski & Cyfert, 2021).

Education does not affect the internationalization of SMEs. This research indicates that SME owners' education level does not significantly affect UK internationalization activities. This study's findings contradict the research by Nguyen and Khuu (2018), which indicates that highly educated owners generate more significant growth than those with lesser educational attainment. A high degree of education among entrepreneurs or employees is positively correlated with the chance of early internationalization (Lamotte & Colovic, 2015), while Lafuente et al. (2015) demonstrate that entrepreneurs who complete managerial courses are more likely to engage in export activities.

Entrepreneurial age determines SMEs' internationalization level, where most SMEs are the millennial generation and are adaptive to information and technology. The findings of this study suggest that SMEs owned by entrepreneurs aged 18-45 are more inclined to engage in foreign operations than those controlled by entrepreneurs over 45. Research by Ren and Zeng (2022) indicates that the gender diversity of female directors impedes the pace of firm internationalization. This adverse effect is more

pronounced when the average age of female directors is higher and less significant when they possess international experience or a financial background. Entrepreneurial characteristics assessed by entrepreneurial experience adversely affect the international operations of SMEs. Nonetheless, the extensive expertise of SMEs does not ensure an enhancement in their internationalization efforts. The findings of the study by Ruzzier & Ruzzier (2015) indicated that entrepreneurs' foreign experience correlated favorably with their degree of internationalization, whereas their perception of dangers connected with international markets.

SME characteristics have a positive effect on SME internationalization. The results of this research show that the characteristics of SMEs, as measured by firm size, firm age, networking, and brand image, can increase the internationalization of SMEs. Firm size can determine SMEs' internationalization activities, and the results support internationalization theory and previous research, which shows that firm size can increase SME internationalization activities, especially exports. This study's findings are pertinent to studies (Gajewski & Tchorek, 2017; Ruzzier & Ruzzier, 2015), indicating that an increase in the assets and growth of SMEs correlates with a rise in exports and other international endeavors. Firm age can influence company internationalization (Ruzzier & Ruzzier, 2015). Networks are also crucial in internationalization because they facilitate knowledge of foreign markets and help identify and evaluate international opportunities (Haddoud et al., 2021; Lafuente et al., 2015). Ruzzier & Ruzzier (2015) quantify the degree of internationalization by a composite of 1) the percentage of international sales, 2) the percentage of products/services marketed overseas, and 3) the percentage of employee time allocated to international endeavors. It was determined that firm size at entry and firm resources had a positive correlation with the degree of internationalization. In contrast, firm age at initial market entry exhibited a negative association with the level of internationalization.

The study's results show that entrepreneurial orientation, as measured by the indicators of revenue from new products, spending on R&D, number of initiatives for international expansion, speed of response to international market opportunities, and the level of capital invested in the project, is high-risk. The amount of investment in foreign markets is uncertain, which can increase the internationalization of SMEs. The results of this study support research (Wasowska, 2019), which shows that the positive orientation of entrepreneurs positively influences the internationalization tendencies of new ventures.

Internationalization, digitization, and sustainability constitute the three primary avenues for corporate growth. Contemporary economics highlights the significance of digital transformation as a crucial catalyst for innovation and business revitalization, particularly for established small and medium firms (Denicolai et al., 2021). Digitalization is essential for the sustained viability of small and medium enterprises, particularly in emerging nations such as Indonesia. With the rapid acceleration of global digitalization, Indonesian SMEs must adopt the digital economy to foster economic growth. The implementation of technology will bridge the productivity disparity between SMEs and large firms by enhancing capacity and capacities for improved competitiveness and innovation (Hasan & Almubarak, 2016). This research presents contrasting empirical evidence indicating that digital technology is not a decisive component in the internationalization of SMEs. The findings of this study contradict those of Lamotte and Colovic (2015), who established a correlation between access to information and communications technology (ICT) infrastructure and early internationalization. This finding indicates that the business matching technique is viable for enhancing internationalization in Indonesia.

