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Entrepreneurial characteristic effect on business performance of millennial farmers

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Abstract. The Indonesian agricultural sector still has considerable potential for growth, but this is not currently being realised due to a lack of adequately trained human resources, particularly among the younger generation. It is anticipated that the younger generation will assume leadership roles within this sector. However, there is a dearth of interest among this demographic in pursuing careers in this field. The issue can be addressed by fostering an entrepreneurial mindset among millennial farmers. Therefore, the purpose of this study was to determine the entrepreneurial characteristic effect

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on millennial farmers' business performance. Data were obtained through in-depth interviews and observations using a questionnaire. Additionally, the sample size was 120 millennial farmers in Central Java within ten selected regencies. Snowball sampling was determined based on data from millennial farmers designated as ambassadors by the Ministry of Agriculture and data analysis used Partial Least Square Structural Equation Modelling (PLS-SEM). The results showed that the business performance of millennial farmers was measured based on four key indicators: turnover, source of capital financing, production capacity, and marketing reach. The findings indicated that entrepreneurial characteristics, as measured by individual features, risk-taking courage, and self-confidence, had a positive and significant effect on business performance. In this context, the business performance of millennial farmers could be enhanced by leveraging their individual characteristics, including a strong commitment, a mature evaluation of risk, and high confidence in their capabilities. Individual characteristics play a pivotal role in business performance. To build their brand in developing businesses, millennial farmers receive capacity-building training

Keywords: farmer regeneration; networking; role model; leadership; risk-taking

INTRODUCTION

In Indonesia, the agricultural sector is reported to have the largest number of workers compared to others with a total of 40.63 million people in 2023 (Central Agency of Statistics, 2023). This shows that the sector is the largest contributor to employment national economy and plays a significant role in the national economy. In 2020–2024, it has been directed to practice advanced, modern, and independent agriculture. As indicated by the agricultural extension and human resource development agency, the government has established a series of pivotal objectives pertaining to agricultural advancement. These include the objective of fostering the emergence of 2.5 million millennial entrepreneurs by the year 2024. Concurrently, the agricultural sector is confronting a series of challenges, including a shortage of young farmers. The proportion of individuals under the age of 35 engaged in agricultural work has declined significantly, from 24.53% in 2021 to 20.02% in 2023. (Central Agency of Statistics, 2023). This decline shows a lack of interest and understanding among the younger generation regarding pursuing a career in this sector. It is therefore vital to implement strategies aimed at regenerating the farming community to ensure the long-term sustainability of the food supply. One potential solution is to cultivate entrepreneurial skills among the younger generation.

The term “entrepreneurship” is defined as the capacity to generate novel ideas and solutions through creative thinking, with the aim of capitalising on opportunities for success. Entrepreneurial characteristics encompass the attributes, dispositions, and actions of an entrepreneur that facilitate the utilisation of creativity, innovation, and the capacity to leverage existing opportunities for enhanced business performance (Andjarwati *et al.*, 2021). The agricultural sector is facing a series of challenges, including the issue of farmer regeneration. The perception that agriculture is not a viable business opportunity has resulted in a significant decline in the number of young people pursuing careers in this field. In contrast, E. Riptanti *et al.* (2024) argue that the future sustainability of food security is contingent

upon the regeneration of farmers. Considering the data from the Central Agency of Statistics (2023), a decline in the number of young people employed in the sector becomes clear. In 2011, the figure stood at 29.18%, declining to 19.18% in 2021. This decline suggests that young people have a low interest in, and unfavourable perceptions of, working in the sector (Zulu *et al.*, 2021).

The Indonesian province of Central Java is endowed with considerable agricultural potential. In 2022, the Central Java Provincial Statistics Agency recorded a total of 2,979,396 individuals aged 15 years and over engaged in primary employment within the agriculture, forestry, and fisheries sectors (Central Java Provincial Statistics Agency, 2023). Notably, one-third of these farmers are millennials. A. Murtagh *et al.* (2023) noted that various initiatives have been implemented to address the challenge of regeneration. These include efforts to engage the interest and awareness of the younger generation in pursuing a career in agriculture with a focus on the role of millennial farmers.

