FINANCIAL LITERACY, RISK ASSESSMENT AND MARKETING OPPORTUNITIES IN THE ADOPTION OF NEW AGRICULTURAL PRODUCTS

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ABSTRACT

This paper investigates the relationship between financial literacy, financial risk perception, and marketing opportunities during adoption of new agricultural products. Based on a sample of 307 agricultural producers from Serbia, the findings highlight the central role of financial literacy in shaping both market orientation and risk awareness. Agricultural producers with stronger financial literacy were more likely to recognize the importance of marketing for new product success, while also demonstrating heightened sensitivity to financial risks. Importantly, financial literacy did not diminish perceived risks but sharpened agricultural producers' ability to critically evaluate uncertainties and investment decisions. At the same time, risk-aware producers tended to view marketing not as an additional burden but as a strategic mechanism to mitigate or balance risks. Overall, the results underscore how financial literacy and risk perception jointly foster opportunity-driven behavior in the placement of new agricultural products.

Introduction

Financial literacy encompasses understanding basic financial concepts, managing resources effectively, and applying skills such as risk management, savings, and opportunity recognition (Alshebami & Al Marri, 2022; Becić et al., 2025; Twumasi et al., 2022). It is particularly important in rural economies, where resource constraints are

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common. Financial literacy is oriented to equipping individuals with the knowledge and skills to make informed financial decisions (Li & Zhang, 2025). Agricultural producers with higher financial literacy are better able to plan household finances, assess risks, and make sound investments, thereby strengthening entrepreneurial capacity (Struckell et al., 2022). Moreover, financial literacy facilitates access to formal credit channels, expands financing opportunities, and reduces constraints that hinder agricultural entrepreneurship (Hasan et al., 2024). In this way, it is both an individual capability and a driver of sustainable agricultural development (Hadjielias, Christofi, & Tarba, 2021), especially for agricultural producers in Serbia which need finances and investments for modernization of equipment and technology (Aničić et al., 2025).

For agricultural producers, financial literacy enables effective farm financial management, informed borrowing and investment decisions, and navigation of credit markets (Fahlevi et al., 2025). Agricultural producers often face challenges such as limited education, rural isolation, and resource constraints, which can reduce financial knowledge (Klapper & Lusardi, 2020). By improving financial literacy, agricultural producers can strengthen planning, budgeting, and resource allocation, thereby enhancing efficiency, reducing financial risks, and increasing access to external support such as loans or subsidies (Nikolić et al., 2025). Ultimately, higher financial literacy improves household well-being and entrepreneurial capacity, making it a cornerstone of sustainable agricultural development (Gottlieb & Hansson, 2024).

Agricultural producers face diverse risks such as production risks (droughts, excessive rainfall), market risks (price volatility), and institutional risks (policy changes), which often compound and destabilize farm operations (Komarek, De Pinto, & Smith, 2020). In rural areas, limited economic resources and insufficient human capital skills represent significant weaknesses that hinder the future development of agricultural products and tourism activities (Dejanović, Lukić Nikolić, & Ljubojević, 2024). Financial risks are particularly important, as adverse events in production or markets can quickly lead to loan repayment difficulties, reduced credit access, and financial instability. Financial risk in agriculture refers to uncertainty in meeting financial obligations due to fluctuating interest rates, lenders' willingness to provide capital, cash flow challenges, and changes in collateral value (Wolf & Karszes, 2023). Managing financial risk is therefore essential for sustaining operations, investing in improvements, and ensuring long-term resilience. Strengthening financial literacy and access to formal credit channels provides agricultural producers with the tools to mitigate these risks, stabilize income, and navigate the uncertainties inherent in agriculture (Komarek, De Pinto, & Smith, 2020).

The purpose of this paper is to investigate the extent to which financial literacy shapes agricultural producers' capacity to evaluate financial risks and recognize marketing opportunities when introducing new agricultural products. Financial literacy evaluation amongst agricultural producers is scarce, especially in emerging economies (Maji & Laha, 2023). By examining the intersection of financial knowledge, risk management, and market positioning, the research highlights how financial literacy contributes

to improved decision-making, resource allocation, and entrepreneurial success in agriculture. Strengthening financial literacy is expected to enhance agricultural producers' financial resilience, reduce vulnerability to market and credit uncertainties, and increase their competitiveness in modern agricultural markets. Finally, the paper seeks to generate insights that support sustainable rural development by demonstrating the critical role of financial literacy in fostering innovation and long-term viability in agricultural enterprises.