The research results show that environmental factors, such as government incentives, macroeconomic conditions, political conditions, and cultural factors, influence the internationalization of SMEs. These results agree with research (Pergelova et al., 2019) that shows the external environment influences the internationalization of SMEs. The presence of export facilities and incentives, including enhancements to international standards for SMEs by the government, stable exchange rates, favorable global economic conditions, domestic political stability, and diplomatic relations among nations, can facilitate new avenues for international market access for SMEs. Culturally-based items, like batik, handicrafts, and traditional Indonesian cuisine and beverages, have a distinctive allure in the global market.

Regulation, as assessed by regulatory hurdles and legal frameworks, is not a determining factor in SME internationalization. This aligns with the assertion by Williams and Spielmann (2019) that national legislation negatively impacts international market orientation, while international legislation positively affects international activity. Awareness and adherence of SMEs to national and international

norms do not provide enhanced 'export compliance' or diminished risks of sanctions, together with financial and non-financial losses stemming from compliance (Chen et al., 2016).

This study's novelty is in identifying factors influencing SMEs' participation in international activities related to gender diversity. The study's findings on gender interaction in the internationalization of SMEs reveal that the impacting elements include SME characteristics, external environmental factors, and regulations. The study's findings demonstrate that the influence of SME characteristics and the external environment on the internationalization of male SMEs surpasses that of female SMEs. Conversely, regulations positively influence internationalization, with the regulation of female SMEs being superior to that of male SMEs. There exists gender parity in the factors of entrepreneurial characteristics, entrepreneurial orientation, and digital technology between female and male SMEs, as no significant difference is observed. Small and medium-sized enterprises possess significant potential to enhance their participation in international endeavors. Relevant ministries must enhance SME internationalization initiatives by partnering with large corporations to integrate SMEs into the industrial ecosystem by establishing a collaborative environment for industry stakeholders and SMEs. Enhancing exports via industry by integrating SMEs into the supply chains of sizeable industrial export products and revitalizing State-Owned Enterprises (BUMN) as partners to ensure BUMN prioritizes SMEs in procurement processes will augment SME internationalization efforts in developing countries, particularly Indonesia. This study has significant limitations, precisely the restricted sample size of SMEs and their geographical concentration in urban areas. Comprehensive interviews with participants did not corroborate the study's results. Additional study is required to distinguish samples according to geographical location (rural versus urban) and to employ mixed methods to achieve more optimal and comprehensive research outcomes.

CONCLUSION

This study seeks to examine the determinants affecting the internationalization of SMEs. The study's findings indicate that the critical determinants for the internationalization of SMEs in Indonesia include entrepreneurial characteristics (age and experience), entrepreneurial orientation, and environmental factors. In contrast, for international SMEs, entrepreneurial characteristics assessed by gender and education, digital technology, and regulations are not determining factors. A substantial disparity exists between male-managed and female-managed SMEs regarding SME characteristics, environmental factors, and regulations. Female SMEs exhibit superior adaptability and adherence to rules. The characteristics of SMEs and the external environment exert a more significant influence on the internationalization of male SMEs than female SMEs. This study empirically demonstrates the determinants of SME internationalization, supporting the Resource-Based View (RBV), internationalization theory, Knowledge-Based View (KBV), and the theory of planned behavior within the framework of feminism.

The results of this investigation indicate numerous points; first, the government, through the Ministry of SMEs and other agencies, establish regular training and mentorship programs in internationalization literacy for SMEs, particularly those led by women. Second, small and medium enterprises (SMEs) should be incorporated into the industrial ecosystem to enhance competitiveness, establish an inclusive value chain, and broaden access to local and international markets. This seeks to guarantee that SMEs are not isolated but integrated into the production, distribution, and marketing processes of domestic and international products. SMEs can serve as suppliers of raw materials, components, or additional services to large companies across the manufacturing, agriculture, fisheries, and service sectors, as well as provide large industries with more efficient local supply chains so that this industrial ecosystem can enlarge SMEs, facilitate networking and open greater global market access for SMEs. Third, the Ministry of Trade and other entities might enhance global market access by enabling suitable business matching through diverse exhibitions and networking efforts. At the same time, digital technology only contributes to the internationalization of SMEs in Indonesia. Fourth, the government should streamline export procedures (Online Single Submission/OSS) to enable SMEs to access foreign markets and offer tax incentives to promote their overseas expansion.

