

Financial literacy for farmers – the case of vineyard farmers in Kosovo

Finanzielle Bildung für Landwirte - der Fall der Weinbauern im Kosovo

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Summary

One of the key factors influencing agricultural development and farm performance is access to finance. There are several factors that influence access to finance, including financial management capacity, which is linked to financial literacy. The paper analyzes the factors which determine farmers' financial management behavior, in the case of Kosovo, based on a structured farm survey focusing on the vineyard sector. The findings suggest that half of the interviewed farmers did not keep records regarding costs and incomes. The likelihood to keep financial records is linked to several household and farm attributes. Market-oriented farmers who had contracts were more likely to keep financial records than those who did not. Policymakers through public advisory services as well as financial institutions should address the need to improve financial literacy among farmers.

Keywords: financial literacy, farmers, cost calculations, Kosovo

Zusammenfassung

Einer der Schlüsselfaktoren, die die Entwicklung der Landwirtschaft und die Leistung der Betriebe beeinflussen, ist der Zugang zu Finanzmitteln. Es gibt mehrere Faktoren, die den Zugang zu Finanzmitteln beeinflussen, einschließlich der Fähigkeit zur Finanzverwaltung, die mit der Finanzkompetenz zusammenhängt. Der Artikel analysiert die Faktoren, die das Bildungsverhalten der Landwirte im Bereich Finanzmanagement bestimmen, im Fall des Kosovo, basierend auf einer strukturierten landwirtschaftlichen Umfrage mit Schwerpunkt auf dem Weinbausektor. Die Ergebnisse deuten darauf hin, dass die Hälfte der befragten Landwirte keine Aufzeichnungen über Kosten und Einkommen führt. Die Wahrscheinlichkeit, finanzielle/wirtschaftliche Aufzeichnungen zu führen, hängt mit mehreren Haushalts- und Betriebsmerkmalen zusammen. Marktorientierte Landwirte, die Verträge hatten, führten mit größerer Wahrscheinlichkeit Finanzunterlagen als Landwirte, die keine Verträge hatten. Politische Entscheidungsträger, öffentliche Beratungsdienste und Finanzinstitute sollten sich mit der Notwendigkeit befassen, das Finanzwissen der Landwirte zu verbessern.

Schlagwörter: Finanzielle Allgemeinbildung, der Landwirt, Kostenberechnungen, Kosovo

1. Introduction

A large share of agricultural contribution globally is provided by smallholders, who make up 84% of the world's 570 million farms (Lowder et al., 2016). The socioeconomic contribution of smallholders is conditioned by access to land and capital (Aggarwal et al., 2014). Poor access to capital limits their capacity to invest in new technologies and inputs and exposes them to higher risks and transaction costs emerging from weak institutional settings and the rising effects of climate change (International Finance Corporation, 2014). Supporting smallholders' capacities to improve access to finance contributes toward sustainable development and inclusion in formal economy (Chang et al., 2022).

There are significant gaps between the financial institution's expectations and the field realities in the context of mobilization and utilization of funds that support inclusive growth (Bansal, 2014), where disparities in financial literacy remain a major concern (Widhiyanto et al., 2018). Empirical findings suggest poor farmers' financial behavior and practices, including financial record bookkeeping and accounting, and the inability to process financial information preventing them from making informed financial decisions (Gaurav and Singh, 2012; Dudafa, 2013).

Few studies have explored the factors influencing farmers' financial practices (Dudafa, 2013; Wolf et al., 2011). A major part of these studies is largely focused on farmers' sociodemographics (rather than on farmers' attitudes and farm conditions). One of the main factors determining financial literacy is education as confirmed by several empirical studies (Aggarwal et al., 2014; Wulandari et al., 2023; Lalrinmawia and Gupta, 2015). Kebede and Kuar (2015) and Sivakumar et al. (2013) highlighted that in addition to education, other social factors such as gender, age, and experience (Viloria Carrillo, 2010) are associated with the propensity of farmers to keep financial records.

There is scarcity of research work on farmers' financial education, determinants, and implications in Kosovo and the region (Western Balkans) in general. This paper addresses the gaps in the literature not only in Kosovo, but also in countries having a large share of the rural population and living the consequences of post-conflict transition, by exploring the financial practices of farmers and the factors associated with the adoption of these practices. Previous studies on farmers' education and its role in their decisions or behavior in Kosovo disregard financial literacy (Zeqiri et al., 2019), whereas studies regarding financial (il)literacy

in Kosovo focused on other sectors or social groups. For instance, Lulaj et al. (2021) analyzed Kosovo households' savings and financial behavior related to financial emergencies. Another study highlights the role of competence in mathematics in achieving financial mathematical literacy knowledge (Yildirim and Vardari, 2020). Both studies are missing insight into rural/farm households.

