Asian Journal of Agriculture and Rural Development
Volume 15, Issue 3 (2025): 510-518

The analysis of entrepreneurial smallholder farmers: Evidence from Thailand

Waripas Jiumpanyarach

School of Agricultural Resources, Chulalongkorn University, Bangkok 10330, Thailand.

✉ waripas.j@chula.ac.th

Article History

Received: 22 May 2025
Revised: 14 August 2025
Accepted: 12 September 2025
Published: 24 September 2025

Keywords

Agricultural entrepreneurship
Entrepreneurial success
Farmer business
Financial access
Market profitability
Smallholder farmers.

ABSTRACT

The success and sustainability of smallholder agricultural entrepreneurship in Thailand were investigated by regional disparities. Data were collected from 302 smallholder farmers through questionnaires, with regional sample sizes of 67 (North), 64 (South), 60 (East), 51 (Central), and 60 (Northeast). The data were subsequently analyzed using a logit regression model. The findings of this study revealed that 46% of respondents achieved entrepreneurial success, defined as a monthly profit exceeding 17,000 THB (570 USD). This success was primarily in the Eastern and Southern regions. Agricultural types, infrastructure, and market profitability were identified as significant positive drivers of entrepreneurial success. Conversely, the Northern and Northeastern regions exhibited the highest rates of entrepreneurial failure. This was associated with limited financial access, inadequate community management, and restricted development of value-added products. These factors, compounded by a lack of formal loan support, resulted in significant income constraints. Furthermore, post-harvesting and logistical challenges, alongside individual and community mindsets, were found to significantly influence business outcomes across all regions. The success approach integrates targeted government and private sector support to improve infrastructure, expand financial accessibility through customized loan programs, and enhance market profitability via optimized value chains, thereby fostering sustainable growth and improved livelihoods.

Contribution/Originality: This study offers an original contribution by focusing on smallholder farmers across diverse regions of Thailand. It identifies barriers to success in agricultural entrepreneurship and highlights opportunities to enhance farm income within the farm business. Furthermore, the findings suggest strategies for developing agricultural entrepreneurship in alignment with sustainable agriculture.

DOI: 10.55493/5005.v15i3.5626
ISSN(P): 2304-1455/ ISSN(E): 2224-4433

How to cite: Jiumpanyarach, W. (2025). The analysis of entrepreneurial smallholder farmers: Evidence from Thailand. *Asian Journal of Agriculture and Rural Development*, *15*(3), 510–518. 10.55493/5005.v15i3.5626

1. INTRODUCTION

The entrepreneurial success of smallholder farmers was significantly constrained by limited access to critical resources, including financial capital, soil fertility, technical knowledge, technological advancements, and innovative practices. Furthermore, the efficacy of community, governmental, and private sector support, alongside the farmers' intrinsic entrepreneurial mindset, were pivotal determinants of business outcomes. Opportunities for smallholder farmers to enhance production and scale their enterprises, from micro to macro levels, were contingent upon several factors. The integration of advanced knowledge and technology facilitates increased agricultural productivity. Information-driven decision-making empowers farmers to expand their business operations. Moreover, the establishment of strategic business linkages through academic, governmental, and private sector networks, market access, and growth potential. Additionally, environmental factors could provide opportunities for farmers to grow their businesses sustainably.

Smallholder farmers had opportunities to participate in various entrepreneurial activities in different types of farming and had the potential to enhance the competitive advantage of their farming enterprises (World Bank, 2008). Entrepreneurship defined as an instrument for innovation and economic development (World Bank, 2013). Farmers' entrepreneurship includes demography, culture, politics, geography, and economics. The ability and willingness of individuals are identified as economic opportunities. The entrepreneurs are likely to contribute to increased profitability and sustainability (World Bank, 2013). Challenges faced by smallholder farmers include insufficient and inadequate financing, lack of information, poor infrastructure, and inappropriate technologies. Farmers have low incentives to invest in farming production using technologies due to issues related to inputs, infrastructure, and prices. Risks and uncertainties for smallholder farmers stem from unpredictable climate conditions, unaffected corporations, and unreliable markets. It is essential to provide improved skills and knowledge through agricultural markets, including characteristics and services, to increase agricultural productivity (World Bank, 2013).

Entrepreneurship is an economic activity that enables individuals to start new businesses (Chouhan, 2015). Entrepreneurial activities motivated smallholder farmers to create new businesses, including economic and firm environments (Ardichvili, Cardozo, & Ray, 2003; Chouhan, 2015; Corbett, 2005; Tarus, Kemboi, Okemwa, & Otiso, 2016). The success of the business depends on farmers' behavior, including risk-taking, proactiveness, innovation, and skills (Tarus et al., 2016). It focused on entrepreneurship, attitudes, and work-life balance (Cherukara & Manalel, 2011; Ntow et al., 2023). Credit constraints were a limitation to access, adopting technologies that prevented undertaking high-return agricultural activities (Brahmbhatt, Haddaoui, & Page, 2017; Dabbous, Barakat, & Kraus, 2023; Puertas, Guaita-Martinez, Carracedo, & Ribeiro-Soriano, 2022). A new agricultural entrepreneur was a risk taker; thus, farmers were willing to obtain sufficient skills. Agricultural entrepreneurs are expected to be able to increase competitiveness by identifying markets and new markets through producing products. These satisfy market demands and adopting new firm technologies, increasing opportunities in both rural and urban areas to develop the economy (Bairwa, Lakra, Kushwaha, Meena, & Kumar, 2014).