ACKNOWLEDGMENTS

We thank the Directorate General of Higher Education, Research, and Technology of the Ministry of Education, Culture, Research, and Technology for funding research under contract number 830/LL3/AL.04/2024, and LPPM Universitas Teknologi Muhammadiyah Jakarta.

AUTHOR CONTRIBUTIONS

Rita Yuni Mulyanti: Writing-original draft, conceptualization, methodology, research instruments, data curation, and supervision. Lela Nurlaela Wati: Writing-original draft, conceptualization, gathering data, software, analyzing data, discussing research findings, and managing the article publication process. Suhana: Writing-review & editing, data processing, and analysis.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

REFERENCES

- Anwar, M., Scheffler, M. A., & Clauss, T. (2022). Digital Capabilities, Their Role in Business Model Innovativeness, and the Internationalization of SMEs. *IEEE Transactions on Engineering Management*, 1–13. <https://doi.org/10.1109/TEM.2022.3229049>
- Arcuri, M. C., Gandolfi, G., & Russo, I. (2023). Exploring the impact of innovation intensity on the growth of female-led entrepreneurial firms. *Journal of Small Business and Enterprise Development*. <https://doi.org/10.1108/JSBED-04-2022-0209>
- Audretsch, D. B., & Belitski, M. (2021). Knowledge complexity and firm performance: evidence from the European SMEs. *Journal of Knowledge Management*, 25(4), 693–713. <https://doi.org/10.1108/JKM-03-2020-0178>
- Benkovskis, K., Masso, J., Tkacevs, O., Vahter, P., & Yashiro, N. (2020). Export and productivity in global value chains: comparative evidence from Latvia and Estonia. *Review of World Economics*, 156(3), 557–577. <https://doi.org/10.1007/s10290-019-00371-0>
- Chang, F. Y. M., & Webster, C. M. (2019). Influence of Innovativeness, Environmental Competitiveness and Government, Industry and Professional Networks on SME Export Likelihood. *Journal of Small Business Management*, 57(4), 1304–1327. <https://doi.org/10.1111/jsbm.12446>
- Cheah, J. H., Memon, M. A., Chuah, F., Ting, H., & Ramayah, T. (2018). Assessing reflective models in marketing research: A comparison between pls and plsc estimates. *International Journal of Business & Society*, 19(1). Retrieved from <https://www.ijbs.unimas.my/images/repository/pdf/Vol19-no1-paper10.pdf>
- Chen, J., Sousa, C. M. P., & He, X. (2016). The determinants of export performance: a review of the literature 2006-2014. *International Marketing Review*, 33(5), 626–670. <https://doi.org/10.1108/IMR-10-2015-0212>
- Child, J., Karmowska, J., & Shenkar, O. (2022). The role of context in SME internationalization – A review. *Journal of World Business*, 57(1). <https://doi.org/10.1016/j.jwb.2021.101267>
- Ciravegna, L., Majano, S. B., & Zhan, G. (2014). The inception of internationalization of small and medium enterprises: The role of activeness and networks. *Journal of Business Research*, 67(6), 1081–1089. <https://doi.org/https://doi.org/10.1016/j.jbusres.2013.06.002>
- Denicolai, S., Zucchella, A., & Magnani, G. (2021). Internationalization, digitalization, and sustainability: Are SMEs ready? A survey on synergies and substituting effects among growth paths. *Technological Forecasting and Social Change*, 166, 120650. <https://doi.org/https://doi.org/10.1016/j.techfore.2021.120650>
- Endra, K., & Villaflor, G. M. (2024). Integration of the POE Model and Metaphorical Thinking in Student Worksheets: Improving Mathematical Reasoning Abilities in the Modern Education Era. *Journal of Educational Technology and Learning Creativity*, 2(1), 41-53. <https://doi.org/10.37251/jetlc.v2i1.981>.
- Exposito, A., Sanchis-Llopis, A., & Sanchis-Llopis, J. A. (2022). Manager gender, entrepreneurial orientation, and SMEs export and import propensities: evidence for Spanish businesses. *Eurasian Business Review*, 12(2), 315–347. <https://doi.org/10.1007/s40821-022-00210-7>
- Fitriana, H., & Waswa, A. N. (2024). The Influence of a Realistic Mathematics Education Approach on Students' Mathematical Problem Solving Ability. *Interval: Indonesian Journal of Mathematical Education*, 2(1), 29-35. <https://doi.org/10.37251/ijome.v2i1.979>.
- Gajewski, P., & Tchorek, G. (2017). What drives export performance of firms in Eastern and Western Poland? *European Planning Studies*, 25(12), 2250–2271. <https://doi.org/10.1080/09654313.2017.1355890>.