This study is based on a farm structured survey in the vineyard sector in Kosovo. It provides a contribution in the current literature of transition countries. In addition to some indicators identified in the literature review, such as age, education, income, and farm size (in our case, proxy for the area of vineyard and share of vineyard of the total area), we also observe the influence of contract farming. In comparison to different previous studies, we also include in our analysis contract farming. While previous studies highlight that contract farming may result in higher access to information sources and markets (Bellemare 2012; Barrett et al., 2012), they do not include in the analysis the relation between contract farming and financial management practices or financial education.

Furthermore, this study includes two other additional factors not identified in the literature, specifically specialization and association of market orientation with financial literacy. So far, no study has estimated the effect of farmers' market orientation (in our study, we explored it through the share of self-consumption) on financial literacy. We expect the farmers' engagement in the market to be positively associated with their need to keep records and calculate costs.

The study also analyzed the relation between farmers' financial practices and the level of hired labor. The expectation is that the more the level of hired labor, the higher becomes the need of the farmer to calculate the cost-effectiveness of using it (as compared to using unpaid household labor). This is a typical challenge for a household farm that is expanding with a strong market orientation.

Also, in the case of Kosovo, findings are of interest to academic institutions, policymakers, and developing agencies supporting the agricultural sector and the wine production sector specifically.

The paper is structured as follows. The second chapter consists of the country's background. The third chapter explains the statistical methods used, followed by the fourth chapter presenting the results of the work. The conclusion in the end provides space for recommendations for financial institutions as well as capacity-building institutions.

2. Country background

Kosovo is situated in the Western Balkans, with a population of 1.8 million. About half of the population lives in rural areas. Kosovo was a centrally planned economy under Yugoslavia until the late 1980s; it underwent a notorious conflict and emerged as an independent country in the following decade. During the conflict, the agricultural sector and vineyards specifically were heavily damaged (FAO, 2016).

After the conflict, the country embraced a free market economy; it went through the process of establishing new institutions and has made efforts to build up its capacities with the support of international organizations. Despite the progress, Kosovo has been facing the challenges of strengthening institutions, adapting to free market economy demands, and attracting investments. The agrifood sector has been facing problems while creating market institutions, establishing marketing and distribution chains, and meeting food safety and quality standards. The agrifood value chain is expected to change substantially in the coming years also due to the growing competition in the context of regional and European Union (EU) integration (Xhoxhi and Imami, 2021), which is also crucial for the wine sector, given that it is very competitive.

Wine production and vineyard growing is one of the most important agrifood activities in Kosovo in terms of production and international trade. Traditionally, Kosovo's wine industry has had a strong export orientation (Miftari et al., 2021). After the conflict, there was a growing interest in the sector by private businesses and significant support from the government and donors. The local industry has been making efforts to keep its presence in the export market (targeting neighboring countries in the region, such as Albania) while growing its sales in the small, but growing local market. Being a transition economy, Kosovo household income and lifestyles are changing fast, implying higher demand for (quality) wine (Zhllima et al., 2020). Thus, achieving high quality is not only important to improve the overall market access (both in the local and export markets), but also crucial to reach higher-paying consumers, who are sensitive to quality rather than price.

The wine industry is dominated by a few large companies. Larger wineries have their own vineyards, which have been expanding over the years, but even in the case of wineries possessing their vineyards, supply from (small) farmers is crucial. About two-thirds of grape supplies are produced by farms smaller than 5 ha, while most farms have less than 1 ha (FAO, 2016; Xhoxhi and Imami, 2021). Considering the high seasonality, the vulnerabilities of vineyard ecosystems

from climate change, and the frequency of yearly operations in grape production, the sector is the best case for exploring the factors associated with financial literacy.

3. Materials and Methods

3.1. Sampling approach

This paper is based on a structured face-to-face survey of vineyard farmers in Kosovo. The survey was conducted in 2016 in the Rahovec region, which has a strong tradition both in grape and wine production – more than half of the grape and wine production takes place in this region.

The survey was conducted with 222 vineyard farmers, of whom 105 specialized in table grapes and the others in wine grapes. It was a purposive sampling, since it covered the region where a major part of the vineyards in Kosovo are located. However, farmers within the targeted regions were selected randomly using a list of vineyard farmers provided by the Municipality of Rahovec. Interviews were carried out face to face by trained graduate students under the supervision of the authors of this study.

