Factors influencing farm succession decisions: evidence from coffee farmers of Colombia

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Abstract

In Colombia and other South American countries, government programs have been implemented to improve the livelihoods of coffee farmers. However, the rate of farm succession remains low and the age of farmers continues to increase. Household surveys and focus group discussions were conducted in the community of Chaparral, Tolima Department, Colombia, to examine the socio-economic and institutional factors that influence family farm succession in the context of these cooperative programs. The study findings suggest that coffee income, parental motivation, secure land tenure, membership in farmer associations, and access to coffee labor have a significant and positive impact on farm succession. To enhance farm succession processes and boost farmers' incomes in the region, it is recommended to strengthen farmer associations and establish secure land tenure policies.

Keywords Coffee farmers · Colombia · Farm succession · Institutional factors · Socio-economic factors

1 Introduction

In recent decades, both developed and developing countries have experienced farmland abandonment and inadequate farm succession (Arends-Kuenning et al., 2021; Breitenbach & Foguesatto, 2023; Foguesatto et al., 2020; Kandel et al., 2023; Rech et al., 2021). The global concern of farmland abandonment is closely linked to the broader issue of farm succession (Foguesatto et al., 2020; Ullah et al., 2020a). Farmland abandonment due to rural–urban migration and the subsequent farm succession process pose significant challenges to national and global development agendas (Jarzebski et al., 2021). Research from various countries emphasizes the urgency and complexity of addressing farm succession issues and highlights the need for coordinated efforts to develop sustainable solutions and policies to mitigate their impacts (Arends-Kuenning et al., 2021; Breitenbach

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& Foguesatto, 2023; Foguesatto et al., 2020; Rech et al., 2021). The relationship between poor farm succession and rural development is central to achieving the United Nations Sustainable Development Goals (Ullah et al., 2022a).

Colombia, where family farming is the dominant model of farm ownership, faces similar challenges. It is estimated that there are at least 700,000 smallholder farmers in Colombia, the majority of whom are subsistence farmers (Maletta, 2012). The young farmer problem (YFP), which refers to the decline in farm succession in Colombia, is a critical issue for the future of agriculture in the country (Espana et al., 2018). The issue of inadequate farm succession in Colombia is primarily caused by the migration of young people from rural to urban areas (Solana-Solana, 2010). This problem has persisted for decades (Leibovich, 1996). According to the Colombian National Administration of Statistics (DANE), only 23% of the population currently resides in rural areas, and of this population, 24.5% are young people (DANE, 2018). The 2016 Colombian Longitudinal Survey indicates that rural migrants are primarily young households seeking to overcome poverty, mitigate the effects of negative shocks, or escape violence (Castaño, 2018). As the younger generation departs, the rural labor force becomes scarcer and older, potentially endangering agricultural production, sustainability, and food supply from rural areas (De Haas, 2010).

The southern region of the Tolima department in Colombia is widely recognized for its political, social, and geographical significance. It has been the birthplace of the Revolutionary Armed Forces of Colombia (FARC-EP), a mobile guerrilla movement, since the mid-twentieth century. Unfortunately, it has also been plagued by conflict, violence, and forced displacement. Over 50 years of conflict between illegal guerrilla forces and official state forces have resulted in displacement, frequent youth migration, and poor farm succession (de Memoria Histórica, 2013). In 2016, a peace, reconciliation and youth welfare agreement was signed, recognizing rural communities as key actors in the development of agricultural policies. Agrarian policies aimed to transform the structure of the countryside and create conditions of well-being and good life for the rural population, all included in the Comprehensive Rural Reform (RRI) (para La Paz, 2016). Young generations and the sustainability of family farming are considered to play an important role in the success of this reform.

Chaparral is a municipality located in the southern region of Tolima, and it is of vital importance for the country. For this reason, it was selected as one of the priority municipalities for the implementation of the RRI (Agencia para la Reincorporación y la Normalización, 2019). The region has approximately 3,725 coffee growers and is known for having one of the most dispersed rural populations in the department. As Tolima is the region with the highest coffee production in Colombia, the municipality plays a crucial role in the development and implementation of public policies at the national level (FAO, 2019). Consequently, agricultural policies are extensively implemented in the Tolima region, with efforts focused on improving farm succession. However, little is known about the factors that contribute to farm succession among young people in Colombia, particularly in the Tolima region.