Theoretical framework and hypotheses development

Agricultural producers with higher levels of financial literacy are more likely to recognize the strategic importance of marketing in ensuring the success of new agricultural products. Marketing, as a highly dynamic discipline, bridges businesses and consumers by creating, communicating, and delivering value in ways that foster and sustain organizational success (Kaur et al., 2022). Its evolution has been shaped by technological progress, economic fluctuations, and societal change (Cui et al., 2025). This progression is evident across the industrial revolutions: *Marketing 1.0* emphasized product quality and functional benefits through mass media; *Marketing 2.0* shifted toward customer-centric strategies with research and internet-based communication; *Marketing 3.0* recognized consumers as multidimensional beings with values and emotions, integrating ethical and social considerations; and *Marketing 4.0* leverages big data, artificial intelligence, and machine learning to personalize offerings and enhance engagement (Kaur et al., 2022). The development of innovative technologies and tools has enabled significant changes in the way individuals operate and function, driving the digitalization of processes and services across all industries and sectors (Labus & Lukić Nikolić, 2024; Životić et al., 2025; Lukić Nikolić, 2024). In agriculture, the expansion of electronic commerce has accelerated the online trade of products, intensified competition and heightened the need for differentiation (Guo et al., 2022; Uzelac, Dukić Mijatović, & Lukinović, 2022). The further rise of the internet transformed marketing into a data-driven practice, enabling organizations to gather timely insights and adapt strategies, while successful leaders and managers realized that they must integrate digital approaches in their organizations in order to remain competitive (Dobričanin & Aleksić, 2025; Dash, Kiefer & Paul, 2021). Moreover, the limited storage stability of agricultural goods presents both challenges and opportunities: unsold harvests lead to economic loss, grain depletion, and food waste, undermining sustainability goals (Li, Guo, & Huang, 2023). Effective marketing strategies are therefore essential to improve distribution efficiency, enhance demand forecasting, and foster consumer engagement aligned with sustainable behavior (Zia & Alzahrani, 2022).

Financial literacy equips producers with the ability to evaluate costs, returns, and profitability, which in turn enhances their appreciation of marketing as a tool for product differentiation and competitiveness. Prior studies emphasize that financially literate entrepreneurs are more inclined to invest in marketing activities because they understand their impact on revenue generation and long-term sustainability (Struckell et al., 2022;

Twumasi et al., 2022). Evidence from agrifood systems further shows that financial literacy improves agricultural producers' capacity to adopt marketing and distribution strategies that increase product success (FAO Investment Centre, 2025). Similarly, research on rural entrepreneurship highlights that financial knowledge strengthens opportunity recognition and resource allocation, making agricultural producers more likely to agree that marketing enhances the chances of success for new products (Gottlieb & Hansson, 2024; Hasan et al., 2024). This leads to the first hypothesis proposed in this paper:

Hypothesis 1: *Financial literacy of agricultural producers is positively associated with perceptions of marketing effectiveness in new product success.*

Financial literacy enhances agricultural producers' ability to evaluate investment options, anticipate cash flow challenges, and identify appropriate financing mechanisms, thereby reducing their perception of risk. Prior research shows that financially literate individuals are more confident in their capacity to manage uncertainty, as they possess the skills to budget effectively, diversify income sources, and access formal credit channels (Hasan et al., 2024; Klapper & Lusardi, 2020). In agricultural contexts, this knowledge enables agricultural producers to mitigate risks associated with fluctuating prices, high input costs, and uncertain demand by making informed borrowing and investment decisions (Wolf & Karszes, 2023). Consequently, financially literate agricultural producers are less likely to perceive new product introduction as highly risky, since they can rely on their financial knowledge to manage potential challenges and safeguard farm stability (Gottlieb & Hansson, 2024; Struckell et al., 2022). That leads to the second hypothesis:

Hypothesis 2: *Agricultural producers with higher levels of financial literacy will report stronger perceptions of financial risks when introducing new products.*