3.2. Sample characteristics

The average age of farmers was 51.5 years (standard deviation [SD] = 12.3 years). Approximately, 43% of farmers had basic education, 31.1% had high school education, 16.2% had university education, and 3.6% reported no education. The average area of vineyards was 1.2 ha, while the average percentage of contribution of agriculture and livestock to the household economy was 54.3% (SD = 38.8). The main purpose of cultivating the vineyards was for sale, while on average, only 1.4% of the production was kept for household consumption (Tables 1 and 2).

3.3. Questionnaire structure and variables

Following the literature review, 25 semi-structured interviews were carried out, along with one focus group with sector actors (including farmers, processors, experts, etc.). Both focus group and semi-structured interviews were based on a protocol that has been drawn up in consultation with various experts. The focus group and semi-structured interview findings provided insights into sector trends and farmers' behavior, and combined with the literature review, they were used for the preparation of the structured questionnaire.

Table 1. Sample characteristics
Tabelle 1. Merkmale der Stichprobe

Indicators/variables	Mean	Std deviation
Farmers' (household head) age (years)	51.45	12.28
Farmers' (household head) education (years)	10.50	3.53
No. of family adult members (> 18 years) (individuals)	5.95	3.51
Area planted with grapes (ha)	1.2	1.1
Share of household income that comes from grape cultivation (%)	54.3	38.8
Share of total production (grape) designated for self-consumption (%)	1.4	5.3
Number of working days for hired labor	22,68	62,12
Total number of working days used for the vineyard cultivation	23,418	30,289

Source: Authors' own calculation

In the questionnaire, farmers were asked to provide data about household characteristics, farm characteristics, type of production, and level of specialization, as well as take into consideration the relations with buyers (such as the use of contracts). In addition, farmers were asked to express their level of financial education by answering Likert scale questions. The main variables indicating the level of financial literacy practices are the bookkeeping scale, which measures the extent to which farmers have a ledger for expenses and revenues, and the calculation scale, which shows the extent to which vineyard farmers calculate the production costs and profit for the main product. More specific information on the measurement rate of the variables to be studied is given in Table 3.

3.4. Data analysis

Descriptive statistics and nonparametric correlation analysis were used to analyze the data. Data not being subject to normal distribution were treated using nonparametric methods. Spearman rank correlation was chosen for carrying out an

analysis of the relationship between scale and ordinal data, also considering that the data do not meet the assumption for normal distribution. In addition, Pearson correlation coefficient was calculated, covering the values of each of the two variables. By using ranks, the quantification coefficient provides strictly monotonic relationships between two variables. The ranking of the data was applied to convert a non-linear, strictly monotonic relationship to a linear relationship – this property makes a Spearman coefficient relatively robust against outliers (Schober et al., 2018).

Pearson Chi-square correlation coefficient was chosen (it is suggested to be used for nominal data) to observe for potential relationships between the variables having or not having a contract and keeping records about expenses and income. The Chi-square was utilized to explore the nature of research data, as measured at the nominal level. For all inferential statistics, the results yielded reliability issues, especially when the data were collected by randomly selected subjects and when the sample sizes were sufficiently large that they produced appropriate statistical power (McHugh, 2013).

4. Results and discussion

The vast majority of farmers did not keep records on expenditures or income (50% stated “never or rarely”) and did not calculate costs and profits for the main product (52.2% stated “never or rarely”) (Table 4).

The ability of farmers to calculate the production costs and profits, given the low access to vocational education, might be related to their experience level as well as access to training on economic and financial issues. The latter did not seem to be the case. As shown in Table 5, about 8.1% of vineyard producers reported having been trained or advised on cost and profit calculations.

Table 2. Frequency table for variables
Tabelle 2. Häufigkeitstabelle für die Variablen

Household head education	Percentage
No education	3.6
Basic	42.8
Agricultural high school	6.3
Other high schools	31.1
University	16.2
Total	100.0

Source: Authors' own calculation

Table 3. Study variables
Tabelle 3. Variablen der Studie

Variable	Question	Measure of variables
Bookkeeping_scale	Do you keep records of expenses and revenues?	Ordinal 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always
Calculation_scale	Do you calculate the production costs and profit for the main product?	Ordinal 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always
Age	Age	Scale
HH_education	Household head education	Ordinal 1 = no education, 2 = basic, 3 = agricultural high school, 4 = other high school, 5 = university
Vineyards_area	Area planted with grapes in ha	Scale
Share_income_farming	Share of household income that is derived from grape cultivation (%)	Scale
Share_self-consumption	Share of total production (grape) destined for self-consumption	Scale
Area_wineyard_share	Specialization (share of area planted with grapes to total farm size) (%)	Scale
Hired_labor	Number of working days for hired labor to total number of working days used for vineyard cultivation	Scale
Contract farming – dummy	Do you have a contract with the buyer?	Nominal 1 = Yes, 2 = No