The topic of farm succession is crucial for both academics and policymakers. It has been extensively studied in various countries using different analytical methods, including descriptive, qualitative, and quantitative approaches (Bavorová et al., 2023; Bertoni & Cavicchioli, 2016a). However, our research distinguishes itself by integrating both quantitative and qualitative methods. This approach is crucial for a holistic understanding of farm succession from multiple perspectives. Many academic analyses emphasize the importance of retaining young people in the coffee sector. However, there is a noticeable gap in scholarly contributions regarding the factors influencing intra-family farm succession, especially in

the context of Colombian or Latin American coffee farmers. While there is a significant amount of research on farm succession in Latin America, including studies by Foguesatto et al. (2020), Morais et al. (2017), Romero-Padilla et al. (2020), Arends-Kuenning et al. (2021), and Breitenbach and Foguesatto (2023), our study provides a unique perspective by concentrating solely on coffee farmers. This emphasis on the coffee farming sector is a distinctive feature of our research, adding a new dimension to the existing literature. Our approach is objective and provides new insights while filling a significant gap in the literature on the dynamics of farm succession within this specific population.

This study investigates the process of farm succession among coffee farmers in Chaparral, Colombia, aiming to examine the impact of key factors on farmers' expectations of farm continuity. The study specifically addresses the following research questions:

1. Does the demographic profile of the farmer (referred to as the 'transferor') influence their expectations of having a successor?
2. Does the economic situation and the availability of resources for a farmer influence the farmer's expectations regarding succession?
3. Does the motivation of the successor to take over the farm affect the expectation of having a successor?
4. Does the location of the farm affect the expectation of having a successor?

These research questions are relevant in the context of development programs aimed at retaining young people in the region. The study results can inform the design of more effective policies for policymakers and other stakeholders.

2 Literature review

2.1 Demographic characteristics

The age of the transferor and successor is considered a determining factor in family succession, as it is related to the timing of succession. The probability of succession is non-linear, increasing and then decreasing with the age of the farmer. This phenomenon occurs because the new generation may be in a life phase where changing occupation and taking over the farm is challenging or unattractive (Bjørkhaug & Wiborg, 2010; Dudek, 2016; Glauben et al., 2009). Additionally, age influences the transferor's decision to transfer land, which, in turn, affects the succession process. For instance, in Slovenia, farmers tend to retain land until their death without allowing new generations to take over (Kerbler, 2012).

Gender is another crucial factor in farm succession (Bjørkhaug & Wiborg, 2010). This factor is closely tied to tradition and culture, with gender norms often favoring sons and excluding daughters from the succession process (Sheridan et al., 2021). When farms lack male children, the likelihood of succession decreases (Arends-Kuenning et al., 2021). Conversely, the likelihood of succession is significantly higher if the farm owner is female (Glauben et al., 2009). In coffee farming, where the majority of farmers are male, this discourages active participation by female farmers, negatively impacting farm succession (Ngeywo et al., 2015).

There is a positive effect of being married on farm succession, and a negative effect of one-person households (Dudek, 2016; Mishra & El-Osta, 2008). In cases of widowhood, marital status tends to depend on gender and local traditions (Ngeywo, 2014). Women,

who often outlive their spouses, are the ones making decisions about succession (Rola-Rubzen et al., 2020). The transferor's education has an impact on the succession process. Some studies found that the higher the level of education, the higher the probability of family succession (Bertoni & Cavicchioli, 2016a; Cavicchioli et al., 2015). However, children's higher education may lead to migration to cities or choice of occupations outside agriculture (Bjørkhaug & Wiborg, 2010).

The large number of potential successors within a family, common in developing countries, could delay the succession process due to high competition among children (Kimhi & Nachilieli, 2001; Ullah et al., 2021). In developed countries with fewer children, such as in Germany, Glauben et al. (2004) found that a higher number of children shortened the time to succession. Similarly, a study of farms in Poland found that each additional child increased the probability of family succession by 15% (Dudek, 2016).

Geographical factors, such as the location of farms and, in particular, their distance from the nearest population centers, can affect family succession (Bertoni & Cavicchioli, 2016a). For example, the likelihood of farm succession decreases with increasing distance from urban centers (Bjørkhaug & Wiborg, 2010). The successor's interest in continuing the family business plays a crucial role (Foguesatto et al., 2020) and can be influenced by the location of the farm. Personal preferences regarding life in rural areas differ and affect the decision to work in agriculture (Bertoni & Cavicchioli, 2016a).