Farmers' decision-making was driven by product value, consumer preferences, and production processes. They actively pursued market opportunities for novel products to satisfy consumer demand (Erogul & Quagrainie, 2018) and enhance farm profitability (Ntow et al., 2023; Wongnaa et al., 2019). Technology adoption was influenced by socio-demographic factors, resource endowments, extension services, financial resources, and income sources. Credit constraints significantly impeded technology access for smallholders (Balana & Oyeyemi, 2022; Zezza & Tasciotti, 2010). Agricultural business performance was contingent on value-added processes, necessitating enhanced vertical knowledge, understanding of market preferences, and strategic technology reallocation (Cao & Duan, 2014; Dabbous et al., 2023).

Entrepreneurial behaviors are influenced by both exogenous and endogenous factors. Exogenous factors, such as reduced transaction costs and enhanced market access, promote smallholder farmer participation in entrepreneurial activities (Mosey, 2016). Endogenous factors, encompassing human and social capital, include network structures, interpersonal relationships, and cognitive attributes (Hoang & Antoncic, 2003; Shane & Smith, 2003; Shepherd & DeTienne, 2005). Additionally, supply chain management of smallholder farming enterprises contributed to financial and economic sustainability (Thindisa, 2014).

Entrepreneurial learning skills related to the learning process, identity redevelopment, and agricultural boundary crossing, providing a foundation for understanding entrepreneurial learning and the transformation of experience into learning outcomes (Cope & Watts, 2000). This included cognitive, behavioral, and affective learning domains (Cope, 2005). Contemporary agriculture integrates human and social capital into new business ventures, necessitating new knowledge, market preferences, performance networks, and training processes (Pindado, Sánchez, Verstegen, & Lans, 2018).

Agricultural entrepreneurial success was predicated on the integration of human, social, and financial capital. Human capital positively influences knowledge acquisition (rural extension, scientific, and technological) and attitudinal development (Shane, 2000). It emphasized the agricultural entrepreneur's capabilities, enabling innovation and motivation under market pressures. For example, sustainable organic agriculture necessitated adaptation through linkages between organic farms and food entrepreneurs, supported by consumers rather than solely by government intervention. Potential farmers possessed human capital (skills and knowledge) and social capital (informal networks and trust), which facilitated market opportunity exploitation and income enhancement.

Social capital encompassed networks of friends, social responsibility, and environmental stewardship, alongside relationships with government, innovative capacity, and access to limited resources. It involved social value creation, influence, and stakeholder engagement. Limitations included legal constraints, cooperation challenges, co-creation complexities, interactive potential, and social technology adoption. Furthermore, social capital structures contributed to resource accumulation, impacting wealth and financial performance (Zhao, Liu, & Zhang, 2023).

Access and creativity, impacting societal and farm environments, were crucial for sustainable entrepreneurship (Cornelissen & Werner, 2014). Balancing economic efficiency with social progress was essential in farm infrastructure development. Consequently, entrepreneurial achievement was contingent upon socio-environmental factors, contextual circumstances, and maximized value creation (Cohen, Smith, & Mitchell, 2008). Furthermore, successful social value creation benefited economically disadvantaged farmers by generating employment and supplementary income (Fischer-Kreer & Brettel, 2022).

Thai smallholder agricultural enterprises across developing economies are constrained by systemic structural barriers. Consequently, smallholders are often relegated to dependence on intermediary agents, thereby hindering their capacity for independent business operation. This dependence exacerbates the economic disparity between smallholders and large-scale agricultural producers, with the latter benefiting from superior access to critical production inputs and expansion resources. The development of these enterprises necessitates rigorous efforts to bridge the existing gaps. Investigation is essential for formulating evidence-based strategies aimed at expanding opportunities, fostering

entrepreneurial development, and advancing the economic prosperity of Thai smallholder farmers. This study aims to identify factors restricting smallholder agricultural entrepreneurship in Thailand, specifically: 1) farm background characteristics (activities, economics, and community context) and 2) challenges to entrepreneurial success within these communities. The expected outcome of the study is to identify barriers to the success of smallholder agricultural entrepreneurs.

2. MATERIALS AND METHODS

A model was developed to analyze the impact of human capital, social capital, and financial capital on entrepreneurial success among smallholder farmers. The study examined how farm activities, community-level factors, and agribusiness dynamics influence success. The study's conceptual framework and research questions were detailed in Figure 1 and Table 1, respectively.