Source: Authors' own calculation

Based on the correlation analysis, it can be concluded that education is positively related to financial literacy – the higher the education, the higher the chances for a farmer to keep a ledger. A positive correlation was also observed with the variables related to household access to financial capital and labor, such as income derived from farming specialization and the number of hired daily labor. On the other hand, there was a statistically significant negative correlation observed with regards to market orientation, namely between the share of self-consumption for household needs and financial literacy practice indicators. This shows that the

higher the percentage consumed for family needs, the lower the chances of farmers to keep records of financial data.

Farm specialization is also positively related to keeping financial information. A statistically significant correlation was found between farm size and retention of financial information (both in terms of area and share total area). No significant relation was found between age (proxy for experience) and the farmers' propensity to bookkeeping and costing (Table 6).

As highlighted in the section "Introduction," another factor that may be correlated to financial management practices is contract farming. The dependency study was conducted through the Chi-square test, which confirms that there is a

Table 4. Frequency table for variables
Tabelle 4. Häufigkeitstabelle für Variablen

Alternatives	Keep a ledger for expenses and revenues	Calculate the production costs and profit for the main product
Never	35.1	41.4
Rarely	14.9	10.8
Sometimes	11.3	12.6
Often	5.0	5.9
Always	33.8	29.3
Total	100.0	100.0

Source: Authors' own calculation

Table 5. Access training on financial issues (answer to the question: "Have you ever been trained or advised about the calculation of cost and profit?")
Tabelle 5. Zugang zu Schulungen in Finanzfragen (Antwort auf die Frage: "Wurden Sie jemals in der Berechnung von Kosten und Gewinn geschult oder beraten?")

Answer	Frequency	Percentage
Yes	18	8.1
No	204	91.9
Total	222	100.0

Source: Field survey

Table 6. Spearman's rank correlation table
Tabelle 6. Spearman's Rangkorrelationstabelle

Variables	Bookkeeping_scale	Costing_scale
Age	0.049	0.052
HH_education	0.142*	0.146*
Vineyards_area	0.157*	0.227**
Share_income_farming	0.193**	0.244**
Share_selfconsumption	-0.134*	-0.181**
Area_wineyard_share	0.146*	0.226**
Hired_labor	0.144*	0.171**

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

Source: Authors' own calculation

dependency between having a contract and financial literacy (Pearson Chi-square = 20.054, degree of freedom [df] = 4, significance = 0.000). As shown in Table 7, 43.8% of farmers who have had a contract often or always kept financial records, while the percentage of farmers who have not had a contract is only 18.2%.

5. Conclusions and recommendations

This paper analyzes the factors which determine farmers' financial behaviors in keeping records in agriculture in the context of Kosovo. Kosovo is chosen as a proper case of small post-communist and post-conflict economies with a large share of the rural population. The study yields new results within the context of a post-communist economy. It is also interesting because under a planned economy, entrepreneurship was poorly developed, while the agricultural sector was largely dominated by (state-run) cooperatives, which also implied a limited incentive to develop financial skills or competences.

The paper contributes with empirical evidence in the existing literature and addresses relationships not identified earlier, such as specialization, market orientation, and the relationship of contract farming practices with farmers' financial management practices. The findings provide insight into financial management practices in the agricultural sector and the need to inform the design of inclusive financial systems that are sensitive to the cognitive and information limitations of rural households.

The results of the study are in line with other relevant studies on farmers' financial management behaviors in poor countries (Dudafa, 2013; Murendo and Mutsonziwa, 2017). The empirical findings of this research paper highlight poor financial literacy among Kosovo farmers. More specifically, the results confirm that most of the interviewed farmers admitted that they did not keep a ledger or rarely kept records on expenditures or income and did not calculate costs and profits for the main product. Thus, it is a phenomenon that raises concern as most farmers do not calculate their costs, and thereby their profits/margins, which is necessary to make better (investment) decisions (considering

Table 7. Correlation table between keeping notes for expenses and revenues and having a contract
Tabelle 7. Korrelationstabelle zwischen dem Führen von Aufzeichnungen über Ausgaben und Einnahmen und dem Bestehen eines Vertrags

	Keep a journal for expenses and revenues					Total
	Never	Rarely	Sometimes	Often	Always	
With contract	61	18	21	10	68	178
	34.3%	10.1%	11.8%	5.6%	38.2%	100.0%
Without contract	17	15	4	1	7	44
	38.6%	34.1%	9.1%	2.3%	15.9%	100.0%
Total	78	33	25	11	75	222
	35.1%	14.9%	11.3%	5.0%	33.8%	100.0%

Source: Authors' own calculation

that the larger farms were targeted and the concern is even bigger in the case of typical/average farms). These results converge with the findings of other authors, thus validating the low capacities of farmers to keep their accounts. Previous research (Gashi, 2019) suggests that one of the factors of limited access to finance in agriculture in Kosovo is the scarce financial education of agricultural clients (capacity restriction). The importance is also underlined in studies carried out in other countries of the Western Balkans (Zakić et al., 2017).