- Gawel, A., & Munska-Struzik, E. (2023). The digitalisation as gender equaliser? The import and export of digitally delivered services in shaping female entrepreneurship in European countries. *International Journal of Gender and Entrepreneurship*, ahead-of-p(ahead-of-print). <https://doi.org/10.1108/IJGE-08-2022-0141>.
- Haddoud, M. Y., Onjewu, A. K. E., Nowinski, W., & Jones, P. (2021). The determinants of SMEs' export entry: A systematic review of the literature. *Journal of Business Research*, 125, 262–278. <https://doi.org/10.1016/j.jbusres.2020.12.017>.
- Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review*, 9(2), 193–206. <https://doi.org/10.5465/amr.1984.4277628>.
- Hasan, F. S. M. A., & Almubarak, M. M. S. (2016). Factors influencing women entrepreneurs' performance in SMEs. *World Journal of Entrepreneurship, Management and Sustainable Development*, 12(2). <https://doi.org/10.1108/WJEMSD-09-2015-0037>.
- Hasan, N. A., Abd Rahim, M., Ahmad, S. H., & Meliza, M. (2022). Digitization of business for small and medium-sized enterprises (SMEs). *Environment-Behaviour Proceedings Journal*, 7(19), 11–16. <https://doi.org/10.21834/ebpj.v7i19.3270>.
- Hidayati, A., Susanti, E., Jamalang, A., Ginting, D., Suwanto, W., & Arifin, A. (2024). Marketing Analytics in the Era of Digital-Based Marketing Strategy. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 8(1), 61–75. <https://doi.org/10.22437/jiituj.v8i1.31908>.
- Hanoum, N. A., Villaverde, K., Saputra, Y., Nuhuyeva, Aehla, & Ye, T. (2024). Design and development of tempe fermentation tool based on fuzzy method to determine tempe maturity level. *Journal of Educational Technology and Learning Creativity*, 2(2), 235–255. <https://doi.org/10.37251/jetlc.v2i2.1418>.
- Hyskaj, A., Ramadhanti, A., Farhan, H., Allaham, A., & Ismail, M. A. (2024). Analysis of the role of the flo application as a digital educational media for adolescent reproductive health in the technology era. *Journal of Educational Technology and Learning Creativity*, 2(1), 71–82. <https://doi.org/10.37251/jetlc.v2i1.1414>.
- Ingram, D. P. (2021). *Social Media as an Aid to Export and Early Stage Internationalization: A Literature Review BT - Conference Proceedings Trends in Business Communication 2020* (P. Schneckleitner, W. Reitberger, A. Brunner-Sperdin, & A. Haller, Eds.; pp. 65–83). Springer specialist media Wiesbaden. https://doi.org/10.1007/978-3-658-33642-4_4.
- Jin, B., & Cho, H. J. (2018). Examining the role of international entrepreneurial orientation, domestic market competition, and technological and marketing capabilities on SME's export performance. *Journal of Business and Industrial Marketing*, 33(5), 585–598. <https://doi.org/10.1108/JBIM-02-2017-0043>.
- Kolagar, M., Reim, W., Parida, V., & Sjödin, D. (2022). Digital servitization strategies for SME internationalization: the interplay between digital service maturity and ecosystem involvement. *Journal of Service Management*, 33(1), 143–162. <https://doi.org/10.1108/JOSM-11-2020-0428>.
- Lafuente, E., Stoian, M.-C., & Rialp, J. (2015). From export entry to de-internationalisation through entrepreneurial attributes. *Journal of Small Business and Enterprise Development*, 22(1), 21–37. <https://doi.org/10.1108/JSBED-09-2012-0101>.
- Lafuente, E., Vaillant, Y., & Moreno-Gómez, J. (2018). Transition in and out of exporting and its impact on employment growth. *International Journal of Emerging Markets*, 13(6), 1907–1927. <https://doi.org/10.1108/IJoEM-08-2017-0306>.
- Lamotte, O., & Colovic, A. (2015). Early internationalization of new ventures from emerging countries: The case of transition economies. *M@n@gement*, 1, 8–30. Retrieved from <https://shs.cairn.info/revue-management-2015-1-page-8?lang=fr>.
- Lopez-Nicolas, C., Nikou, S., Molina-Castillo, F. J., & Bouwman, H. (2020). Gender differences and business model experimentation in European SMEs. *Journal of Business and Industrial Marketing*, 35(7), 1205–1219. <https://doi.org/10.1108/JBIM-05-2019-0194>.
- Manesh, Zolfaghari Ejlal, S. M., & Rialp-Criado, A. (2019). International ecopreneurs: The case of eco-entrepreneurial new ventures in the renewable energy industry. *Journal of International Entrepreneurship*, 17(1), 103–126. <https://doi.org/10.1007/s10843-017-0222-3>.
- Manolova, T. S., Manev, I. M., & Gyoshev, B. S. (2013). Friends with money? Owner's financial network and new venture internationalization in a transition economy. *International Small Business Journal*, 32(8), 944–966. <https://doi.org/10.1177/0266242613482482>.