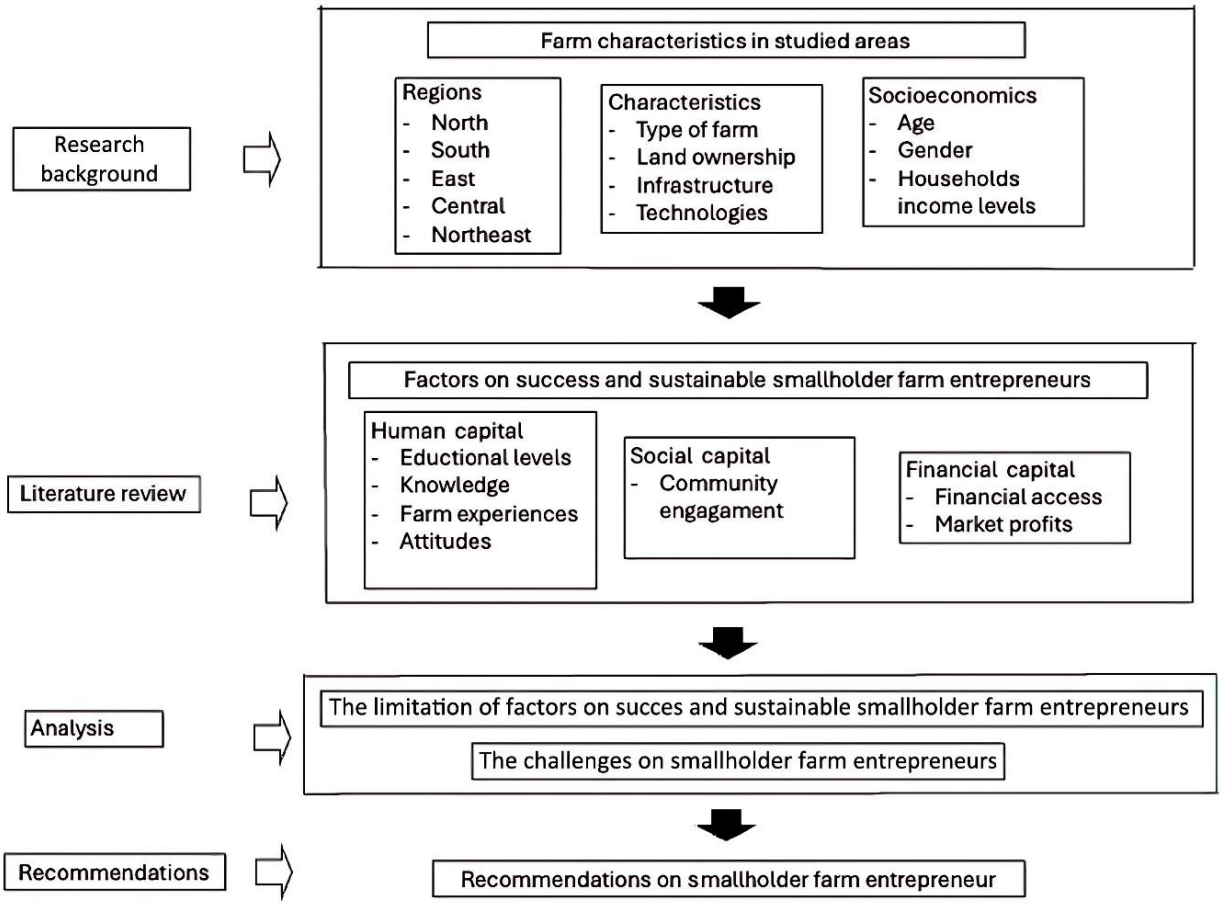

Figure 1. Conceptual framework.

Table 1. Description of variables and research questions.

Variable category	Variable	Expected impact	Question/Description	Units/Categories	Resource/References
Socio-economics	Age	-	Age of household leader	Years	-
	Gender	-	Gender of household leader	1 = Female; 0 = Male	-
	Household income level	+	Monthly household income	Baht	Cohen et al. (2008)
Background	Type of agriculture	+	Type of agricultural activity	1 = Livestock; 0 = Plants	-
	Land ownership	+	Farm ownership status	1 = Rented; 0 = Owned	-
	Infrastructure	+	Satisfaction level with farm infrastructure	1 = Lowest; 2 = Low; 3 = Medium; 4 = High; 5 = Highest	Chen, Shen, Qiu, Liu, and Mardani (2023) and Louw, Jordaan, Ndanga, and Kirsten (2008)

Variable category	Variable	Expected impact	Question/Description	Units/Categories	Resource/References
	Technologies	+	Satisfaction level with farm technologies	1 = Lowest; 2 = Low; 3 = Medium; 4 = High; 5 = Highest	Dabbous et al. (2023) and Louw et al. (2008)
Human capital	Education levels	-	Highest education level attained	-	Shane (2000)
	Knowledge	+	Level of knowledge on agricultural entrepreneurship	1 = Lowest; 2 = Low; 3 = Medium; 4 = High; 5 = Highest	Shane (2000)
	Attitudes on agricultural entrepreneur	+	Satisfaction level with agricultural entrepreneurship	1 = Lowest; 2 = Low; 3 = Medium; 4 = High; 5 = Highest	Shane (2000)
Social capital	Community engagement	+	Level of farm community engagement	1 = Lowest; 2 = Low; 3 = Medium; 4 = High; 5 = Highest	Cornelissen and Werner (2014); Fischer-Kreer and Brettel (2022); Shane (2000) and Thompson (2009)
Financial capital	Financial access	-	Level of financial access	1 = Lowest; 2 = Low; 3 = Medium; 4 = High; 5 = Highest	Louw et al. (2008) and Shane (2000)
Sustainable outcome	Market profit	+	Level of market profit	1 = Lowest; 2 = Low; 3 = Medium; 4 = High; 5 = Highest	Shane (2000) and World Bank (2013)
Success	Success	-	Entrepreneurial success	0 = Not Successful; 1 = Successful	-

2.1. Data Collection

Data were gathered through 302 paper-based surveys, distributed across various geographic locations (Figure 2), capturing diverse characteristics of smallholder farmers. The sample sizes of smallholder farmers surveyed were 67 in the North, 64 in the South, 60 in the East, 51 in the Central region, and 60 in the Northeast during the period from January 2019 to August 2019. The questionnaire validation rate was 95%. The questionnaire included sections on respondent socioeconomics, farm characteristics, and attitudes regarding sustainability and entrepreneurial success, defined as achieving a monthly profit of at least 570 USD (17,000 THB) (Office of Agricultural Economics, 2023). The varieties of cultivated crops across different regions are presented in Figure 2. The definition of financial access and market profit levels is illustrated in Table 3.