There are several factors that appear to influence farmers' accounting practices. Likewise, the empirical findings from the literature on financial literacy (Aggarwal et al., 2014; Gaisina and Kaidarova, 2017; Lalrinmawia and Gupta, 2015; Van Nguyen et al., 2022) confirm that education is important. The higher the education, the higher are the chances for a farmer to keep a ledger. Therefore, actions designed to address farmers' basic financial management and accounting practices should target farmers with a lower education level. Segmentation of the target groups and designated capacity-building activities should be performed using as a reference the level of education. Age would not become a significant factor in clustering targeted farmers in the future. Different from previous studies (Kebede and Kuar, 2015; Gaurav and Singh, 2012), no significant relation was found between age (proxy for experience) and farmer's propensity to record keeping.

The study results also show that contract farming increases chances for better financial management, which is a contribution to the literature. In addition, a statistically significant positive correlation was observed with regard to market orientation – the higher the market orientation (or lower the share of product going for self-consumption), the higher are the chances of farmers keeping records of financial information. The effect of integration into marketed channels increases the farmers' pressure to keep costs under control and monitor production performance. The result not only shows the positive effect of the market integration for farmers, but also calls for urgent intervention in increasing the capacity building for those value chains which are entering into a new phase of integration. The provision of capacity building is crucial to improve financial practices, especially for rapidly growing farmers (Su et al., 2018). Several pilot interventions can be used, especially toward start-ups, by teaching farmers bookkeeping and calculations by providing them simple guides, ready prepared templates, and other e-tools for facilitating bookkeeping and calculations.

An important positive correlation was also observed with the variables dealing with household access to financial

capital and labor, that is, the income that emerges from farming (proxy for specialization) and the number of hired daily labor. While specialization has been formally evaluated, the influence of hired labor has not been highlighted in the literature, to the best of authors' knowledge. The assumption is that farmers' intention and capacity to keep financial records and analyze them (to calculate costs and profits) can be motivated by the need to assess effectivity or cost–benefit analysis related to hired workers.

A statistically significant correlation was found between farm size and keeping of financial information (both in terms of area and share total area). The findings support the studies carried out in other countries, as cited by Lalrinmawia and Gupta (2015), Sivakumar et al. (2013), and Das and Maji (2023). As a result, more focus should be given to small farmers. Poor financial practices by small farmers can result in poor farm management and performance; therefore, it is important to increase awareness and capacity building to these categories of farmers. Public extension services can play an important role in addressing this need, by providing training and advice to farmers and by including these components in the yearly operational program. This would enable farmers to change behaviors (Kilpatrick and Johns, 2003), enhance effective decision-making in times of rapid change and market openness, as well as save their time and protect them from associated stress (Simkin et al., 1998). The study has several limitations. The survey took place in 2016, and as such, it does not depict the current situation of vineyard farmers' financial education and practices in Kosovo. However, anecdotal evidence and expert views show that the problems in this regard are the same.

Due to the multi-thematic structure of the questionnaire, the variables related to financial needs and relations with financing institutions were very limited. Future studies should explore financial management practices and literacy based not only on statements, but also on behaviors. In addition, financial literacy should be operationalized also with assessment indicators that express the level of farmers' cognitive ability (Gaurav and Singh, 2012). The questionnaire did not contain questions related to farmers' behaviors toward risk, farmers' relation with the banks, and location characteristics. The study is based on descriptive statistics and correlation analysis. Regression analysis was not applied for two reasons. Firstly, some of the variables included in the analysis, such as the vineyards' area/size, the share of income from farming, the share of self-consumption, hired labor, and so on, are (by default) strongly correlated and including them into one common regression would result in multicollinearity.

Secondly, our intention was not to assess the likelihood of keeping financial records by a set of explanatory variables, but rather to highlight the nature of the relation for which a correlation analysis is sufficient. However, future research related to financial management and literacy can consider the design/use of variables that are suitable for regression analysis. Another aspect that can be addressed by future research is the impact of financial literacy on farm performance and well-being.

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