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Entrepreneurial Success among Women SME Owners in Malaysia: The Moderating Role of Risk-Taking Behaviour

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ABSTRACT: This research aims to understand better the phenomenon of women entrepreneurs' success in business attributes, entrepreneurial traits, and entrepreneurship education among female small and medium-sized business owners. The present research study contributes to the body of knowledge by explaining the relationship between business attributes, entrepreneurial traits, entrepreneurship education, risk-taking behaviour, and women entrepreneurs' success. A quantitative research approach was used, and data were collected through a convenience sampling questionnaire. Although convenience sampling limits the generalizability of the findings, it was considered appropriate because a comprehensive sampling frame of women-owned SMEs in Malaysia was not available. Therefore, the findings should be interpreted as representative of the sampled respondents rather than all women entrepreneurs in Malaysia. The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. The results of the current study reported that organizations and individuals should adapt to developing business skills to ensure the business attributes and influence individual business people's personalities in making decisions for entrepreneurial setups. The study found that business attributes, entrepreneurial traits, and entrepreneurial education play crucial roles in entrepreneurial success. The findings also show a significant relationship between risk-taking behavior and women's entrepreneurial success, which means risk-taking behavior is an important predictor of entrepreneurial success. The findings extend Entrepreneurship Motivation Theory, Liberal Feminist Theory, and Risk Propensity Theory by demonstrating the combined influence of entrepreneurial competencies and risk-taking behavior on women's entrepreneurial success. Practically, the findings provide useful insights for policymakers, entrepreneurship support agencies, and SME practitioners to design initiatives that strengthen entrepreneurial skills, education, and risk-taking capabilities among women entrepreneurs in Malaysia.

Keywords: Entrepreneurship motivation theory, Entrepreneurial competencies, Small and medium enterprises (SMES), Entrepreneurial performance, Malaysia.

I. INTRODUCTION

A dramatic inclination among women has been observed in business startups in recent years, showing females' significant critical role in economic and social development. Women comprise half of the world's population and potentially play an important role in global sustainable development. Female business owners' economic impact and tilting of interest toward political leaders, venture capitalists, and academicians towards women's entrepreneurial success have brought the subject to attention. Discerning literature pinpoints a deficiency of clarity on the meaning and the characteristics of women's entrepreneurial success, demanding theoretical research [1, 2]. Women's unique talents, skills, and functions are essential to their entrepreneurial processes. Women have been proven to vary in what they probably see as opportunities and managerial approaches and are affected by social, family, and cultural factors. This requires more supportive interventions and appraisal of how their entrepreneurial problem-solving activities are done.

Female entrepreneurs were found to be more creative and opportunity-sensing and have leadership qualities, societal well-being, innovative capabilities, and sustainable development [3]. More interestingly, it has been reported that 231 million women have taken the initiative to create new businesses or part of existing businesses in Malaysia. The entrepreneurial activities of females significantly differ in different economies and depend upon socio-cultural factors. The prior literature on women's entrepreneurship identified various issues, including encouraging driving forces, impeding factors, barriers to initiating business ventures, risks, and potential business outcomes [4]. The studies have stressed the benefits of creating new business ventures, and a systematic literature review that explains the phenomenon of women's initiatives for business ventures, various research themes have been focused that attracted the attention for further exploration of the field to assess the role of contributing variables in women entrepreneurship [5]. Previously, it has been documented that entrepreneurial success among Malaysian women highlighted various developmental factors, personality traits, and entrepreneurial education to increase entrepreneurial activities.

Women entrepreneurship has played a significant role in the economy of Malaysia especially in the tourism sector and SME sector. Family-based businesses have emerged in these sectors such as lodging, food services, transportation, recreation and entertainment, which has helped women to enhance their socioeconomic status and to participate in entrepreneurship [6, 7]. Women are important stakeholders in family businesses, where they are involved in customer service, human resource management, cultural integration and family business operations. However, women's involvement in male-dominated sectors like manufacturing and agriculture is still relatively low and thus there is a need to improve the entrepreneurial capabilities of women [8]. Entrepreneurship is identified as one of the main pillars of sustainable economic development, employment creation and innovation. For this reason, the Malaysian government has launched a number of policies in order to encourage women entrepreneurship. However, the rate at which women are starting businesses is relatively low. Past research has identified factors that are important in entrepreneurial success, such as organizational, personal, environmental and process-related factors [9]. Of these, risk taking behavior has received some attention due to the fact that women entrepreneurs are considered as a risk averse group in comparison to their male counterparts and this may impact the business performance [10].

Though some studies have explored women entrepreneurship, there is a lack of research which has tried to integrate business characteristics, entrepreneurship characteristics, entrepreneurship education and risk-taking behavior in a single model. Moreover, the moderating effect of risk-taking behavior is also under-researched, especially in Malaysian women entrepreneurs' SMEs, which is an essential research gap [11]. Business attributes are managerial skills, knowledge and competencies needed to manage business operations effectively, while entrepreneurial traits are the personal attributes such as confidence, creativity, perseverance etc., which are needed to become successful entrepreneur [2]. Entrepreneurial education improves the entrepreneurial knowledge, opportunity recognition, and business management skills, which help entrepreneurs to react to the market changes [12]. Moreover, women entrepreneurs must also acquire technological and business development skills in order to stay competitive in the more dynamic markets [49].

Despite the fact that Malaysian SME sector is one of the contributors to the economic growth of the country, the number of SMEs that failed is still high, including those SMEs that are owned by women entrepreneurs [13, 14]. Meanwhile, women make up almost half of Malaysia's population and are participating more in the workforce and entrepreneurial activities. Women entrepreneurship promotion is thus still needed for economic development, employment generation and poverty alleviation [15, 16].