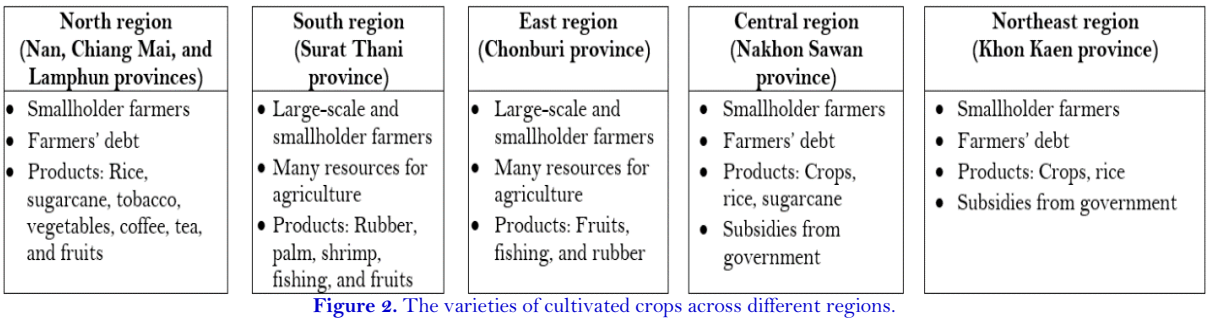

Figure 2. The varieties of cultivated crops across different regions.

This research explored the determinants of success and sustainability among agricultural entrepreneurs, particularly within the context of smallholder farm businesses. Data regarding entrepreneurial success were collected using questionnaires. Success was defined as achieving a monthly profit of at least 570 USD (17,000 THB) (Office of Agricultural Economics, 2023). The study analyzed the influence of human capital, financial capital, and social capital on both success and satisfaction. According to utility theory, a choice modelling approach (Greene, 2007; McFadden, 1974; Meyer & Meyer, 2017) was adopted to characterize the strategic decision-making of agricultural entrepreneurs. This framework posited that individuals derive utility from the characteristics of goods and services, with choice behavior reflecting the maximization of expected utility. Under the assumption of individual rationality and utility maximization, the logit regression model was employed to analyze choices made among a set of alternatives. The model is shown below.

$$y^* = x' + \varepsilon \quad (1)$$

$$Y_{ij} = \beta_0 + \beta_1 X_{1j} + \beta_2 X_{2j} + \cdots + \beta_n X_{nj} + \varepsilon_{ij} \quad (2)$$

The study's analytical framework (Figure 1) posited relationships between independent and dependent variables. A logistic regression model was employed to investigate the determinants of success among agricultural entrepreneurs. Entrepreneurial success was defined dichotomously (1 = successful, 0 = not successful). A structured questionnaire was developed to elicit data on variables relevant to the study's research questions. Data were collected from respondents using a five-point Likert scale (1 = lowest; 5 = highest), with variable details presented in Table 1.

The model employed equations that specified each individual's outcome as a function of all relevant parameters (β). An empirical model was constructed to estimate the determinants of success for farmers engaged in agricultural entrepreneurship. Respondents' success as smallholder farmers was used as a proxy measure of farmer rationality. Individual farmers (i) were observed to make choices within varying sets of alternatives, including socioeconomic factors, farm characteristics, behavioral attributes, and market profits. This data facilitated the calculation and statistical testing of relationships between farmers' decisions and the characteristics of their farms (shown below).

$$Y_{ij} = \beta_0 + \beta_{1j}AGE + \beta_{2j}GENDER + \beta_{3j}EDU + \beta_{4j}INCOME + \beta_{5j}TYPEF + \beta_{6j}OWNER + \beta_{7j}KNOW + \beta_{8j}INFRASTRU + \beta_{9j}TECH + \beta_{10j}FINANCE + \beta_{11j}MKTPROFIT + \beta_{12j}COM + +\beta_{13j}ATTITUDE + \varepsilon_{ij} \quad (3)$$

Note: Age (AGE), gender (GENDER), education levels (EDU), household income (INCOME), types of agriculture (TYPEF), farms' ownership (OWNER), knowledge (KNOW), infrastructure (INFRASTRU), technologies (TECH), financial aspects (FINANCE), market profit (MKTPROFIT), community engagement (COM), and attitudes (ATTITUDE).

3. RESULTS AND DISCUSSION

The purposes of this study investigated the success factors of smallholder agricultural entrepreneurship. Specifically, the study empirically analyzed the relationships among smallholder farming activities, human, social, and financial capital, and their influence on business success. Additionally, geographical, economic, and cultural factors influencing on-farm practices were also taken into consideration. Furthermore, the study examined the correlation between participation in modeled activities and resultant success (Table 2). Finally, the analysis explored the successes achieved by smallholder agricultural entrepreneurs and the challenges they faced in both agricultural practices and entrepreneurship.

3.1. Origins and Background of Farm Systems

Table 2 details the demographic and farm characteristics. The average farm size is under 4 hectares, with multifunctional smallholder farming being prevalent. Respondents are primarily elderly (over 46), and agriculture is their main source of income.

Table 2. Socioeconomic characteristics of agricultural entrepreneurs (Percentage distribution).

Gender	Percentage (%)	Education level	Percentage (%)	Age (Years)	Percentage (%)
Male	39.6	Below elementary school	0.7	18-25	26.8
Female	60.4	Elementary school	11.6	26-35	18.5
		Junior high school	14.2	36-45	11.2
		High School	23.8	46-55	22.4
		Vocational/Technical college	7.3	56-65	18.5
		Graduated	28.1	Above 65	2.6
		Post-graduated	14.3		

3.2. Success and Sustainability of Smallholder Farms' Entrepreneur

Figure 3 demonstrates regional differences in the determinants of Thai smallholder agricultural entrepreneurship. The analysis highlights the relationship between regional success and varying influential factors. The analysis indicates that 46% of respondents achieve entrepreneurial success, while 54% do not. Entrepreneurial failure is predominantly reported in the northeast and north regions, where field crops are majorly cultivated. This failure is attributed to limited value-added product development, excessive loan availability, and inadequate community management. Conversely, success is more prevalent in the south and east regions, characterized by horticulture, particularly economically fruit production. This contributes to community income growth.