Elevated risk perception may lead to conservative decision-making, where agricultural producers prioritize avoiding potential losses over pursuing new opportunities (Wan et al., 2023). Research on entrepreneurial behavior suggests that when financial risks are perceived as dominant, individuals tend to limit innovation and reduce investment in marketing activities, thereby constraining opportunity recognition (Komarek, De Pinto, & Smith, 2020). In agriculture, high perceived risks, such as uncertain demand, volatile prices, or high input costs, can overshadow potential benefits of marketing strategies like branding, promotion, or collaboration with retailers (Wolf & Karszes, 2023). Consequently, agricultural producers who perceive greater financial risks may be less likely to view marketing as a viable pathway for success, since their focus shifts toward risk avoidance rather than opportunity exploitation (Gottlieb & Hansson, 2024; Hasan et al., 2024). Following the case of Chinese smallholders, agricultural producers with high-risk perception prefer immediate sales at low prices during harvest rather than storing grain for later, even though delayed sales could yield higher returns. The theoretical framework of expected utility explains this: when risk perception is high, the uncertain (but potentially more profitable) future outcome is valued less than the certain but lower immediate return (Tian & Zhao, 2024). That leads to the third hypothesis:

Hypothesis 3: *Agricultural producers with higher perceptions of financial risk will report lower perceptions of marketing opportunities in the placement of new products.*

Materials and methods

Research design. A quantitative research design was employed to examine agricultural producers' perceptions of financial literacy, financial risks, and marketing opportunities in the placement of new agricultural products. Data were collected via a structured online questionnaire distributed during March 2026. The questionnaire was disseminated using a random sampling approach and made available online, allowing broad participation from agricultural producers in Serbia. This method ensured accessibility, cost-effectiveness, and time efficiency, while also facilitating the inclusion of diverse respondents actively engaged in agricultural production.

Questionnaire. The questionnaire was structured into two main sections. The first section collected socio-demographic and farm-related data: gender, age, education, farming experience, farm size, motives for introducing new agricultural products, and dominant marketing channels used. The second section of the questionnaire assessed agricultural producers' attitudes across three domains using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree): Financial Literacy (understanding financial concepts, calculating profitability, knowledge of banking products, record-keeping, use of digital tools, monitoring marketing costs), Financial Risks (perceived risks of new product introduction, lack of funds, marketing costs, insufficient financial knowledge, uncertain demand, high initial costs), and Marketing Opportunities (role of marketing, branding, social media, digital tools, and collaboration with restaurants/shops). This structure allows for both descriptive profiling of agricultural producers and analytical measurement of their financial literacy, risk perception, and marketing orientation. Pilot research encompassing 30 respondents showed that proposed scales manifest high reliability and validity with Cronbach's Alpha coefficient higher than 0.80.

Sample. The sample consisted of agricultural producers selected through a random sampling approach, who voluntarily completed the questionnaire during March 2026. The questionnaire was distributed and administered online, ensuring accessibility and broad participation among individuals actively engaged in agricultural production. In total, 307 agricultural producers responded, providing a reliable dataset for examining the relationship between financial literacy, financial risks, and marketing opportunities in the placement of new agricultural products.

Data Analysis. Data were processed using the Statistical Package for the Social Sciences (SPSS), version 21.0. To examine the proposed hypotheses, a combination of descriptive and inferential statistical techniques was employed. First, descriptive statistics were used to summarize socio-demographic characteristics and provide an overview of agricultural producers' responses across the constructs of financial literacy, financial risk perception, and marketing opportunities. Reliability analysis (Cronbach's Alpha) was conducted to ensure internal consistency of the Likert-scale items

measuring each construct, as shown in Table 1. Cronbach's alpha values demonstrated high internal consistency for all scales, with coefficients well above the recommended threshold of 0.70 (DeVellis, 2003).

Table 1. Cronbach's Alpha coefficients

Scale	N	Cronbach's Alpha
Financial Literacy (FL)	6	0.899
Financial Risks (FR)	6	0.919
Marketing Opportunities (MO)	5	0.902

Further data analysis was conducted to examine the relationships among financial literacy, financial risk perception, and marketing opportunities. The analysis proceeded in two stages: correlation analysis and regression analysis. First, a Pearson correlation matrix was computed to assess the strength and direction of associations among the constructs. Next, a series of linear regression analyses were performed to test the hypotheses.