In this regard, this study aims to examine the impact of business characteristics, entrepreneurial characteristics and entrepreneurial education on entrepreneurial success of women entrepreneurs and to examine the moderating role of risk-taking behavior among women entrepreneurs in Malaysia. The study fills a gap in the entrepreneurship literature by incorporating all these factors in a single conceptual framework and offers theoretical and practical implications for enhancing women's entrepreneurial success in Malaysia. To address these gaps, this study proposes an integrated framework that examines the effects of business attributes, entrepreneurial traits, and entrepreneurial education on women's entrepreneurial success while investigating the moderating role of risk-taking behavior. By providing empirical evidence from Malaysian women-owned SMEs, this study extends the entrepreneurship literature and offers a more comprehensive understanding of the determinants of women's entrepreneurial success.

II. LITERATURE REVIEW

The quality of life and a healthy economy are derived from effective entrepreneurial activities; female business owners play an important role in economic development. The untapped talent of female entrepreneurs has gained the attention of academicians and developmental agencies to meet the growing demand for human capital worldwide. Female entrepreneurs observe creative change through liberating and transformative acts; the lack of prominent, successful women business owners contributes to the general lack of visibility of women entrepreneurs and assumed as successful business owners [17].

1. BUSINESS ATTRIBUTES AND WOMEN ENTREPRENEUR SUCCESS

Entrepreneurial success has gained the attention of research scholars due to its wide significance and interest of policymakers, the intention of venture capitalists, and academicians to define the phenomenon and highlight the influential factors of entrepreneurial success among female business owners. It has been argued in the prior literature that there is a lack of clarity on the concept of women's entrepreneurial success and the required attributes that incline take the initiative for new business ventures. Previously, it was suggested that the entrepreneurial perspective among females be investigated due to its worth and impact on economic development [1]. A unique talent, extraordinary skills, and upright knowledge are required for the entrepreneurial process and to create an innovative entrepreneurial mindset among females specifically. Learning plays a crucial role for women entrepreneurs in the early stages of their businesses, and the clear gap has been stated in prior recent literature that there is a need to conduct an empirical investigation on women's entrepreneurial activities [2]. The previous literature also highlighted that limited focus had been given to the intervention and evaluation of initiatives supporting women's entrepreneurial activities. The research scholars have argued that women entrepreneurs perceive opportunities differently than men; even the managerial approach was found to be different between both genders, and alternative solutions provided during professional life were also observed to be different. It has been previously argued that gender bias affects women's entrepreneurial perspective as it includes social, family, cultural, and other influences as compared to male counterparts.

The business attributes entail the business skills of an individual who indulged in entrepreneurial activities and the competencies required to perform business operations; the personal traits have been highlighted as important attributes to determine entrepreneurial success. The studies were conducted in Klang Valley of Malaysia to determine the influence of skills development, entrepreneurial practices, and personality traits through a self-administered Google-form usage questionnaire survey. There is a need to investigate women's entrepreneurial perspectives as the major portion of this is unexplored, including technological capabilities and associated attributes that can help business ventures flourish. Females require the appropriate knowledge, skills, and abilities in a globally competitive business environment for flexible and efficient business operations management and to acquire the market through effective communication

to meet the requirements of the global arena. Previously, studies have raised how business attributes influence entrepreneurial success among female business owners. The prior literature also stressed identifying business attributes influencing women's entrepreneurial success [2].

The business attributes relate to the skills embedded in the person who runs the businesses; the skills must be able to encourage entrepreneurial activity; this construct focuses on the development of skills of females that increase entrepreneurial activity. The individual's skills to run the business influence the expansion of business activity. The skills of females to run the business, including their knowledge, learning capacity, and intervention and creativity, influence business success. However, it has also been stated that females encounter more difficulties running businesses due to a lack of experience [2].

The literature suggests that business attributes, such as organizational vision and mission alignment, leadership, and efficient management, are pivotal in determining entrepreneurial success. Specifically, [18] emphasize that business attributes, including efficiency in target achievement and the quality of relationships between leaders and employees, are critical to success. The researcher argues that business attributes tend to influence the women's entrepreneurial success among the Malaysian sample, which means the skills related to conducting a successful business are important in determining overall entrepreneurial success. According to Entrepreneurship Motivation Theory, individuals possessing appropriate business skills and capabilities are more motivated and better equipped to identify and exploit entrepreneurial opportunities. Business attributes therefore provide the necessary competencies that facilitate business growth and enhance the likelihood of entrepreneurial success among women entrepreneurs. Thus, the following hypothesis is derived:

- H1: Business Attributes influence women's entrepreneurial success among Malaysian female businesspersons.

2. *ENTREPRENEURIAL TRAITS AND WOMEN ENTREPRENEUR SUCCESS*

Entrepreneurship can be considered a transformer for the world in a rapidly changing business environment and to meet various organizations' global challenges. The gender equality is one of the prime concerns in today's world to achieve the sustainable development goals. The participation of females in business activities in Malaysia has increased in recent years; this change has contributed to gender equality and influenced the country's economic strength [19]. According to the Department of Statistics Malaysia, 20.6% of the population are women entrepreneurs in Malaysia, which is much lower than the participation of male members in entrepreneurial activities. The Department of Statistics Malaysia also reported that 400,000 women in Malaysia are unemployed, which shows Malaysia's untapped potential. Entrepreneurship significantly maximizes benefits and increases income; younger people focus on entrepreneurial initiatives to generate extra income. The women entrepreneurs have taken many initiatives, as Selangor has more business establishments, followed by Kelantan and Kuala Lumpur. The Statistics Department of Malaysia also reported that women-owned businesses contribute about 3.4% of gross product, which is 85 billion RM [7].

The entrepreneurial trait is referred to as the set of inspirational innate required specific personality characteristics, the appropriate knowledge, motivational perspective, skills competency that facilitate the self-image and recognize the social role of the business owner to become the entrepreneur. The motivational level to meet the continuous development for survival and to grow for venture or business must be related to social role and self-image for successful enterprises. The previous research articles have incorporated gender equality to determine the empowerment of women entrepreneurs, the sociocultural factors have also been assessed for determining the empowerment of women entrepreneurs, and the policies have been stressed in prior literature to explain the phenomenon of women entrepreneurs in Bahrain. The study revealed that gender equality, sociocultural factors, and policies significantly influence the empowerment of women entrepreneurs [20]. Another research article has determined the relationship between emotional perspective and intelligence, social and family support, and knowledge and risk-taking behavior that influence entrepreneurial success. The study revealed that organizations should devise policies while focusing on family and social support, the emotional perspective of the employees, gender, knowledge level,

and the tendency to take risks; that means these important variables explain the behavior of individuals to become successful entrepreneurs [21].