Agricultural knowledge levels in different regions, a key success factor, are highest in the southern region. Specifically, 24% of respondents in the south report possessing agricultural knowledge, infrastructure, technology, financial access, community engagement, and attitudes. The results indicate that these limiting factors significantly impede the development of entrepreneurial success. The findings reveal that market profit levels in this region are the lowest among all others, which suggests a significant financial gap between consumers and small-scale agricultural enterprises. The high entrepreneurial failure rate in the northeast region coincides with the lowest levels of access to several resources, including knowledge, technology, infrastructure, and community engagement. Furthermore, the northern region has significantly constrained financial access, underscoring its reliance on financial resources. In the northeast region, significant challenges in accessing resources and attitudes are primarily due to limited financial access. However, these factors do not consistently predict regional entrepreneurial success.

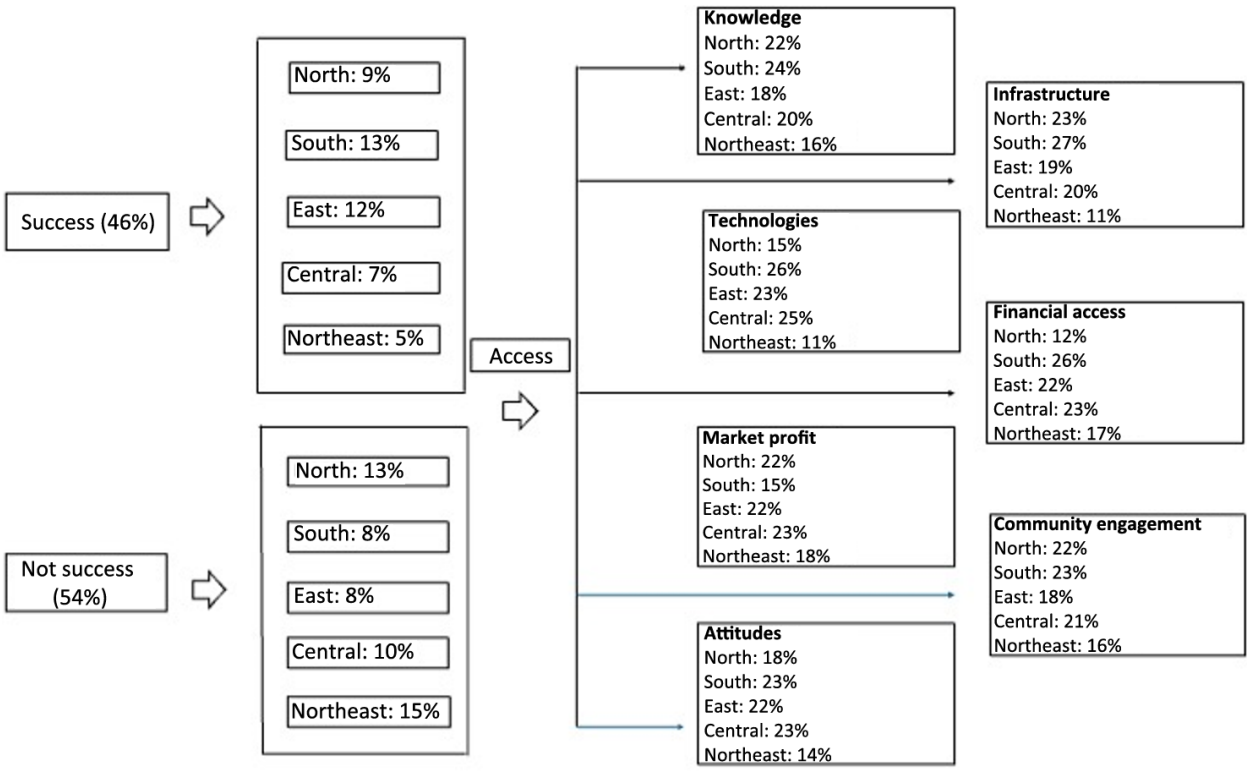

Figure 3. The success of farmers' entrepreneurs and access to factors impact the success of entrepreneurship.

3.3. Challenges to Agriculture Entrepreneurs

The result indicates that financial access negatively impacted entrepreneurial success, posing a significant challenge for future development. Smallholder farmer businesses focus on income challenges attributable to financial limitations, with formal financial and informal alternatives. Conversely, market profit demonstrates a positive impact on smallholder farmer business success. Respondents indicate satisfaction with monthly incomes ranging from 340-500 USD (10,000-15,000 THB), aligning with national statistics reporting that an average Thai farmer had an income of approximately 540 USD (17,000 THB) and expenses of 230 USD (7,000 THB) (Office of Agricultural Economics, 2023). Successful and sustainable business outcomes are driven by market profit exploitation. These aim to foster economic growth within these communities.

Table 3. Definition of financial access and market profit.

Impacted factor	Level to access	Definition
Financial access	1 (Lowest)	Informal financial access
	2 (Low)	Agricultural cooperative
	3 (Medium)	Agricultural cooperative and agricultural banks
	4 (High)	Agricultural cooperative, agricultural banks, and government bank
	5 (Highest)	Agricultural cooperative, agricultural banks, government bank, and commercial bank
Market profit (Baht/Month)	1 (Lowest)	Below 5,000
	2 (Low)	5,000 - 10,000
	3 (Medium)	10,000 - 15,000
	4 (High)	15,000 - 20,000
	5 (Highest)	More than 20,000

This study reveals that attitudes of smallholders influence smallholder farmers' ability to establish new agribusinesses. Farmers generally report average levels of satisfaction with their knowledge, infrastructure, market profit, and community engagement, which are medium. Additionally, satisfaction with technologies, financial access, and attitudes towards agricultural entrepreneurs is low (Table 4). This result encourages participation in farm development and fosters inter-regional promotion, sharing, and cooperation to stimulate economic growth. These knowledge and infrastructural opportunities enhance farm competitiveness, profitability, and sustainability. Furthermore, market profit and community engagement demonstrate a positive impact on smallholder farmer businesses, exhibiting the highest satisfaction levels among successful entrepreneurs.