- Marconatto, D. A. B., Teixeira, E. G., Santini, F. de O., & Ladeira, W. J. (2022). Characteristics of owners and managers in different countries: a meta-analytical investigation of SMEs' growth. *Journal of Small Business and Enterprise Development*, 29(3), 354–379. <https://doi.org/10.1108/JSBED-11-2020-0411>.
- Masso, J., Roigas, K., & Vahter, P. (2015). Foreign market experience, learning by hiring and firm export performance. *Review of World Economics*, 151(4), 659–686. <https://doi.org/10.1007/s10290-015-0224-y>.
- Maudia, N., Awodeyi, A. F., & Mohammed, A. S. (2024). Enhancing pedagogical content knowledge in mathematics teachers through collaborative professional development. *Interval: Indonesian Journal of Mathematical Education*, 2(1), 36–49. <https://doi.org/10.37251/ijome.v2i1.1342>.
- Miharja, M. A., Bulayi, M., & Triet, L. V. M. (2024). Realistic mathematics education: Unlocking problem-solving potential in students. *Interval: Indonesian Journal of Mathematical Education*, 2(1), 50–59. <https://doi.org/10.37251/ijome.v2i1.1344>.
- Miocevic, D., & Crnjak-karanovic, B. (2011). Cognitive and Information-Based capabilities in the Internationalization of small and medium-sized enterprises: The case of Croatian exporters. *Journal of Small Business Management*, 49(4), 537–557. <https://doi.org/10.1111/j.1540-627X.2011.00335.x>.
- Munthomimah, R., Yamin, M., & Rusdi, M. (2022). Exploring physics: Engaging Inquiry-Based labs for sman 1 Muaro Jambi's Class X. *Tekno - Pedagogi : Jurnal Teknologi Pendidikan*, 12(2), 10–19. <https://doi.org/10.22437/teknopedagogi.v12i2.32523>.
- Nguyen, T.H., & Thanh Khuu, Q. (2018). Determinants of Firm Growth: Evidence from Vietnamese Small and Medium Sized Manufacturing Enterprises. *Journal of Economics and Development*, 20(3), 71–87. <https://doi.org/10.33301/jed-p-2018-20-03-05>.
- Nguyen, P. V., Huynh, H. T. N., Lam, L. N. H., Le, T. B., & Nguyen, N. H. X. (2021). The impact of entrepreneurial leadership on SMEs' performance: the mediating effects of organizational factors. *Helion*, 7(6). <https://doi.org/10.1016/J.HELIYON.2021.E07326>.