The literature emphasizes that creativity and opportunity-sensing are critical entrepreneurial traits among women. Work in [22] highlight that female entrepreneurs often demonstrate higher creativity and a stronger ability to sense opportunities, which is key to identifying and exploiting business prospects. These traits allow women to innovate and adapt in competitive environments, contributing to the overall success of their entrepreneurial ventures. Previously, the researchers have overlooked and ignored the entrepreneurial traits to explain the phenomenon of women's entrepreneurial success. Therefore, the following hypothesis is devised based on the argument that entrepreneurial traits tend to influence the entrepreneurial success of women business owners.

Liberal Feminist Theory suggests that women possess the capabilities and entrepreneurial potential required for business success when provided with equal opportunities and resources. Entrepreneurial traits such as creativity, self-confidence, and achievement orientation enable women entrepreneurs to overcome barriers and improve entrepreneurial performance.

- H2: Entrepreneurial Traits Influence Women's Entrepreneurial Success among Malaysian SMEs

3. ENTREPRENEURIAL EDUCATION AND WOMEN ENTREPRENEUR SUCCESS

Entrepreneurial success depends upon effective education that provides the basic and advanced levels of entrepreneurial education that equip the individual with unique skills and attitudes to initiate successful business ventures. Entrepreneurial education aims to provide the required skills, enhance awareness about conducting business, and train individuals to pursue successful business activities through effective management. Entrepreneurial education also provides the risk management perspective to develop a successful career path. The necessary skills must be delivered to potential entrepreneurs to achieve organizational success through a higher level of performance, appropriate culture, effective team development, and connections with others. Entrepreneurial education was much more effective in boosting participants' confidence to take entrepreneurial initiatives. The study was conducted to determine the performance of the firm; the previous research papers have depicted the significant association between entrepreneurship education and competencies among employees; it shows the worth of appropriate education related to entrepreneurship tends to enrich the competencies among participants that collectively increase the firm performance [23].

Past research has been conducted to determine the firm performance influenced by entrepreneurial education through the mediating effect of entrepreneurial competencies; the researcher established that entrepreneurial education increases the level of competencies that further contribute to higher performance. The study reported that effective and meaningful education related to entrepreneurship enriches the competencies of students and participants and increases the level of performance due to creativity, novelty, and innovation perspectives [23]. The research scholars have stated that entrepreneurship reduces poverty and increases economic activity and growth due to a significant boost in innovation and enhances social and environmental sustainability. The study established the correlation between entrepreneurial education and providing coaching, which was reported to be positively related to sustainability. The literature has depicted a lack of knowledge and empirical evidence that focusing on educational technology has a negative impact; the progressive education approach and innovation create stability and higher performance [24].Another research study has explained the role of entrepreneurial leadership in achieving sustainable performance. The study reported that entrepreneurial leadership significantly impacts economic, environmental, and social performance, which means that entrepreneurial leadership influences sustainable performance [25].

The literature emphasizes the importance of entrepreneurial education in equipping women with the skills and knowledge needed for business success. Studies [2, 18]points out that entrepreneurial education enhances women’s abilities in business management, strategic decision-making, and leadership, which are critical for starting and sustaining successful ventures. It is evident in the research that the educational approach towards entrepreneurship has significant potential to produce an entrepreneurial mindset. Entrepreneurship Motivation Theory further suggests that entrepreneurial education enhances knowledge, skills, and motivation, enabling individuals to recognize business opportunities and make informed

entrepreneurial decisions. Consequently, entrepreneurial education is expected to contribute positively to women's entrepreneurial success. Thus, the following hypothesized statement is devised:

- H3: Entrepreneurial education influences Women's Entrepreneurial success in the SME sector of Malaysia

4. MODERATING THE ROLE OF RISK-TAKING BEHAVIOR

This research paper incorporated the important construct of risk-taking behavior that is integral to entrepreneurial business setups. Risk-taking behavior is the tendency of an individual to take or avoid risks. Risk-taking is the most striking factor that predicts business success [26]. The two terms were found to be closely related as it is believed that an entrepreneurship mindset encourages individuals to make risky decisions to harvest the maximum benefits; it has been documented that the personality factor of females plays an important role in decision-making related to business operations. The risk-taking perspective of an individual businessman plays a crucial role in business decisions in exchange for greater or more successful results. The research studies have highlighted that risk propensity is the best predictor for successful entrepreneurial activities. Women entrepreneurs receive a major impact from risk-taking behavior and innovativeness that further influence competitiveness. The prior literature has highlighted that women entrepreneurs are found to be more risk-averse than their counterparts. The gender difference also highlighted that women entrepreneurs are more emotional to uncertain situations, so their risk-taking behavior is significantly different and impacts the outcomes [27].

The propensity to business venture has been explored, and risk appetite plays an important role in harvesting the benefits after availing the opportunities. It is revealed that the risk-taking behavior of a business person tends to influence the formation of a business venture [28]. The entrepreneurial perspective requires risky behavior to harvest large-scale benefits. The significant commitment to utilizing resources and the possibility of risk has to be incorporated; the entrepreneurial mindset must possess the capabilities to take risks to maximize profits and seek higher-risk market opportunities. Risk is also the appropriate measure the business management takes to discover the market, invest most of its resources, and increase the return. The study revealed that risk-taking influences business performance [29]. Entrepreneurs are responsible for such decisions that influence the growth and performance of the business, and risk management has been expressed as one of the striking factors for organizational growth and performance. Effective risk management reduces volatility, enhances the value of firms, and increases growth [30].