Research results

Table 2 presents the basic information about the respondents. The gender distribution is relatively balanced, with a slight predominance of male participants (53.42%). Age composition indicates that the majority of respondents fall within the younger and middle-aged categories, particularly between 21 and 40 years (52.77%), which suggests an active and potentially adaptable agricultural producers. Over two-thirds of respondents have completed college or university (68.08%). Respondents are evenly distributed across experience levels regarding agriculture, with approximately one-third in each category (less than 5 years, from 5 to 10 years, more than 10 years). Farm size is predominantly medium (47.88%), while small and large farms are less represented. Introduction of new agricultural products was driven mainly by personal initiative (27.36%), followed by subsidies (24.76%), diversification motives (24.76%), and demand for that product in the market (23.13%). Marketing channels are diverse, with social media/internet (29.32%) and direct sales (24.43%) being most frequently utilized, indicating a usage of modern and customer-oriented distribution strategies.

Table 2. Key information about respondents

	Answers	N	%
Gender	Male	164	53.42
	Female	143	46.58
Age	Up to 20	48	15.64
	From 21 to 30	85	27.69
	From 31 to 40	77	25.08
	From 41 to 50	60	19.54
	Above 50	37	12.05
Education	Primary School	19	6.19
	High School	79	25.73
	College	94	30.62
	University	115	37.46

	Answers	N	%
How long have you been engaged in agriculture?	Less than 5 years	109	35.50
	From 5 to 10 years	105	34.20
	Above 10 years	93	30.29
Farm size	Small (up to 5 ha)	87	28.34
	Medium (5–20 ha)	147	47.88
	Large (over 20 ha)	73	23.78
What was the main motive for new agricultural product?	Demand for that product in the market	71	23.13
	Subsidies / incentives	76	24.76
	Diversification of production	76	24.76
	Personal initiative	84	27.36
Which channels do you use for marketing/distributing new products?	Market (farmers' market)	54	17.59
	Agricultural cooperatives	42	13.68
	Social media / internet	90	29.32
	Direct sales to customers	75	24.43
	Collaboration with shops/restaurants	46	14.98

Source: Authors' calculations

Table 3 presents the responses to the statements in the measurement scale "Financial Literacy". The mean values (M) for all statements range between 3.40 and 3.60, indicating moderate agreement. The highest mean scores were observed for statements related to record-keeping of the farm's income and expenses (M = 3.60) and monitoring marketing costs (M = 3.60), suggesting stronger competencies in practical financial management. The proportion of respondents selecting marks 4 and 5 (indicating agreement or strong agreement) is substantial across all statements, ranging from approximately 46% to 57%. This distribution highlights that nearly half of the sample demonstrates higher levels of financial literacy. The share of mark 3 responses ranges between 25% and 31% indicating that many respondents perceive their financial literacy as adequate, but not advanced.

Table 3. Results regarding the scale "Financial Literacy"

Statements	Answer	N	%	M	SD
I understand basic financial concepts such as income, expenses, and profit.	**1**	22	7.17	3.40	1.242
	2	53	17.26		
	3	91	29.64		
	4	61	19.87		
	5	80	26.06		
I know how to calculate the profitability of production on my farm.	**1**	10	3.26	3.49	1.139
	2	54	17.59		
	3	94	30.62		
	4	73	23.78		
	5	76	24.76		

Statements	Answer	N	%	M	SD
I am aware of which banking products (loans, leasing, subsidies) can be used to finance agriculture.	**1**	13	4.23	3.55	1.137
	2	44	14.33		
	3	87	28.34		
	4	86	28.01		
	5	77	25.08		
I regularly keep records of the farm's income and expenses.	**1**	12	3.91	3.60	1.149
	2	43	14.01		
	3	88	28.66		
	4	78	25.41		
	5	86	28.01		
I use digital tools (Excel, applications) to track finances.	**1**	18	5.86	3.51	1.173
	2	45	14.66		
	3	79	25.73		
	4	92	29.97		
	5	73	23.78		
I monitor the costs of marketing and promoting my agricultural products.	**1**	19	6.19	3.60	1.176
	2	35	11.40		
	3	78	25.41		
	4	92	29.97		
	5	83	27.04		

Source: Authors' calculations

Table 4 provides insights into respondents' perceptions of financial risks associated with placement of new agricultural products. The mean values (M) across all statements range between 3.41 and 3.66 indicating moderate agreement. The highest mean scores were recorded for statements concerning uncertain market demand (M = 3.66) and high initial costs (M = 3.62), underscoring that external market conditions and upfront investments are perceived as the most significant sources of risk. The distribution of marks 4 and 5 (agreement and strong agreement) is substantial, ranging from 49% to 60% across statements, with the highest levels observed for uncertain market demand and high initial costs. Responses marked with a score of 3 range from 23% to 34%, representing a significant portion of agricultural producers who hold moderate views on financial risks.