- Otoritas Jasa Keuangan. 2023. Infografis Hasil Survei Nasional Literasi dan Inklusi Keuangan Tahun 2022. Retrieved from: <https://ojk.go.id/id/berita-dan-kegiatan/info-terkini/Pages/Infografis-Survei-Nasional-Literasi-dan-Inklusi-Keuangan-Tahun-2022.aspx>.
- Pergelova, A., Angulo-Ruiz, F., & Yordanova, D. I. (2018). Gender and international entry mode. In *International Small Business Journal: Researching Entrepreneurship* (Vol. 36, Issue 6). <https://doi.org/10.1177/0266242618763012>.
- Pargelova, A., Manolova, T., Simeonova-Ganeva, R., & Yordanova, D. (2019). Democratizing entrepreneurship? Digital technologies and the internationalization of female-led SMEs. *Journal of Small Business Management*, 57(1), 14–39. <https://doi.org/10.1111/jsbm.12494>.
- Putra, R. P., Ramadhanti, A., & Rizky, D. A. (2023). Gender differences in levels of toxic positivity in adolescents: a quantitative study. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 7(2), 83–91. <https://doi.org/10.22437/jiituj.v7i2.26624>.
- Ren, G., & Zeng, P. (2022). Board gender diversity and firms' internationalization speed: the role of female directors' characteristics. *Baltic Journal of Management*, 17(1), 72–88. <https://doi.org/10.1108/BJM-12-2020-0449>.
- Risnawati, R., Ramadan, M., Baba, K., Hammad, S., & Rustaminezhad, M. A. (2024). The impact of Augmented Reality-Based learning media on students' digital literacy skills: A study on junior high school students. *Journal of Educational Technology and Learning Creativity*, 2(1), 63–70. <https://doi.org/10.37251/jetlc.v2i1.1415>.
- Rosenbaum, G. O. (2017). Female entrepreneurial networks and foreign market entry. *Journal of Small Business and Enterprise Development*, 24(1), 119–135. <https://doi.org/10.1108/JSBED-07-2016-0113>.
- Ruzzier, M., & Ruzzier, M. K. (2015). On the relationship between firm size, resources, age at entry and internationalization: the case of Slovenian SMEs. *Journal of Business Economics and Management*, 16(1), 52–73. <https://doi.org/10.3846/16111699.2012.745812>.
- Saputra, A., Musonda, A., & Nikolantonakis, K. (2024). Transformation of Character Assessment through ICT Technology: A Study of the Use of Web-Based Platforms. *Interval: Indonesian Journal of Mathematical Education*, 2(1), 60–68. <https://doi.org/10.37251/ijome.v2i1.1345>.