Millennial farmers can adapt to digital information technology to create innovation and improve quality, productivity, and competitiveness in agriculture. It is expected that the advent of the millennial farmer will engender innovation and enhance the quality, productivity, and competitiveness of agriculture. E. Riptanti *et al.* (2024) noted that in the context of innovation, successful farmers should possess robust entrepreneurial characteristics to achieve optimal farm performance. Concurrently, business performance is contingent upon a multitude of datasets for a variety of purposes. According to F. Kitsios and E. Grigoroudis (2020) and S. Chen *et al.* (2020), the success of on-farm farming is contingent upon not only the practices employed on the farm itself, but also the competencies of the actors involved in the agricultural business. These competencies encompass attitudes, knowledge, and skills.

The entrepreneurial characteristics of an individual are manifested in their personality traits, human resources, and business track record. According to A. Titien (2021), these include several aspects, namely

individual attributes, leadership capabilities, the capacity to take calculated risks, self-assurance, and the proclivity for networking. The issue of regeneration in agriculture is a considerable challenge that must be addressed to ensure the future viability of this sector. Apart from its role in food security, agriculture can become a major contributor to the national economy. It is therefore essential to develop a mindset among young farmers that encourages entrepreneurial spirit and the pursuit of a decent standard of living. A plethora of characteristics are associated with successful entrepreneurs, including self-confidence, individual characteristics, the capacity to accept calculated risks, leadership and a dynamic spirit, the ability to build networks, creativity and flexibility, and the spirit of optimism. An effective business management system is contingent upon a robust entrepreneurial mindset. R. Astuti *et al.* (2024) mentioned that millennial farmers need an entrepreneurial spirit which provides benefits in the form of economic independence and mental fortitude in running business. According to T. Chandrayanti *et al.* (2020), entrepreneurial characteristics affect business performance of an entrepreneur.

Based on these problems, the influence of entrepreneurial characteristics on the business performance of millennial farmers in Central Java Province needs to be investigated. The findings are anticipated to inform the formulation of government policies designed to foster an entrepreneurial spirit among millennial farmers. Consequently, the purpose of this study was to as-

certain the impact of entrepreneurial attributes on the business performance of millennial farmers.

MATERIALS AND METHODS

The study employed a quantitative approach to test certain theories by investigating the relationship between variables. The study was conducted between April and August 2023. The location was selected purposively, namely the Central Java Province, considering the province's potential for the agricultural sector and the number of millennial farmers, which constituted 33.7% of the 2.88 million in Central Java. The sample of locations was selected from ten regencies with the highest concentration of millennial farmer representatives, as designated by the Decree of the Ministry of Agriculture. These included Magelang, Sukoharjo, Klaten, Wonosobo, Tegal, Purbalingga, Temanggung, Semarang, Purworejo, and Banyumas.

A combination of purposive and snowball sampling was employed to select the sample of millennial farmers. The inclusion criteria were that the farmers must be aged between 19 and 39 years old and must be in charge of businesses in one or more of the following sectors: food agriculture, horticulture, fisheries, animal husbandry, and plantations, with activities spanning from upstream to downstream. The study employed six latent variables, reflected in 24 indicators, to measure the sample of 120 respondents (Hair *et al.*, 2019). The categories of variables and indicators used are presented in Table 1.

Table 1. Categories of variables and indicators used

Variable	Source	Indicator	Symbol
Individual Characteristic (IC)	P. Nguyen <i>et al.</i> (2023); T. Katz-Gerro <i>et al.</i> (2024)	Cosmopolite	IC1
		Education	IC2
		Experience	IC3
		Creativity	IC4
Leadership (L)	V. Srimulyani <i>et al.</i> (2023); I.N. Persada and S.D. Nabella (2023)	Role model	L1
		Motivator	L2
		Treatment of employees	L3
		Goal-oriented	L4
Risk-Taking Courage (RTC)	L. Mozumdar <i>et al.</i> (2022)	Risks to develop the business	RTC1
		Risks to innovate	RTC2
		Risks to achieve goals	RTC3
		Basis for retreat	RTC4
Self-Confidence (SC)	I. Otache <i>et al.</i> (2021)	Entrepreneurial skills	SC1
		Self-organisation	SC2
		Initiative	SC3
		Optimism	SC4
Networking Capability (NC)	S. Pattanayak <i>et al.</i> (2024); F. Sadeh and M. Kacker (2020)	Expanding of network	NC1
		Networking capabilities	NC2
		Trust preservation	NC3
		Relationship-building skills	NC4
Business Performance (BP)	H. Cuevas-Vargas <i>et al.</i> (2023); M. Latifi <i>et al.</i> (2021)	Sales growth	BP1
		Profit growth	BP2
		Modal growth	BP3
		Market growth	BP4