Table 4. Results regarding the scale "Financial Risks"

Statements	Answer	N	%	M	SD
Introducing new agricultural products carries significant financial risk.	**1**	27	8.79	3.41	1.261
	2	51	16.61		
	3	71	23.13		
	4	84	27.36		
	5	74	24.10		
Lack of financial resources is the main obstacle to placing new agricultural products on the market.	**1**	14	4.56	3.52	1.127
	2	39	12.70		
	3	103	33.55		
	4	76	24.76		
	5	75	24.43		

Statements	Answer	N	%	M	SD
Marketing and promotion costs significantly increase financial risk for small agricultural producers.	**1**	14	4.56	3.56	1.148
	2	43	14.01		
	3	85	27.69		
	4	86	28.01		
	5	79	25.73		
Lack of financial knowledge makes it difficult to make decisions about placing new agricultural products.	**1**	13	4.23	3.60	1.111
	2	39	12.70		
	3	79	25.73		
	4	102	33.22		
	5	74	24.10		
Uncertain market demand represents a serious financial risk for new agricultural products.	**1**	17	5.54	3.66	1.164
	2	34	11.07		
	3	73	23.78		
	4	95	30.94		
	5	88	28.66		
High initial costs for seeds, seedlings, equipment, and labor increase the financial risk that investment in a new product will not pay off if buyers are not found.	**1**	22	7.17	3.62	1.216
	2	35	11.40		
	3	71	23.13		
	4	90	29.32		
	5	89	28.99		

Source: Authors' calculations

Table 5 presents respondents' perceptions of marketing opportunities during placement of new agricultural products. The mean values (M) range from 3.40 to 3.73, indicating moderate agreement. The highest mean score was recorded for collaboration with local restaurants and shops (M = 3.73), suggesting that respondents view partnerships with local businesses as particularly effective for product placement. Social media (M = 3.64) and digital tools (M = 3.59) also scored highly, reflecting recognition of modern channels as valuable opportunities. Marks 4 and 5 (agreement and strong agreement) are substantial across all statements, ranging from 51% to 64%. This indicates that most respondents acknowledge the importance of marketing strategies, especially those involving direct partnerships and digital promotion. Scores of 3 account for 21 to 29% of responses, highlighting a notable group of agricultural producers who express moderate attitudes toward marketing opportunities.

Table 5. Results regarding the scale "Marketing Opportunities"

Statements	Answer	N	%	M	SD
Marketing significantly increases the chances of success for new agricultural products.	**1**	28	9.12	3.40	1.262
	2	51	16.61		
	3	70	22.80		
	4	86	28.01		
	5	72	23.45		
Branding (packaging, labeling, name) contributes to better sales of new agricultural products.	**1**	7	2.28	3.55	1.091
	2	50	16.29		
	3	90	29.32		
	4	87	28.34		
	5	73	23.78		
Social media represents an effective channel for promoting agricultural products.	**1**	17	5.54	3.64	1.153
	2	31	10.10		
	3	85	27.69		
	4	88	28.66		
	5	86	28.01		
Digital tools (e-commerce platforms, applications) facilitate the placement of new agricultural products.	**1**	22	7.17	3.59	1.197
	2	34	11.07		
	3	74	24.10		
	4	95	30.94		
	5	82	26.71		
Collaboration with local restaurants and shops creates new opportunities for placing new agricultural products.	**1**	23	7.49	3.73	1.203
	2	24	7.82		
	3	65	21.17		
	4	97	31.60		
	5	98	31.92		

Source: Authors' calculations

The correlation matrix (Table 6) indicated strong, positive, and statistically significant associations among all three constructs. Financial literacy is highly correlated with financial risk perception ($r = 0.710$, $p < 0.01$) and marketing opportunities ($r = 0.681$, $p < 0.01$). Similarly, financial risk perception is highly correlated with marketing opportunities ($r = 0.660$, $p < 0.01$). The consistently large correlations highlight that these constructs are closely interrelated, supporting the rationale for regression analysis.