The level of risk of the individual business person explains an entrepreneur's success; the literature has postulated that the risk-taking tendency of an entrepreneur influences performance-related outcomes [31]. The current study focused on women entrepreneurs, and prior literature has depicted that women entrepreneurs are related to risk exposure; it has been stated that women who deal with risk tend to influence the firm's performance. The research scholars have explained that women entrepreneurs can perform well in turbulent markets, so it has been suggested that they should invest in turbulent markets. A positive influence has been observed on business performance by the risk-taking level of women entrepreneurs [18, 32, 33].

The prior literature also reported that women entrepreneurs were less confident, leading to different risk perception levels in their risk preferences. The higher risk-taking behavior was investigated it hurts profit, and the higher risk perception was found to affect profits positively. Interestingly, the researchers have highlighted no difference due to gender in the performance of entrepreneurs with risk-taking and decisiveness traits. However, calculated risk-taking behavior has been considered to minimize the negative impact, and minimum financial risk-taking behavior to mitigate the negative impact [34, 35]. Women entrepreneurs were more calculated risk-takers in business decisions and managed better than men entrepreneurs [21].

It is well documented that risk-taking behavior substantially impacts performance-related outcomes, and the gender difference is that both genders have different approaches towards making decisions that involve some scale of risks. In the case of women entrepreneurs, attitudes conducive to or averse to risk-taking propensity affect entrepreneurial decisions [10]. The fear of failure and unwillingness to take risks are major obstacles for women entrepreneurs to face to gain a specific level of success. Risk-taking behavior is considered the striking factor in entrepreneurial success [3]. The prior literature has mixed findings that risk-

taking behavior differs between genders, so this research intends to determine the role of risk-taking behavior in women's entrepreneurial success as the moderator. The researcher argues that risk-taking behavior moderates the relationship between exogenous and endogenous constructs. Therefore, the following direct and moderating hypotheses are devised:

Risk-taking behavior is considered a crucial moderating factor in entrepreneurial success. Studies like [36] reveal that women entrepreneurs are often more risk-averse than men, which may impact their business decisions and outcomes. However, [21] suggest that calculated risk-taking is important for women entrepreneurs to succeed, especially in challenging business environments. Risk-taking behavior influences how women entrepreneurs utilize their education, traits, and business attributes to navigate uncertainties and capitalize on opportunities. Risk Propensity Theory argues that entrepreneurs with a greater willingness to take calculated risks are more likely to exploit uncertain business opportunities and achieve superior entrepreneurial outcomes. Therefore, risk-taking behavior is expected to directly influence women's entrepreneurial success and strengthen the effects of business attributes, entrepreneurial traits, and entrepreneurial education on entrepreneurial success.

- H4: Risk-taking behavior significantly influences Women's Entrepreneurial success in the SME sector of Malaysia
- H5: Risk-taking behavior significantly moderates the relationship between Business Attributes and Women's Entrepreneurial success in the SME sector of Malaysia
- H6: Risk-taking behavior significantly moderates the relationship between Entrepreneurial Traits and Women's Entrepreneurial success in the SME sector of Malaysia
- H7: Risk-taking behavior significantly moderates the relationship between Entrepreneurial Education and Women's Entrepreneurial success in the SMEs sector of Malaysia

III. RESEARCH FRAMEWORK

This section demonstrates the potential variables of the study, the independent variables, including business attributes, entrepreneurial traits, and entrepreneurial education, that influence the dependent variable of women entrepreneur success with the moderating effect of risk-taking behavior. The framework also presents the hypothesized relationships.

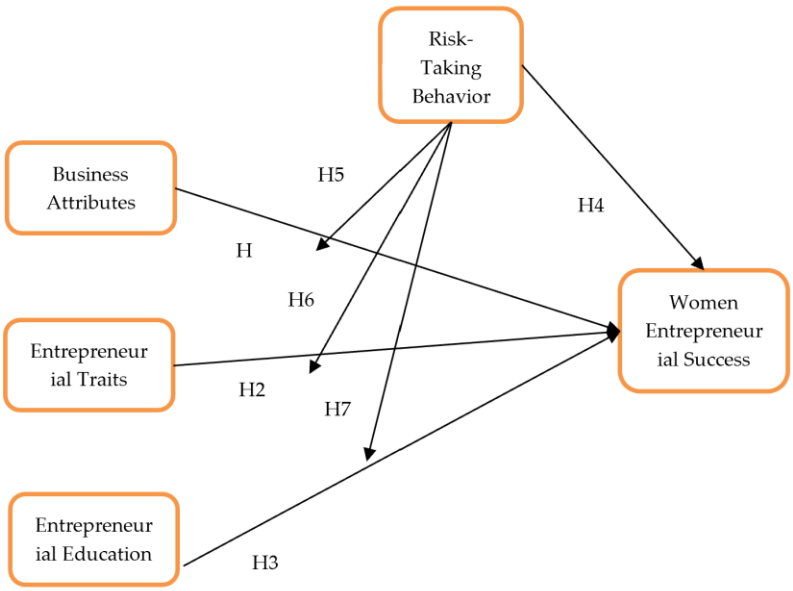


FIGURE 1. Research framework.

1. RESEARCH METHODOLOGY

The quantitative research approach has been used to conduct this research as data was collected through questionnaires from women entrepreneurs conducting business operations in different areas of Malaysia. The target population for this study is women entrepreneurs of Small and Medium (SME) enterprises, and the unit of analysis in this research effort is individual female entrepreneurs in Malaysia in different regions, including Kuala Lumpur, Penang, Johor, Kedah, Langkawi, and Kelantan. The SMEs were chosen because they cover 98.5% of Malaysian business establishments. Convenience sampling was employed because a comprehensive sampling frame of women-owned SMEs in Malaysia was not available, making probability sampling impractical for the present study [37]. The sample size was determined based on the recommendations for Partial Least Squares Structural Equation Modeling (PLS-SEM), which is appropriate for prediction-oriented research involving complex structural models. According to Hair et al. [38], PLS-SEM provides reliable parameter estimates with relatively small sample sizes when the structural model is of moderate complexity and sufficient statistical power is achieved. Moreover, the sample size of 150 exceeds the minimum requirement suggested by the 10-times rule, as the maximum number of structural paths directed toward a single endogenous construct in the proposed model is four [38]. Therefore, the selected sample size was considered adequate to estimate both the direct and moderating relationships in the proposed model.