Source: compiled by the authors of this study based on the findings of researchers cited in Table 1

The data were collected via a questionnaire administered through face-to-face interviews. The millennial farmers who took part in the study were willing to provide their identities. Data has been analysed through the PLS-SEM approach. This technique explored the relationship between various variables in a model (Hair *et al.*, 2019). The questionnaire was tested for validation and reliability before being used for data collection (Sürücü & Maslakçi, 2020). Validity was proven by the Average Variance Extracted (AVE) value and Composite Reliability (CR) on reliability, while instrument testing used 30 respondent data. The study was conducted following the Declaration of Helsinki (2013).

A PLS-SEM analysis was conducted in two stages, namely outer and inner models. The outer model comprised two tests: a validity test and a reliability test. The validity test entailed an examination of the convergent and discriminant validity of the indicators, whereas the reliability test employed Cronbach's Alpha (CA) and Composite Reliability (CR). Inner model analysis was evaluated through two indicators, namely the coefficient of determination (R^2) and predictive relevance (Q^2), while the hypothesis was performed using bootstrap resampling.

RESULTS AND DISCUSSION

Business Performance of Millennial Farmers in Central Java Province. Business performance describes the success of a business operated by an entrepreneur. This can be evaluated using indicators of profit and sales volume (Lytvynenko *et al.*, 2022). In parallel, the evaluation encompasses a synthesis of internal and external factors within an organisational context. The SWOT analysis is subdivided into two distinct categories: external and internal factors. The internal factors within the SWOT analysis comprise strengths and weaknesses, whereas the external factors encompass opportunities and threats. The indicators can be quantified through the measurement of sales growth, capital growth, mar-

keting strategies, and profit improvement. (Cuevas-Vargas *et al.*, 2023). The business performance of millennial farmers is reflected through four key indicators: the level of turnover generated, production capacity, capital in business, and increased market coverage. Based on the amount of turnover per month, these farmers have already achieved a turnover of over 5 million per month, representing 66.33% of the total. Approximately 29.16% of respondents have a high turnover, which is equal to or greater than IDR25 million per month. The production capacity in Central Java Province is heterogeneous due to the diverse range of business types. The production capacity is classified as good and has a positive impact on business turnover, demonstrating a direct proportional relationship between the two variables.

Most of the initial business capital (85%) was sourced from personal funds, while the remainder was obtained through bank loans. H. Yang *et al.* (2021) mentioned that increased capital is directly and positively proportional to the income received. Most marketing outreach activities were directed towards local and national markets, representing 45.83% and 39.17% of the total, respectively. According to M. Latifi (2021), an expansion in growth suggests an enhancement in the operational efficiency of a business.

Analysis of the Entrepreneurial Characteristics Effect on Business Performance. The PLS-SEM analysis method is conducted in two stages: the outer and inner models. The aim of the outer model is to specify the relationship between latent variables and their indicators. The inner model is used to determine the relationship between the latent variables. Prior to the analysis of the data, the study instrument was subjected to validity and reliability tests using data from 30 respondents. The results of the research demonstrate that this construct exhibits an AVE value exceeding 0.5 and a CR value exceeding 0.7. Consequently, the instrument was considered both valid and reliable (Hair, 2019). However, two indicators, namely IC4 and RTC4, were identified as invalid.

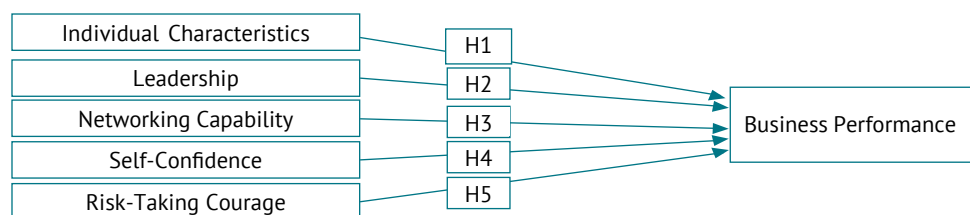


Figure 1. Study Model

Source: adapted by the authors of this study from Wei *et al.* (2023)

Outer Model Evaluation. The evaluation of the outer or measurement model begins with the assessment of convergent validity (CV), discriminant validity (DV), and reliability tests. The convergent validity (CV) test is assessed using two indicators: the Loading Factor value and the Average Variance Extracted (AVE) value, which

is presented in Table 5. Each indicator demonstrates a factor loading value of 0.7 or above and an AVE value of 0.5 or above. These results suggest that the data is valid, and thus the model meets the CV requirements, as all indicators represent latent variables. The outer model evaluation is presented in Table 2.