Table 4. Satisfaction levels of smallholder farmer entrepreneurs (Percentage distribution).

Variable	Lowest (%)	Low (%)	Medium (%)	High (%)	Highest (%)	Avg.±Std.	Interpretation***
Knowledge	23	12	32	18	15	2.90±1.35	Medium
Infrastructure	26	25	24	13	12	2.60±1.35	Medium
Technologies	33	24	14	24	5	2.44±1.38	Low
Financial access*	45	23	14	13	5	2.10±1.48	Low
Market profit**	12	18	40	20	10	2.98±1.13	Medium
Community engagement	20	25	15	13	27	3.02±1.51	Medium
Attitudes	10	25	17	34	14	1.90±1.26	Low

Note: * Financial access and ** market profit are explained in Table 3.
***Interpretation: 1.00-1.80 = Lowest; 1.81-2.60 = Low; 2.61- 3.40 = Medium; 3.41-4.20 = High; 4.21-5.00 = Highest.

Table 5 indicates that agricultural type, infrastructure, market profits, and community engagement show a significantly positive impact on smallholder entrepreneur success. Conversely, financial access demonstrates a negative impact on success. This suggests that economically valuable agricultural practices are associated with the necessary resources for both farm management and business operations. Farmers express the highest level of satisfaction toward community engagement, identifying the factor as an important key solution for smallholder entrepreneurial success. However, other solutions address critical gaps and limitations among farmers, middlemen, and consumers. Agricultural entrepreneurial success necessitates financial access to facilitate innovation and technology adoption, ensuring product diversification and market competitiveness (Kamondetdacha, 2022). External subsidies from government and private sectors provided productive resources to enhance farm business performance.

Table 5. Logit regression results: Factors impacting success of smallholder farmer entrepreneurs.

Variable	Coefficient (Coeff.)	Significance (Sig.)
Age	-0.1571	-0.2094
Gender	-0.0752	-0.813
Education	-0.0024	-0.9828
Income	0.0524	-0.9891
Type of agriculture	0.3144*	-0.0593
Farm ownership	-0.0498	-0.9889
Knowledge	0.1135	-0.978
Infrastructure	0.7040**	-0.0003
Technologies	0.3125	-0.0862
Financial access	-0.4376*	-0.0376
Market profit	0.6248**	-0.0006
Community engagement	0.3279*	-0.0304
Attitudes	0.2346	-0.1259

Note: * Significant at the 5% level. ** Significant at the 1% level.

The success and sustainability of smallholder agricultural entrepreneurship were contingent upon human, social, and financial capital. These resources were influenced by: 1) geographical factors, specifically infrastructure availability, impacted transaction costs for agribusiness activities (post-harvest and logistics); 2) economic status, with low disposable income limiting financial access; 3) farm characteristics, including ownership and infrastructure, serving as business resources; and 4) community mindset, which constrained farm activities.

Smallholder entrepreneurship is an interaction of motivations, opportunities, and conditions, which enhances competitiveness and economics. Human capital (knowledge, experience, technology, and training) influences entrepreneurial attitudes, impacting productivity (Becker, 1964; Shane, 2000; Shepherd & DeTienne, 2005). Attitudes drove productive activities (Davidsson & Honig, 2003; Venter, Urban, Rwigema, & Marks, 2008), including behavior (Ajzen, 2005) and market benefit. The behavior of farm entrepreneurship drove an economic growth (Noruzi, Rahimi, & Westover, 2010; Si, Ahlstrom, Wei, & Cullen, 2019; Toma, Grigore, & Marinescu, 2014; Vidyatmoko & Hastuti, 2017), examined business factors and recognizing success complexity (Vidyatmoko & Hastuti, 2017). Financial status was crucial (Omri, 2020).

Smallholder entrepreneurs exhibited strong social capital (farm activities and community engagement) but limited financial access, impacting economic and community development (Louw et al., 2008; Thompson, 2009; World Bank, 2013). Financial capital (access and profit) was key to success (Asokan & Singh, 2003). Social networks had opportunities for identification and exploitation (Shepherd & DeTienne, 2005). The integration of technology and innovation stimulated community development and improved access to resource networks. Concurrently, market forces were instrumental in sustaining the economic viability of smallholder farms. Success was attributed to a combination of factors, including production, operations, cultivation, and rural development. Productivity, value creation, and the development of dynamic leadership skills were also essential. Furthermore, human skills and social media proved critical in enhancing markets.

4. CONCLUSIONS

Thai smallholder agricultural entrepreneurship is constrained by systemic structural barriers, including deficiencies in infrastructural development, prevailing socio-economic limitations, and restricted access to financial

resources. Entrepreneurial decision-making within this sector is influenced by complex economic, social, and cultural processes. Notably, farmer decision-making is often limited by individual knowledge, physical resource constraints, and cultural norms. These limitations impede the autonomous operation of agricultural businesses and compel farmers to rely on intermediaries. Consequently, the economic growth of smallholder farmers is significantly lower than that of larger-scale farmers who possess greater access to essential production and expansion resources. The persistent research gap surrounds the success in the development of Thai smallholder agriculture. This identifies strategies for enhancing opportunities, fostering entrepreneurial potential, and improving the economic well-being of these farmers.