The methodology employed in this study, particularly the use of convenience sampling and a sample size of 150 female entrepreneurs, is rooted in practical constraints and theoretical adequacy. [21] note the vast and varied landscape of SMEs run by female entrepreneurs. This makes a probability sampling technique both impractical and irrational due to the population's immense size and dispersed nature. In such contexts, convenience sampling becomes a strategic choice, enabling researchers to gather data that are still valuable for making informed inferences about the target population [37].

Moreover, the choice of sample size in qualitative and exploratory quantitative research where Smart PLS is used for data analysis does not strictly adhere to the requirements of larger sample sizes seen in probability sampling. According to [38], in PLS-SEM, smaller sample sizes may still provide robust results, especially when the study design focuses on exploring complex models with moderation or mediation effects. Therefore, the sample size of 150 is considered sufficient to achieve statistical power and meaningful model estimation, aligning with the rule of thumb for PLS path modeling, which recommends ten times the largest number of structural paths directed at a particular construct in the model [38]. Since data were collected from a single source using self-reported questionnaires, common method bias (CMB) was assessed. VIF values were examined, and all values were below the recommended threshold of 3.3, indicating that common method bias was not a serious concern in this study.

2. THEORETICAL FOUNDATION

This study is primarily grounded in Entrepreneurship Motivation Theory (EMT), which serves as the overarching theoretical foundation for explaining women's entrepreneurial success. The theory suggests that entrepreneurial success is driven by individuals' motivation, entrepreneurial competencies, knowledge, and skills, which enable them to identify and exploit business opportunities effectively [39]. According to this perspective, entrepreneurs who possess stronger business capabilities, appropriate education, and favourable entrepreneurial characteristics are more likely to establish sustainable ventures and achieve superior business performance. Therefore, Entrepreneurship Motivation Theory provides the primary theoretical basis for explaining the direct relationships between business attributes, entrepreneurial traits, entrepreneurial education, and women's entrepreneurial success.

In addition to Entrepreneurship Motivation Theory, this study draws on Liberal Feminist Theory to explain women's entrepreneurial capabilities. Liberal Feminist Theory argues that women possess entrepreneurial abilities comparable to men; however, their entrepreneurial outcomes are often constrained by unequal access to resources, education, and business opportunities rather than differences in ability [40]. This theory supports the importance of developing entrepreneurial competencies among women to improve their entrepreneurial success.

Furthermore, the study incorporates Risk Propensity Theory to explain the moderating role of risk-taking behavior. The theory suggests that entrepreneurs differ in their willingness to undertake calculated risks, and those with a higher propensity for risk are better able to recognize opportunities, make strategic decisions, and achieve superior entrepreneurial outcomes under uncertain business conditions [41]. Accordingly, Risk Propensity Theory provides the theoretical justification for examining risk-taking behavior as a moderator of the relationships between business attributes, entrepreneurial traits, entrepreneurial education, and women's entrepreneurial success. Entrepreneurship Motivation Theory, Liberal Feminist Theory, and Risk Propensity Theory provide a comprehensive theoretical foundation for the proposed conceptual framework by explaining how entrepreneurial competencies and behavioural characteristics jointly contribute to women's entrepreneurial success in Malaysian SMEs.

3. RESEARCH INSTRUMENTS

The previously developed questionnaire was adopted for each construct, and a 5-point Likert scale was utilized to measure the responses. All the measurement scales were established and tested in prior literature and were adopted based on the researcher's best knowledge. The 05 items measurement scale for women's entrepreneurial success was taken from the research article [21]. The sample items of the instrument include information about knowledge, traits, family and social support, emotional support, and risk-taking intention. The 11-item measurement scale for business attributes was taken from the study of [2]. The sample items entail the short- and long-term objectives, the management of credit predictively, a proactive approach, an open line of communication, access to funding, a profitable forecast, and individual flexibility. The 16 items scale of entrepreneurial traits, including sample item's goal orientation, self-starting, overcoming barriers, handling issues and challenges, the need for achievement, the successful business desires and family background, risk-taking, vision, and creativity, is adapted from the research article of [2]. The instrument scale of risk-taking behavior, including sample items risk propensity, risk-taking ability, risk-taking behavior, risk-attitude, and entrepreneurial orientation trait, is adapted from the research study [21] and has five items. The instrument of entrepreneurial education, adapted from the research effort of [43], has five items.

IV. ANALYSIS AND DISCUSSION

Initially, the descriptive analysis is presented. The female entrepreneurs were approached to assess their entrepreneurial success. The ethical concern was one of the prime tasks of the current research. The SME's female-owned businesses were participants of the study; they were approached through proper channels by asking permission and willingness to provide accurate information. The data was collected from willing females who owned businesses in different cities of Malaysia, as stated during the sampling process. The data was collected and utilized under ethical considerations to predict the phenomenon of entrepreneurial success. The questionnaire was first translated into the local Malaysian language for a better and complete response. The researcher targeted to collect 150 complete responses. To achieve this purpose, the researcher approached and distributed 200 questionnaires but received the first 150 responses from different cities in Malaysia. The researcher received 50 responses from Kuala Lumpur, 30 from Penang, 25 from Johar, 25 from Kedah, and 20 from Langkawi.

The collected data is analyzed on Smart-PLS 4 to assess the relationship between framework constructs. The analysis phase consists of two phases; the first phase entails the construct reliability and validity of the constructs through the PLS algorithm, as the Measurement Model Assessment depicts the reliability and validity. The second analysis phase is conducted through the bootstrapping method of PLS as Structural Equation Modelling (SEM) depicts the significance of the relationships between variables. The structural model was evaluated using the bootstrapping procedure with 5,000 bootstrap subsamples, two-tailed testing, a 95% bias-corrected confidence interval, and the individual sign-change option, following the recommendations of Hair et al. [38].