Table 2. Outer model evaluation

Variable	Indicator	Loading factor	AVE	CA	CR
Business Performance (BP)	BP1	0.812	0.614	0.790	0.864
	BP2	0.799			
	BP3	0.740			
	BP4	0.782			
Individual Characteristic (IC)	IC1	0.836	0.662	0.742	0.854
	IC2	0.869			
	IC3	0.731			
Leadership (L)	L1	0.708	0.584	0.762	0.849
	L2	0.748			
	L3	0.806			
	L4	0.792			
Networking Capability (NC)	NC1	0.785	0.591	0.773	0.852
	NC2	0.824			
	NC3	0.730			
	NC4	0.732			
Risk-Taking Courage (RTC)	RTC1	0.859	0.696	0.785	0.873
	RTC2	0.861			
	RTC3	0.780			
Self-Confidence (SC)	SC1	0.712	0.552	0.731	0.831
	SC2	0.753			
	SC3	0.792			
	SC4	0.711			

Source: compiled by the authors of this study based on the findings of researchers cited in Table 1

The results of the reliability test demonstrate that all constructs or variables employed have CA and CR values exceeding 0.6 and 0.7, respectively. Therefore, the variables are reliable, providing consistent and stable answers (Zheng *et al.*, 2023). In this context, the study variable is employed in the subsequent test, namely structural model evaluation. The results of the DV test are based on the Fornell-Larcker value and cross-loading. The Fornell-Larcker value

demonstrates that the square root of the AVE is greater than the correlation value of the latent variables, thereby confirming the validity of the results. Furthermore, the cross-loading value of each indicator on related constructs is higher than that on unrelated constructs, indicating a stronger correlation between the indicator and the construct in question. Table 3 presents the Fornell-Larcker value results for the outer model evaluation.

Table 3. Fornell-Larcker value in outer model evaluation

	BP	IC	L	NC	RTC	SC
BP	0.784					
IC	0.430	0.814				
L	0.342	0.498	0.764			
NC	0.379	0.325	0.437	0.769		
RTC	0.448	0.385	0.563	0.445	0.834	
SC	0.487	0.388	0.561	0.521	0.617	0.743

Source: Central Java Provincial Statistics Agency (2023)

Inner Model Evaluation. The evaluation of the inner model is based on the R^2 and Q^2 values. The R^2 value indicates a result of 0.336, which is categorised as moderate. This value demonstrates that 33.6% of business performance can be explained by entrepreneurial characteristics variables, including individual characteristics, leadership, networking capability, risk-taking courage, and self-confidence. The Q^2 value of 0.186 indicates predictive relevance, and the

path model is deemed to be effective for predicting the observed values.

Hypothesis Test. Hypothesis testing employs the bootstrapping method, whereby the theoretical correlation between exogenous and endogenous variables is evaluated through path analysis (Anizar *et al.*, 2021). This study employed a 95% confidence level, or a value of <0.05 , and the hypothesis was considered significant upon meeting the requisite

criteria at the 5% significance level, namely a p-value <0.05 and a t-statistic >1.96. The relationship between exogenous and endogenous variables was

organised into a structural model: $BP = \alpha + \beta_1 IC + \beta_2 L + \beta_3 RTC + \beta_4 SC + \beta_5 NC + e$. The hypothesis test results are presented in Table 4.

Table 4. T-statistic values and p-values on hypothesis testing

Hypothesis	Correlation	Path Coefficient	p-values
H1	IC → BP	0.265	0.003***
H2	L → BP	-0.090	0.362 ^{ns}
H3	NC → BP	0.114	0.217 ^{ns}
H4	RTC → BP	0.184	0.035**
H5	SC → BP	0.262	0.009***

Notes: ns – not significant; *** – significant at $\alpha \leq 1\%$; ** – significant at $\alpha \leq 5\%$

Source: Primary Data Analysis (2024)

H1: It is suspected that individual characteristics affect millennial farmers' business performance. Based on Table 4, hypothesis **H1** is **accepted**, and this is in line with S. Nabilah *et al.* (2022), where individual characteristics significantly affect business performance. The cognitive abilities of millennial farmers are characterised by a strong capacity for study and analysis of business operations. According to S. Nabilah *et al.* (2022), individual characteristics, such as a strong commitment, exemplary conduct, and a foundation of education and knowledge, serve as a form of trust capital, facilitating enhanced business performance. This is influenced by an indicator of individual characteristics, namely the dimensions of age, education level, and experience, which serve as sources of strength to encourage business actors to develop businesses. The majority of millennial farmers have completed secondary education and graduated from university, which increases their ability to understand information and marketing trends.