Table 6. Correlation matrix

		Financial Literacy	Financial Risk	Marketing Opportunities
Financial Literacy	Pearson Correlation	1	0.710**	0.681**
	Sig. (2-tailed)		0	0
	N	307	307	307
Financial Risk	Pearson Correlation	0.710**	1	0.660**
	Sig. (2-tailed)	0		0
	N	307	307	307

		Financial Literacy	Financial Risk	Marketing Opportunities
Marketing Opportunities	Pearson Correlation	0.681**	0.660**	1
	Sig. (2-tailed)	0	0	
	N	307	307	307
** Correlation is significant at the 0.01 level (2-tailed).				

Source: Authors' calculations

The regression analysis results presented in Table 7 demonstrated that financial literacy significantly predicted marketing opportunities, $F(1, 305) = 263.591$, $p < 0.001$. The model explained 46.4% of the variance in marketing perception (R^2 =0.464). Financial literacy was a strong positive predictor (B = 0.716, β = 0.681, $p < 0.001$). This result supports H1.

Table 7. Relationship between Financial Literacy and Marketing Opportunities

Predictor	B	SE B	β	t	p	Tolerance	VIF
Constant	1.056	0.161	—	6.557	0.000	—	—
Financial Literacy	0.716	0.044	0.681	16.235	0.000	1.000	1.000
Model Summary: R = 0.681, R^2 =0 .464, Adjusted R^2 = 0.462, Std. Error = 0.735 **ANOVA**: F(1, 305) = 263.591, p < 0.001							

Source: Authors' calculations

Furthermore, the regression analysis (Table 8) revealed that financial literacy significantly predicted perceptions of financial risk, $F(1, 305) = 310.089$, $p < 0.001$. The model accounted for 50.4% of the variance in financial risk perception (R^2 =0.504). Financial literacy was a strong positive predictor (B = 0.737, β = 0.710, p <0 .001). This result supports H2.

Table 8. Relationship between Financial Risk perception and Financial Literacy

Predictor	B	SE B	β	t	p	Tolerance	VIF
Constant	0.964	0.153	—	6.308	0.000	—	—
Financial Literacy	0.737	0.042	0.710	17.609	0.000	1.000	1.000
Model Summary: R = 0.710, R^2 = 0.504, Adjusted R^2 = 0.503, Std. Error = 0.698 **ANOVA:** F(1, 305) = 310.089, p < 0.001							

Source: Authors' calculations

Finally, the regression analysis results presented in Table 9 did not provide support for H3. The regression coefficient (B = 0.669, β = 0.660, p < 0.001) is positive and significant, meaning that higher financial risk perception is associated with greater perceptions regarding marketing opportunities during introduction of new agricultural products. Financial risk perception explains about 43.6% of the variance in marketing opportunity perception which is a substantial effect. ANOVA (F(1,305) = 235.304, p < 0.001) which means that the overall regression model is statistically significant.

Producers with strong risk perception may be strategic thinkers: they acknowledge risks but also identify opportunities in marketing as a way to mitigate or balance those risks. Although regression results show that higher financial risk perception increases agreement with marketing opportunities in the process of new product placement, this reveals a deep insight: risk-aware producers are opportunity focused. This aligns with theories in entrepreneurship and strategic management: risk perception can sharpen opportunity recognition rather than suppress it (Caputo, Nguyen, & Delladio, 2025; Yin & Wu, 2023).

Table 9. Relationship between Marketing Opportunities and Financial Risk Perception

Predictor	B	SE B	β	t	p	Tolerance	VIF
Constant	1.199	0.161	—	7.438	0.000	—	—
Financial Risk	0.669	0.044	0.660	15.340	0.000	1.000	1.000
Model Summary: $R = 0.660$, $R^2 = 0.436$, Adjusted $R^2 = 0.434$, Std. Error = 0.754 **ANOVA:** $F(1, 305) = 235.304$, $p < 0.001$							

Source: Authors' calculations

Discussion of research findings

The results of regression analyses presented in Tables 7, 8 and 9 provide strong empirical support for the hypothesized relationships between financial literacy, financial risk perception, and marketing opportunities. First, the results confirm that financial literacy is a significant and robust predictor of marketing opportunities perceptions (H1). With an explained variance of 46.4%, the findings highlight that agricultural producers with higher levels of financial literacy are more likely to perceive marketing as an important driver of success in agricultural product placement. This aligns with prior studies emphasizing the role of financial competencies in shaping strategic decision-making and market orientation. Other studies have emphasized that financial literacy must indeed be developed, but with appropriate regulation and guidance to ensure it does not merely encourage short-term profit seeking but rather supports stable and sustainable food production (Li et al., 2024). Furthermore, several studies highlight that many agricultural entrepreneurs possess limited financial literacy, which often results in weak financial management and inadequate risk-handling practices (Kaur & Dharni, 2024; Pal & Sharma, 2023). A survey conducted among 505 farmers in India revealed that only about 33% demonstrated financial discipline, with an average financial literacy score of just 1.80 (Das & Maji, 2025).