1. DESCRIPTIVE ANALYSIS

This section of the research presents the descriptive analysis. Table 1 shows the demographic information collected, and age and education with appropriate family background are given. Age is very important among female entrepreneurs as age was divided into four age groups: between 20-25 years, which is 2% of the sample; the second group from 25-35 years old, which is 37% of the sample; the third group is between 35-45 and the fourth group is 45 and above, which are 29% and 32% respectively.

Table 1. Respondents' profile.

S#	Questions	Choices	Percentage
1	Age	20-25	2%
		25-35	37%
		35-45	29%
		45 and above	32%
2	Education level	High school	3%
		Diploma	6%
		Bachelor	68%
		Master	20%
		PhD	3%
3	Family business	Yes	46%
		No	54%

Respondents' profile

2. MEASUREMENT MODEL ASSESSMENT

This section emphasized the reliability assessment and validity test of collected data for each using the PLS algorithm. The reliability and validity are examined based on Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity. The reliability of constructs is determined based on the value of Cronbach's alpha, which must be equal to or higher than 0.70 for acceptability; if the alpha is higher than 0.80, that is considered good reliability, and higher than 0.90 is excellent reliability [38]. Similarly, the value for composite reliability should be greater than 0.70 for acceptability. The cutoff point for AVE is 0.50 for acceptable validity, and the table below presents the reliability and validity of constructs in Table 2.

Table 2. Construct reliability and validity.

Constructs	Alpha	CR	AVE
WES	0.778	0.833	0.551
RTB	0.867	0.897	0.648
BA	0.934	0.938	0.606
ET	0.946	0.953	0.551
EE	0.940	0.955	0.806

Note: entrepreneurial education (EE), women entrepreneurial success (WES), Risk-Taking Behavior (RTB), Business Attributes (BA), Entrepreneurial Traits (ET).

The above table depicted the acceptable reliability and validity based on the Cronbach alpha, composite reliability, and average variance extracted (AVE); the results show that Cronbach alpha and CR were acceptable as all values were observed to be higher than a cutoff point. The values for AVE were also found to be acceptable, as all values are above the cutoff point of 0.50, and the validity is achieved per the given criteria [38].

3. *DISCRIMINANT VALIDITY*

The discriminant validity of the constructs is determined by comparing the correlational values of each construct. The criteria are based on the [44] method to examine the discriminant validity. Table 3 below demonstrates the result of discriminant validity.

Table 3. Discriminant validity.

Constructs	BA	EE	ET	RTB	WES
BA	0.779				
EE	0.621	0.898			
ET	0.660	0.676	0.743		
RTB	0.592	0.670	0.700	0.805	
WES	0.503	0.567	0.580	0.550	0.742

Note: entrepreneurial education (EE), women entrepreneurial success (WES), Risk-Taking Behavior (RTB), Business Attributes (BA), Entrepreneurial Traits (ET).

The above table shows that discriminant validity was achieved, the correlational value of each construct was compared, and the intersectional value was higher than other correlational values. The square root of AVE must be higher than correlational values with variables. The diagonal values depicted that discriminant validity is achieved per the criteria [44]. Figure 2 shows the Measurement Model Assessment extracted from PLS:

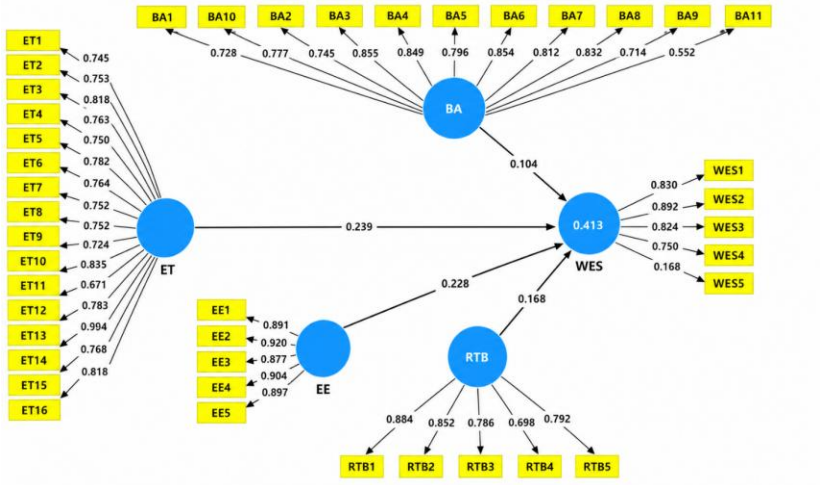


FIGURE 2. Measurement model assessment.

Note: entrepreneurial education (EE), women entrepreneurial success (WES), Risk-Taking Behavior (RTB), Business Attributes (BA), Entrepreneurial Traits (ET).

4. *STRUCTURAL EQUATION MODELING (SEM)*

This section investigates the hypothesized relationships. The relationship is examined based on β value, t-value, and p-value. The significance of the relationship is determined by t-value. That cutoff point is 1.96 with a 5% error margin, as the p-value should be lower than 0.05 for acceptable significance [38]. The four direct and three moderating hypothesized relationships are to be tested. The explanatory power of the structural model was further assessed using the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and standardized root mean square residual (SRMR). The R^2 values indicated satisfactory explanatory power, while Q^2 values were greater than zero, confirming predictive relevance. The SRMR value was below the recommended threshold of 0.08, indicating an acceptable model fit. The effect size (f^2) analysis further demonstrated the relative contribution of each predictor to women's entrepreneurial success.

The significance of the structural relationships was assessed using bootstrapping. Path coefficients, standard errors, t-values, p-values, and confidence intervals were examined to determine the statistical significance of the proposed hypotheses

Table 4. Hypothesized relationships test.