The process of developing character among millennial farmers involves the sharing and training of activities that are appropriate to the fields in question. Some of these farmers possess the creativity to produce innovative products, which is reflected in the product characteristics or marketing methods employed. According to V. Graskemper *et al.* (2020), the implementation of creative strategies at the level of the millennial farmer can result in the development of more diverse business strategies. The innovative products produced by millennial farmers include processed gethuk brownies derived from cassava, dried crystal guava bakpia, probiotic coffee, and ornamental plants used for souvenir packaging. The introduction of these innovative products can enhance marketing, which can lead to an increase in sales turnover.

H2: It is suspected that leadership affects millennial farmers' business performance. Hypothesis **H2** is **rejected** based on data from Table 4 and this result is in line with H. Mwakajila and R. Nyello (2021), where leadership style does not significantly affect business performance. This finding is also consistent with the results of the study conducted by M. Jony *et al.* (2019),

which indicated that there is no significant correlation between leadership style and performance. However, some studies contradict these findings, namely M. Gofur *et al.* (2021), where the development of business performance is positively influenced by leadership. There is considerable diversity in leadership styles, with millennial farmers serving as role models to inspire, motivate, and listen to employees. As K. Folarin (2021) has observed, the leadership of the millennial generation represents a significant challenge due to the distinct approaches they bring to the table.

H3: It is suspected that networking capability affects millennial farmers' business performance. Hypothesis **H3** is **rejected** based on the data presented in Table 4, where networking capability does not affect millennial farmers' business performance in Central Java Province. This result is in line with R. Kurniawan *et al.* (2021), where networking capability has no direct effect on business process capabilities. According to R. Rustianah *et al.* (2023), networking capability affects business performance. E. Riptanti *et al.* (2022) highlighted the significance of networking capability in forming partnerships with other businesspeople. This capability is highly diverse, encompassing a range of aspects, from the scope of the network to the main source of capital and the patterns formed within it.

Despite their commitment to building business networks, millennial farmers still face considerable challenges in realising their commitments. This is conditioned by a series of factors, including limited access provided by partners and binding regulations from business partners. Furthermore, most farmers market their products in a limited scope without adequate networking capability. According to E. Riptanti *et al.* (2022), several networks affiliated with the production input supply subsystem include local farmers and breeders, companies that produce seeds, companies supplying raw materials from outside the region, as well as farmer groups and joint ventures.

A further innovation in the study was the incorporation of the expanding network indicator within the capability variable, which proved unable to elucidate

the impact on business performance. Some millennial farmers encounter difficulties in establishing relationships with partners due to disparate priorities. A case in point is the relationship between tobacco farmers and cigarette companies. Millennial farmers with limited marketing coverage have not maximised the presence of technology to expand business network. Some only use WhatsApp for two-way communication and have not expanded to other social media to develop networking capabilities.

H4: It is suspected that risk-taking courage affects millennial farmers' business performance. Based on Table 4, **H4** was **accepted**. M. Suder (2022) supported the results where risk-taking had a positive and significant effect on business performance. The willingness and ability to take risks is a significant aspect of entrepreneurial orientation. Entrepreneurs who are reluctant to take risks tend to be less inclined to initiate new ventures. However, it is essential for them to be able to navigate risk and uncertainty effectively. Nevertheless, excessive risk-taking can also have adverse effects on business performance. Some entrepreneurs may be inclined to avoid risks and favour strategies that have a proven track record of generating expected profits.

The confidence that millennial farmers possess enables them to take risks to develop their businesses. This confidence is based on careful evaluation. According to L. Mozumdar *et al.* (2022), some risks should be faced to achieve success. It is often observed that high-risk-taking leads to increased returns, and thus this variable is frequently associated with business success. The results of in-depth interviews with millennial farmers indicate that the majority have experienced repeated business failures. These experiences are viewed as opportunities for learning and avoiding similar mistakes or risks. Millennial farmers demonstrate a willingness to embrace new business ventures, as evidenced by their production of fertilizer under the RASSELabmix label for horticultural crops. This fertilizer has been successfully marketed in Central Java and the Special Region of Yogyakarta (DIY).