Similarly, financial literacy emerged as a strong positive predictor of financial risk perception (H2), accounting for 50.4% of the variance. This suggests that financially literate agricultural producers are more aware of potential risks, which may reflect their ability to critically evaluate investment decisions and market uncertainties (Lu, Li, & Wu, 2024). Rather than reducing perceived risk, financial literacy appears to sharpen awareness, consistent with theories of bounded rationality and informed risk assessment in entrepreneurship (Pandey & Chadha, 2026).

Unexpectedly, the results regarding H3 revealed that financial risk perception positively predicted marketing opportunity perception, explaining 43.6% of the variance. Although the hypothesis anticipated a negative relationship, the findings suggest that risk-aware producers are not deterred by financial risks; instead, they recognize marketing as a strategic tool to mitigate or balance those risks. This interpretation resonates with entrepreneurial theory, which posits that heightened risk perception can enhance opportunity recognition by encouraging proactive strategies (Caputo, Nguyen, & Delladio, 2025; Yin & Wu, 2023). Agricultural producers who acknowledge risks may therefore be more inclined to adopt innovative marketing practices, such as collaboration with local businesses or digital promotion, to secure competitive advantage.

Taken together, these findings underscore the central role of financial literacy in shaping both risk awareness and marketing orientation. Moreover, they reveal a nuanced dynamic: risk perception does not suppress opportunity recognition but rather coexists with it, fostering strategic thinking among agricultural producers.

Conclusion

This paper examined the relationships between financial literacy, financial risk perception, and marketing opportunities among agricultural producers in Serbia. The results in which participated 307 agricultural producers revealed strong, positive, and statistically significant correlations among all three constructs, confirming that they are closely interrelated. Regression analyses further demonstrated that financial literacy significantly predicted both marketing perception and financial risk perception, supporting Hypotheses 1 and 2. Interestingly, Hypothesis 3 was not supported: rather than a negative association, financial risk perception was positively related to marketing opportunities. This finding suggests that agricultural producers who are more risk-aware also tend to recognize greater marketing opportunities, highlighting the duality of risk and opportunity in their decision-making.

The results contribute to theory by demonstrating that financial literacy plays a dual role: it not only enhances perceptions of marketing effectiveness but also heightens awareness of financial risks. This supports theories that emphasize the importance of cognitive capabilities in opportunity recognition and risk assessment. Importantly, the unexpected positive relationship between financial risk perception and marketing opportunities challenges traditional assumptions that risk awareness dampens opportunity recognition. Instead, the findings align with perspectives that view risk and opportunity as interdependent, suggesting that producers who are more risk-aware may simultaneously be more opportunity-focused.

From the practical standpoint findings suggest that improving financial literacy among agricultural producers can strengthen both their ability to recognize risks and their confidence in marketing strategies for new products. The positive association between risk perception and marketing opportunities implies that risk-aware producers may be better positioned to identify market gaps and innovate in product placement.

Policymakers and industry stakeholders can leverage this by designing support mechanisms that encourage producers to treat risk as a signal for potential opportunity.

Despite these contributions, several methodological limitations must be acknowledged. First, the study employed a cross-sectional design, which captures perceptions at a single point in time (2026). Second, data were collected through self-reported online questionnaires, which may introduce response bias and exclude producers with limited internet access or digital literacy. Third, the sample was restricted to agricultural producers in only one country (Serbia), limiting the generalizability of findings to other cultural and institutional contexts.

Building on these limitations, future research should adopt longitudinal designs to track how financial literacy, risk perception, and marketing orientation evolve over time. Incorporating objective measures of financial literacy and marketing performance, alongside qualitative interviews, would reduce self-report bias and provide richer insights. Finally, comparative studies across countries or regions would enhance external validity and reveal whether the observed relationships hold across diverse agricultural systems, thereby offering a broader understanding of how financial literacy and risk perception shape opportunity recognition in agriculture.

Conflict of interests

The authors declare no conflict of interest.

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