- Serra, F., Pointon, J., & Abdou, H. (2012). Factors influencing the propensity to export: A study of UK and Portuguese textile firms. *International Business Review*, 21(2), 210–224. <https://doi.org/https://doi.org/10.1016/j.ibusrev.2011.02.006>.
- Srivastava, M., & Tyll, L. (2021). The effect of industry-specific networking behaviour on the internationalization performance of Czech SMEs. *European Business Review*, 33(2), 361–382. <https://doi.org/10.1108/EBR-10-2019-0244>.
- Sui, S., Morgan, H. M., & Baum, M. (2022). Differences between women- and men-owned export businesses: are women-owned export businesses more financially successful when they adopt an intensive export strategy? *Journal of Small Business & Entrepreneurship*, 34(5), 578–595. <https://doi.org/10.1080/08276331.2022.2045169>.
- Susanti, E., Mulyanti, R. Y., & Wati, L. N. (2023). MSMEs performance and competitive advantage: Evidence from women’s MSMEs in Indonesia. *Cogent Business and Management*, 10(2). <https://doi.org/10.1080/23311975.2023.2239423>.
- Suwarni, E., Sedyastuti, K., & Mirza, A. H. (2019). Peluang dan hambatan pengembangan usaha mikro pada era ekonomi digital. *IKRAITH-EKONOMIKA*, 2(2), 29-34. Retrieved from <https://journals.upi-yai.ac.id/index.php/IKRAITH-EKONOMIKA/article/view/401>.
- Szabo, R. Z., Szedmak, B., Tajti, A., & Bera, P. (2023). Environmental Sustainability, Digitalisation, and the Entrepreneurial Perception of Distances as Drivers of SMEs’ Internationalisation. *Sustainability (Switzerland)*, 15(3). <https://doi.org/10.3390/su15032487>.
- Tolstoy, D. (2019). The Proactive Initiation of SMEs’ Foreign Business Relationships. *European Management Review*, 16(4), 1159–1173. <https://doi.org/https://doi.org/10.1111/emre.12303>.
- Taurusi, T., Septi, S. E., & Osmar, U. S. (2024). Discovery learning model to improve creative thinking skills and ability to understand concepts in ohm’s law material: Meta analysis. *EduFisika: Jurnal Pendidikan Fisika*, 9(1), 104-116. <https://doi.org/10.59052/edufisika.v9i1.32640>.
- Triyasmina, T., Rusdi, M., Asyhar, R., Dachia, H. A., & Rukondo, N. (2022). Chemistry learning revolution: Interactive multimedia E-Learning with a problem based learning approach. *Tekno - Pedagogi : Jurnal Teknologi Pendidikan*, 12(2), 1-9. <https://doi.org/10.22437/teknopedagogi.v12i2.32521>.
- Varblane, U., & Bormann, S.-K. (2019). Does the pursuit of more complex products contribute to the productivity of exporting firms? *International Journal of Manpower*, 40(6), 1131–1150. <https://doi.org/10.1108/IJM-03-2018-0092>.
- Wasowska, A. (2019). Social-cognitive antecedents of new venture internationalization. *Baltic Journal of Management*, 14(3), 462–479. <https://doi.org/10.1108/BJM-09-2018-0325>.
- Williams, C., & Spielmann, N. (2019). Institutional pressures and international market orientation in SMEs: Insights from the French wine industry. *International Business Review*, 28(5), 101582. <https://doi.org/10.1016/j.ibusrev.2019.05.002>.
- Wulandari, M., Rodriguez, E. V. ., & Afrianda, S. (2024). Analysis of high school students’ creativity ability in solving physics problems. *EduFisika: Jurnal Pendidikan Fisika*, 9(1), 117-122. <https://doi.org/10.59052/edufisika.v9i1.29637>.
- Yadewani, D., Pandi, O. D., Syafrani, Nurofik, A., & Poddar, S. (2024). Impact of Government Policies on the Knowledge Base of Sustainable Small and Medium-Sized Enterprises. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 8(1), 251–266. <https://doi.org/10.22437/jituj.v8i1.31884>.
- Zakiah, Z., Boonma, K., & Collado, R. (2024). Physics learning innovation: Song and Animation-Based media as a learning solution for mirrors and lenses for junior high school students. *Journal of Educational Technology and Learning Creativity*, 2(2), 183-191. <https://doi.org/10.37251/jetlc.v2i2.1062>.
- Zastempowski, M., & Cyfert, S. (2021). Impact of entrepreneur’s gender on innovation activities. The perspective of small businesses. *PLoS ONE*, 16(10 October 2021), 1–24. <https://doi.org/10.1371/journal.pone.0258661>.