This study suggests the following implications: Firstly, governments should create an enabling business environment to encourage smallholder farmer participation in agricultural entrepreneurship, addressing financial and market barriers. Second, governments and agencies should provide essential entrepreneurial and marketing skills for success. Third, governments and agencies should provide knowledge and technology resources. Finally, farmers should learn and develop new skills in both production and marketing. These actions support and facilitate economic growth in smallholder farming entrepreneurship.

Funding: This research is supported by research grant from School of Agricultural Resources, Chulalongkorn University.
Institutional Review Board Statement: The Ethical Committee of the Chulalongkorn University, Bangkok has granted approval for this study on 10 September 2018 (Ref. No. COA No. 219/2561).
Transparency: The author states that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The author declares that there are no conflicts of interests regarding the publication of this paper.

REFERENCES

Ajzen, I. (2005). *Attitudes, personality, and behavior* (2nd ed.). Maidenhead, UK: Open University Press.
Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business venturing, 18*(1), 105-123. https://doi.org/10.1016/S0883-9026(01)00068-4
Asokan, S. R., & Singh, G. (2003). Role and constraints of contract farming in agro-processing industry. *Indian Journal of Agricultural Economics, 58*(3), 566-576. https://doi.org/10.22004/ag.econ.297972
Bairwa, S. L., Lakra, K., Kushwaha, S., Meena, L., & Kumar, P. (2014). Agripreneurship development as a tool to upliftment of agriculture. *International Journal of Scientific and Research Publications, 4*(3), 1-4.
Balana, B. B., & Oyeyemi, M. A. (2022). Agricultural credit constraints in smallholder farming in developing countries: Evidence from Nigeria. *World Development Sustainability, 1*, 100012. https://doi.org/10.1016/j.wds.2022.100012
Becker, G. S. (1964). *Human capital*. New York: Columbia University Press.
Brahmbhatt, M., Haddaoui, C., & Page, J. (2017). *Green industrialisation and entrepreneurship in Africa. Contributing paper for the African Economic Outlook 2017*. Paris: African Development Bank and Organisation for Economic Co-operation and Development (OECD).
Cao, G., & Duan, Y. (2014). *Gaining competitive advantage from analytics through the mediation of decision-making effectiveness: An empirical study of UK manufacturing companies*. Paper presented at the Pacific Asia Conference on Information Systems. Proceedings.
Chen, S., Shen, W., Qiu, Z., Liu, R., & Mardani, A. (2023). Who are the green entrepreneurs in China? The relationship between entrepreneurs' characteristics, green entrepreneurship orientation, and corporate financial performance. *Journal of Business Research, 165*, 113960. https://doi.org/10.1016/j.jbusres.2023.113960
Cherukara, J., & Manalel, J. (2011). *Evolution of Entrepreneurship theories through different schools of thought*. Paper presented at the Ninth Biennial Conference on Entrepreneurship at EDI, Ahmedabad.
Chouhan, R. (2015). Enterprise resource planning: Alexis Leon, book review. *Journal of Applied Management-Jidnyasa, 7*(2), 67-69.
Cohen, B., Smith, B., & Mitchell, R. (2008). Toward a sustainable conceptualization of dependent resource-based economies: The example of entrepreneurship in the natural resource sector. *Academy of Management Journal, 51*(5), 971–995.
Cope, J. (2005). Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship Theory and Practice, 29*(4), 373-397. https://doi.org/10.1111/j.1540-6520.2005.00090.x
Cope, J., & Watts, G. (2000). Learning by doing–an exploration of experience, critical incidents and reflection in entrepreneurial learning. *International Journal of Entrepreneurial Behavior & Research, 6*(3), 104-124. https://doi.org/10.1108/13552550010346208
Corbett, A. C. (2005). Experiential learning within the process of opportunity identification and exploitation. *Entrepreneurship Theory and Practice, 29*(4), 473-491. https://doi.org/10.1111/j.1540-6520.2005.00094.x
Cornelissen, J. P., & Werner, M. D. (2014). Putting framing in perspective: A review of framing and frame analysis across the management and organizational literature. *Academy of Management Annals, 8*(1), 181-235. https://doi.org/10.5465/19416520.2014.875669
Dabbous, A., Barakat, K. A., & Kraus, S. (2023). The impact of digitalization on entrepreneurial activity and sustainable competitiveness: A panel data analysis. *Technology in Society, 73*, 102224. https://doi.org/10.1016/j.techsoc.2023.102224
Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing, 18*(3), 301-331. https://doi.org/10.1016/S0883-9026(02)00097-6
Erogul, M. S., & Quagrainie, F. A. (2018). Conceptualising entrepreneurial orientation dimensions and female business performance in developing economies. *Journal for International Business and Entrepreneurship Development, 11*(2), 118-139. https://doi.org/10.1504/JIBED.2018.091213
Fischer-Kreer, D., & Brettel, M. (2022). Accentuate the positive? Sustainable entrepreneurs' framing of positive and negative impacts. *Journal of Cleaner Production, 376*, 134319. https://doi.org/10.1016/j.jclepro.2022.134319
Greene, W. H. (2007). *Econometric analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
Hoang, H., & Antoncic, B. (2003). Network-based research in entrepreneurship: A critical review. *Journal of Business Venturing, 18*(2), 165–187. https://doi.org/10.1016/S0883-9026(02)00081-2