H5: It is suspected that self-confidence affects millennial farmers' business performance. Hypothesis **H5** is **accepted** based on the data presented in Table 4, where self-confidence significantly affects business performance. According to E. Riptanti *et al.* (2024), self-confidence has a positive effect on business success and serves as a driving factor for entrepreneurs in innovating. The confidence of millennial farmers is reflected in the success of the businesses they run. Additionally, some demonstrate initiative and an optimistic outlook regarding business progress. According to

R. Ryan *et al.* (2021), individuals who demonstrate high capability tend to exhibit motivation in terms of effort, perseverance, and behaviour, in comparison to those who evince pessimism. Millennial farmers demonstrate a high level of confidence in their ability to effectively manage time, resources, and teams, thereby maximizing business potential. Initiatives undertaken by grape farmers in Magelang, who are members of the "Gemblung farmer" community, involve the development of new grape varieties. This is achieved using a home-made laboratory for conducting crossbreeding trials involving a range of varieties.

CONCLUSIONS

In conclusion, the business performance of millennial farmers was reflected in four key indicators: turnover, production capacity, capital in business, and increased market coverage. The variables of individual characteristics, risk-taking courage, and self-confidence were found to have a positive effect on business performance, while leadership and networking capability did not. Therefore, the indicators of individual characteristics, risk-taking courage and self-confidence should be considered as potential avenues for improving business performance.

The business performance of millennial farmers was found to be influenced by a range of individual characteristics, including self-confidence and risk-taking courage. The effect of individual characteristics on business performance was found to be explained by indicators of cosmopolitanism, education, and experience. Furthermore, entrepreneurial ability, self-management, initiative, and optimism were identified as factors influencing the effect of self-confidence on business performance. The courage to take risks, as reflected in the indicators of risk to business development, innovation and achievement, also explained the effect of the variable on performance. In this context, government programmes should pay attention to business performance based on the effect of the three variables. Millennial farmers felt confident in their abilities and skills by managing time and resources to improve business potential. Additionally, business performance in the good category showed that sustainability was efficiently maintained and developed.

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CONFLICT OF INTEREST

The authors of this study declare no conflict of interest.

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Вплив підприємницьких характеристик на ефективність бізнесу фермерів-міленіалів

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Анотація. Сільськогосподарський сектор Індонезії все ще має потенціал, але він не збалансований з відповідними людськими ресурсами, особливо наступним поколінням. Очікується, що молоде покоління стане наступником, але насправді воно має низький інтерес до цього сектору. Подолання проблеми можливе шляхом зміни мислення фермерів-міленіалів через розвиток у них підприємницьких якостей. Тому метою цього дослідження було визначити вплив підприємницьких характеристик на ефективність бізнесу фермерів-міленіалів. Дані були отримані шляхом проведення глибоких інтерв'ю та спостережень за допомогою анкетування. Крім того, розмір вибірки склав 120 фермерів-міленіалів у Центральній Яві в десяти обраних регіонах. Вибірка за методом снігової кулі була визначена на основі даних від фермерів-міленіалів, призначених послами Міністерством сільського господарства, а для аналізу даних використовувалося моделювання структурних рівнянь методом найменших квадратів (PLS-SEM). Результати показали, що ефективність бізнесу фермерів-міленіалів вимірюється на основі чотирьох показників, а саме: оборот, джерело фінансування капіталу, виробничі потужності та охоплення ринку збуту. Підприємницькі характеристики через змінні індивідуальних особливостей, сміливість у прийнятті ризиків та впевненість у собі мали позитивний і значний вплив на ефективність бізнесу. У цьому контексті ефективність бізнесу може бути покращена за допомогою індивідуальних характеристик фермерів-міленіалів, таких як сильна прихильність, зріла оцінка ризику та висока впевненість у своїх можливостях. Індивідуальні характеристики відіграють домінуючу роль у результативності бізнесу. Фермери-міленіали проходять тренінги з розбудови потенціалу для створення брендингу в бізнесі, що розвивається

Ключові слова: відродження фермерства; мережування; рольова модель; лідерство; прийняття ризиків