S#	Relationships	*β*	*t-value*	*p-value*
H1	BA→WES	0.115	2.105	0.044
H2	ET→WES	0.172	1.999	0.003
H3	EE→WES	0.214	2.301	0.002
H4	RTB→WES	0.160	2.012	0.004

Note: entrepreneurial education (EE), women entrepreneurial success (WES), Risk-Taking Behavior (RTB), Business Attributes (BA), Entrepreneurial Traits (ET).

Hypothesis H1 was accepted because business attributes had a significant positive effect on women's entrepreneurial success (β = 0.115, t = 2.105, p = 0.044). This finding suggests that business skills and managerial capabilities enhance entrepreneurial performance by improving decision-making and opportunity recognition. The result is consistent with previous studies highlighting the importance of business attributes in entrepreneurial success [2, 43, 45]. It also supports Entrepreneurship Motivation Theory, which emphasizes that business competencies strengthen entrepreneurial motivation and business performance.

Hypothesis H2 was accepted because entrepreneurial traits significantly influenced women's entrepreneurial success (β = 0.172, t = 1.999, p = 0.003). This indicates that traits such as creativity, confidence, and perseverance improve entrepreneurial performance. The finding is consistent with previous research [46, 47] and supports Liberal Feminist Theory, which argues that women possess the capabilities required to achieve entrepreneurial success when provided with appropriate opportunities.

H3: Entrepreneurial Education and Women's Entrepreneurial Success. Hypothesis H3 was accepted because entrepreneurial education positively influenced women's entrepreneurial success (β = 0.214, t = 2.301, p = 0.002). The findings suggest that entrepreneurial education enhances knowledge, managerial competencies, and entrepreneurial motivation, thereby improving business performance. This result is consistent with previous studies [21, 24, 48] and supports Entrepreneurship Motivation Theory.

Hypothesis H4 was accepted because risk-taking behavior had a significant positive effect on women's entrepreneurial success (β = 0.160, t = 2.012, p = 0.004). This finding indicates that women entrepreneurs who are willing to take calculated risks are more likely to exploit business opportunities and achieve superior entrepreneurial outcomes. The result is consistent with previous studies [21] and supports Risk Propensity Theory, which emphasizes that calculated risk-taking contributes to entrepreneurial success [41].

5. *MODERATING EFFECT*

The moderating effect of risk-taking behaviour is assessed in the present research effort between exogenous and endogenous constructs. The researcher argues that risk-taking behaviour tends to moderate the relationships by strengthening the relationships between variables. Table 5 shows the moderating effects

Table 5. Moderating effect.

S#	Relationships	β	t-value	p-value
H5	BA*RTB→WES	0.201	1.981	0.041
H6	ET*RTB →WES	0.171	3.013	0.002
H7	EE*RTB →WES	0.121	2.971	0.003

Note: entrepreneurial education (EE), women entrepreneurial success (WES), Risk-Taking Behavior (RTB), Business Attributes (BA), Entrepreneurial Traits (ET).

Hypothesis H5 was accepted because risk-taking behavior significantly moderated the relationship between business attributes and women's entrepreneurial success (β = 0.201, t = 1.981, p = 0.041). This finding indicates that business attributes become more effective when women entrepreneurs are willing to take calculated risks. The result extends previous findings on entrepreneurial risk-taking [18, 29] and supports Risk Propensity Theory.

Hypothesis H6 was accepted because risk-taking behavior significantly strengthened the relationship between entrepreneurial traits and women's entrepreneurial success (β = 0.171, t = 3.013, p = 0.002). This suggests that entrepreneurial traits produce stronger entrepreneurial outcomes when accompanied by a greater willingness to take calculated risks. The finding is consistent with previous studies [21], [10] and supports Risk Propensity Theory.

Hypothesis H7 was accepted because risk-taking behavior significantly moderated the relationship between entrepreneurial education and women's entrepreneurial success (β = 0.121, t = 2.971, p = 0.003). This finding indicates that entrepreneurial education is more effective when women entrepreneurs are willing to apply their knowledge in uncertain business environments. The result extends previous studies [23], [24] and supports Risk Propensity Theory.

6. DISCUSSION, IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

Hypothesis H1 was accepted because business attributes had a significant positive effect on women's entrepreneurial success (β = 0.115, t = 2.105, p = 0.044). This finding indicates that women entrepreneurs with stronger business skills and managerial capabilities are more likely to achieve business success through effective opportunity recognition and resource utilization [50]. The finding is consistent with previous studies [2, 18], which emphasized the importance of business competencies in entrepreneurial performance. From the perspective of Entrepreneurship Motivation Theory, business attributes enhance entrepreneurial motivation and facilitate venture success. However, some studies have suggested that external environmental factors may weaken the influence of business attributes on entrepreneurial outcomes [16]. In the Malaysian SME context, strengthening business management skills through training and capacity-building programs can improve entrepreneurial success among women entrepreneurs.

Hypothesis H2 was accepted because entrepreneurial traits significantly influenced women's entrepreneurial success (β = 0.172, t = 1.999, p = 0.003). This suggests that characteristics such as creativity, self-confidence, and perseverance enable women entrepreneurs to overcome business challenges and improve firm performance. The result supports previous findings [21, 22] and aligns with Liberal Feminist Theory, which argues that women possess the capabilities required for entrepreneurial success when provided with equal opportunities. Although previous studies generally support this relationship, some have reported that institutional barriers may reduce the impact of entrepreneurial traits on business performance [20]. In Malaysia, promoting entrepreneurial competencies among women can strengthen SME growth and sustainability.

Hypothesis H3 was accepted because entrepreneurial education positively influenced women's entrepreneurial success (β = 0.214, t = 2.301, p = 0.002). The findings suggest that entrepreneurial education enhances knowledge, opportunity recognition, and managerial competencies, thereby increasing business performance. This finding is consistent with previous studies [23, 24]. Entrepreneurship Motivation Theory further explains that education strengthens entrepreneurial motivation by improving individuals' confidence and decision-making abilities. However, some researchers argue that education alone may not guarantee entrepreneurial success without practical experience and institutional support [25]. Within Malaysian SMEs, entrepreneurship education can prepare women entrepreneurs to respond effectively to dynamic business environments.