Kamondetdacha, R. (2022). Adoption of mobile applications in agriculture among farmers in Nan, Thailand. *Journal of Digital Communications*, *6*(1), 69–96.
Louw, A., Jordaan, D., Ndanga, L., & Kirsten, J. F. (2008). Alternative marketing options for small-scale farmers in the wake of changing agri-food supply chains in South Africa. *Agrekon*, *47*(3), 287-308. https://doi.org/10.1080/03031853.2008.9523801
McFadden, D. (1974). Conditional logit analysis of qualitative choice behaviour. In P. Zarembka (Ed.), Frontiers in econometrics. In (pp. 105–142). New York: Academic Press
Meyer, N., & Meyer, D. F. (2017). An econometric analysis of entrepreneurial activity, economic growth and employment: The case of the BRICS countries. Master's mini-Dissertation, North-West University).
Mosey, S. (2016). Teaching and research opportunities in technology entrepreneurship. *Technovation*, *57*, 43-44. https://doi.org/10.1016/j.technovation.2016.08.006
Noruzi, M. R., Rahimi, G. R., & Westover, J. H. (2010). An exploration of social entrepreneurship in the entrepreneurship era. *Asian Social Science*, *6*(3), 75–83.
Ntow, T. K., Wongnaa, C. A., Nyadu-Addo, R., Addison, M., Awunyo-Vitor, D., & Abokyi, E. (2023). Effects of entrepreneurial behaviour on market outlets choice: Evidence from rice producers in Ashanti Region, Ghana. *Sustainable Technology and Entrepreneurship*, *2*(2), 100037. https://doi.org/10.1016/j.stae.2023.100037
Office of Agricultural Economics. (2023). *Farmers' income annual report 2023*. Thailand: Office of Agricultural Economics.
Omri, A. (2020). Formal versus informal entrepreneurship in emerging economies: The roles of governance and the financial sector. *Journal of Business Research*, *108*, 277-290. https://doi.org/10.1016/j.jbusres.2019.11.027
Pindado, E., Sánchez, M., Verstegen, J. A. A. M., & Lans, T. (2018). Searching for the entrepreneurs among new entrants in European Agriculture: The role of human and social capital. *Land Use Policy*, *77*, 19-30. https://doi.org/10.1016/j.landusepol.2018.05.014
Puertas, R., Guaita-Martinez, J. M., Carracedo, P., & Ribeiro-Soriano, D. (2022). Analysis of European environmental policies: Improving decision making through eco-efficiency. *Technology in Society*, *70*, 102053. https://doi.org/10.1016/j.techsoc.2022.102053
Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, *11*(4), 448-469. https://doi.org/10.1287/orsc.11.4.448.14602
Shane, S., & Smith, J. L. (2003). Entrepreneurship strategy and the emergence of firms. *Strategic Management Journal*, *24*(3), 235–253.
Shepherd, D. A., & DeTienne, D. R. (2005). Prior knowledge, potential financial reward, and opportunity identification. *Entrepreneurship Theory and Practice*, *29*(1), 91-112. https://doi.org/10.1111/j.1540-6520.2005.00071.x
Si, S., Ahlstrom, D., Wei, J., & Cullen, J. (2019). Business, entrepreneurship and innovation toward poverty reduction. *Entrepreneurship & Regional Development*, *32*(1–2), 1–20. https://doi.org/10.1080/08985626.2019.1640485
Tarus, T., Kemboi, A., Okemwa, D., & Otiso, K. (2016). Determinants of entrepreneurial intention: Selected Kenyan universities service sector perspective. *International Journal of Small Business and Entrepreneurship Research*, *4*(6), 1-52.
Thindisa, L. M. V. (2014). Participation by smallholder farming entrepreneur in agro-processing activities in South Africa. Unpublished Master's Thesis, University of the Witwatersrand, Johannesburg.
Thompson, E. R. (2009). Individual entrepreneurial intent: Construct clarification and development of an internationally reliable metric. *Entrepreneurship Theory and Practice*, *33*(3), 669-694. https://doi.org/10.1111/j.1540-6520.2009.00321.x
Toma, S.-G., Grigore, A.-M., & Marinescu, P. (2014). Economic development and entrepreneurship. *Procedia Economics and Finance*, *8*, 436-443. https://doi.org/10.1016/S2212-5671(14)00111-7
Venter, R., Urban, B., Rwigema, H., & Marks, J. (2008). *Entrepreneurship: Theory on practice* (2nd ed.). Cape Town, South Africa: Oxford University Press Southern Africa.
Vidyatmoko, D., & Hastuti, P. (2017). Identification of the determinants of enterpreneurial success: A multidimensional framework. *STI Policy and Management Journal*, *2*(2), 163-178. https://doi.org/10.14203/STIPM.2017.118
Wongnaa, C. A., Adams, F., Bannor, R. K., Awunyo-Vitor, D., Mahama, I., Osei, B. A., . . . Ackon, A. (2019). Job creation and improved consumer health through commercialisation of tiger nut yoghurt: A willingness to pay analysis. *Journal of Global Entrepreneurship Research*, *9*, 1-22. https://doi.org/10.1186/s40497-018-0139-x
World Bank. (2008). *The World Bank annual report 2008: Agriculture for development*. United States: The World Bank.
World Bank. (2013). *The World Bank annual report 2013*. United States: The World Bank.
Zezza, A., & Tasciotti, L. (2010). Urban agriculture, poverty, and food security: Empirical evidence from a sample of developing countries. *Food Policy*, *35*(4), 265-273. https://doi.org/10.1016/j.foodpol.2010.04.007
Zhao, C., Liu, Z., & Zhang, C. (2023). Real or fictional? Digital entrepreneurial narratives and the acquisition of attentional resources in social entrepreneurship. *Journal of Innovation & Knowledge*, *8*(3), 100387. https://doi.org/10.1016/j.jik.2023.100387