Hypothesis H4 was accepted because risk-taking behavior had a significant positive effect on women's entrepreneurial success (β = 0.160, t = 2.012, p = 0.004). This indicates that women entrepreneurs willing to take calculated risks are more likely to exploit business opportunities and achieve superior performance. The finding is consistent with previous studies [21, 29] and is supported by Risk Propensity Theory, which proposes that calculated risk-taking enhances entrepreneurial decision-making. Nevertheless, previous studies have reported mixed findings regarding women's willingness to take risks [3, 10], possibly because

of differences in cultural and institutional environments. In the Malaysian SME sector, encouraging calculated risk-taking may enhance innovation and business competitiveness.

Hypothesis H5 was accepted because risk-taking behavior significantly strengthened the relationship between business attributes and women's entrepreneurial success ($\beta = 0.201$, $t = 1.981$, $p = 0.041$). This finding suggests that business skills become more effective when women entrepreneurs are willing to take calculated risks in uncertain business situations. This result extends previous studies [18, 29] by demonstrating the interactive role of risk-taking behavior. In the Malaysian SME context, combining business competencies with appropriate risk-taking can improve business growth and sustainability.

Hypothesis H6 was accepted because risk-taking behavior significantly moderated the relationship between entrepreneurial traits and women's entrepreneurial success ($\beta = 0.171$, $t = 3.013$, $p = 0.002$). The findings indicate that entrepreneurial traits such as confidence and creativity produce stronger entrepreneurial outcomes when accompanied by a willingness to take calculated risks. This result supports Risk Propensity Theory and complements earlier findings on entrepreneurial behavior [10, 21]. In Malaysian SMEs, developing both entrepreneurial competencies and risk management capabilities may improve women's business performance.

Hypothesis H7 was accepted because risk-taking behavior significantly strengthened the relationship between entrepreneurial education and women's entrepreneurial success ($\beta = 0.121$, $t = 2.971$, $p = 0.003$). This finding suggests that entrepreneurial education is more effective when women entrepreneurs are willing to apply their acquired knowledge in uncertain business environments. The result extends previous research [23, 24] by demonstrating that education and risk-taking complement each other in enhancing entrepreneurial success. From a practical perspective, entrepreneurship training programs in Malaysia should incorporate risk assessment and decision-making skills to maximize entrepreneurial outcomes.

Every research study has limitations in various perspectives. This study was conducted on women only from the SME sector of Malaysia and different cities. In the future, the study can be conducted to compare the results of male and female entrepreneurs to present and assess the real worth of entrepreneurial success in the Malaysian context. A gender comparative study would make this study more interesting and will give interesting and comprehensive results of entrepreneurial success. The study is also limited due to the bias in the convenience sampling technique. Therefore, other sampling techniques will be applied in the future. Future studies could apply other sampling techniques like stratified random sampling to make the results more generalizable and reliable. Limited sample size was considered; future studies may focus on a large sample size as it provides a broader comparison base and generalizes the findings. This study's nature was cross-sectional, making it more difficult to determine cause and effect relationships; future research should be conducted longitudinal. The research implications are an integral element of the research paper; this research effort has been made to assess the entrepreneurial success of females in Malaysia. Females are more inclined to initiate business activities contributing to Malaysian GDP and the nation’s growth. This study provides the framework for attaining success for females as entrepreneurs; the study focused on developing skills that depict the business attributes for successful entrepreneurial activities. The study is useful for shaping the entrepreneurial traits among females to become successful entrepreneurs. The study also stressed the entrepreneurial education that must be incorporated with existing studies to give deep insight into business know-how and encourage them to initiate their businesses. The prior literature has argued that female business persons are more risk-taking, which means the females possess more risk-taking behavior that increases the level of involvement and the success rate.

This study identified several key challenges women entrepreneurs face in Malaysia. These challenges include gender inequality, which shows the limited access to resources and opportunities compared to males. A lack of education and skills further slows down women's ability to successfully start and manage businesses, making it difficult to compete in the marketplace. An unsupportive cultural environment often discourages women from pursuing entrepreneurial ventures, while inadequate policies fail to provide female business owners with the necessary support and protection. These barriers slow down the growth of women entrepreneurs in the region

V. CONCLUSION

This study contributes to the entrepreneurship literature by empirically examining the effects of business attributes, entrepreneurial traits, entrepreneurial education, and risk-taking behavior on women's entrepreneurial success in Malaysian SMEs. The findings reveal that business attributes, entrepreneurial traits, entrepreneurial education, and risk-taking behavior significantly enhance women's entrepreneurial success. Furthermore, risk-taking behavior strengthens the relationships between business attributes, entrepreneurial traits, entrepreneurial education, and entrepreneurial success. These findings extend Entrepreneurship Motivation Theory, Liberal Feminist Theory, and Risk Propensity Theory by demonstrating the combined influence of entrepreneurial competencies and behavioral characteristics on entrepreneurial success. From a practical perspective, the study highlights the importance of strengthening entrepreneurial skills, expanding entrepreneurship education, and promoting calculated risk-taking through targeted training and policy initiatives to improve the success of women entrepreneurs in Malaysia.

Conflicts of Interest

The authors declare no conflicts of interest.

Author Contributions

Conceptualization, S.K., A.N., F.E., and M.B.H.; methodology, S.K., A.N., T.S.J., B.M.A., F.E., and M.B.H; software, S.K., and F.E.; validation, S.K., A.N., T.S.J., B.M.A., F.E., and M.B.H.; formal analysis, S.K., A.N., T.S.J., and F.E.; investigation, S.K., F.E., and M.B.H.; data curation, S.K., and M.B.H.; writing—original draft preparation, S.K., A.N., T.S.J., and F.E.; writing—review and editing, S.K., B.M.A., F.E., and M.B.H.; visualization, S.K., and M.B.H.; funding acquisition, M.B.H; supervision, M.B.H. All authors have read and agreed to the published version of the manuscript.

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