2.2 Economic factors/resources

One of the drivers of family succession is farm income. Previous studies found that the higher the family income on the farm, the more likely a successor will want to take over the farm (Bertoni & Cavicchioli, 2016b; Hennessy, 2002). It is closely related to the motivation of the actors involved, i.e., whether the father motivates his successor to stay on the farm or whether the successor decides to participate in farming or take up another better-paid job outside the farm (Bertoni & Cavicchioli, 2016b; Hennessy, 2002). Unlike farm family income, off-farm income is relevant in the process of farm succession. This can lead to two situations: firstly, by providing better economic stability, the farm can specialize, and successors are more motivated to continue; or secondly, it can be the first step towards leaving farming for another occupation and lead to land abandonment (Morais et al., 2017).

Farm size is an important factor in farm succession as it represents the economic strength of the farm (Hennessy, 2002; Kerbler, 2012). In developed countries such as Germany, it has been a decisive factor in continuing farming as a livelihood (Glauben et al., 2009). Even if the successor has already been chosen, the fact that the farm is large motivates the successor to start working on the farm as soon as possible, to try to improve the farm and to use all the knowledge acquired by the transferor (Glauben et al., 2004). In Austria, diversified farms with a focus on several production lines are more likely to succeed (Glauben et al., 2004). While farm size and income represent profit, assets represent the productive capacity of the farm. Assets guarantee the successor future benefits in terms of cash flow or transactions (Calus, 2009) and thus influence farm succession.

The source of labor on the farm is mainly related to the type of production on the farm. For example, on labor-intensive coffee farms, successors are the main source of labor (Ngeywo, 2014). Farmers who have identified a successor tend to involve him or her in farm tasks, thus saving the cost of hired labor (Morais et al., 2017). A study in Belgium found that the intensive labor demands of family farming discouraged farmers' children from taking over the family farm (Calus, 2009).

Land rights and traditions influence the likelihood of the succession process (Ullah et al., 2022b). The fact that parents own the farms motivates and facilitates these young people to continue farming (Bednaříková et al., 2016). In this sense, the informal status of land tenure and the lack of land security affect the possibility of a successful family farm succession. Even in cases where the farm is leased, the possibility of losing the rights is high and with it the risk of losing the assets, which discourages both successors and transferors (Min et al., 2017). In areas where agricultural policies provide incentives and credit for successors to buy land and obtain titles, the likelihood of family succession is higher (Morais et al., 2017). In areas with strong cultural influences, the designation of those who will farm in the future is usually made by the village head (customary tenure) (Ngeywo, 2014).

Other authors describe policies and market influences to be relevant for the succession process (Fischer & Burton, 2014) as they may affect economic situation and access to resources. In many developed economies, the issue of succession in family farming is recognized as crucial, and agricultural policies aim to support farms to reduce the depopulation of rural areas and centralization (Bjørkhaug & Wiborg, 2010). Mishra and El-Osta (2008) found that government agricultural payment programs have a significant influence on the probability of succession.

2.3 Social factors

Being a member of a co-operative or producer organization increases social capital and knowledge, including knowledge of the farm succession process, and plays an important role in the maintenance of family farming (Cavicchioli et al., 2015; Wheeler et al., 2012). Parents' opinions, often connected with farm economic situation and resources as described above, influence the likelihood of family farm succession (Bertoni & Cavicchioli, 2016a, 2016b; Cavicchioli et al., 2015; Fischer & Burton, 2014; Kerbler, 2012; Piras & Botnarenco, 2018).

3 Methodology

3.1 Study area

This study was conducted in Chaparral, a municipality located in the southern part of the Tolima department in Colombia (Fig. 1). Covering an area of 2124 square kilometers, it represents approximately 10% of the department's total area. Chaparral is known for being the most densely populated municipality in the region (UPRA, 2013) and is characterized by its agricultural importance. Based on data from the National Agricultural Census, the region is home to around 3725 agricultural producers, with a strong emphasis on intensive coffee cultivation (DANE, 2016). Most of the producers in this area are farming families who own relatively small farms, typically less than 5 hectares. This limitation in farm size has been identified as a significant factor contributing to suboptimal farm succession outcomes (Faguet et al., 2020). Furthermore, for over half a century, chaparral has been affected by the long-lasting consequences of the Colombian conflict. Recovery efforts began in 2016, and this historical context has had a lasting impact on agricultural practices and land tenure systems in the region. Chaparral relies on the Cooperativa de Caficultores del Sur del Tolima (CAFISUR) and the Colombian Coffee Growers Federation (FNC) as

Fig. 1 Location of Chaparral, Colombia
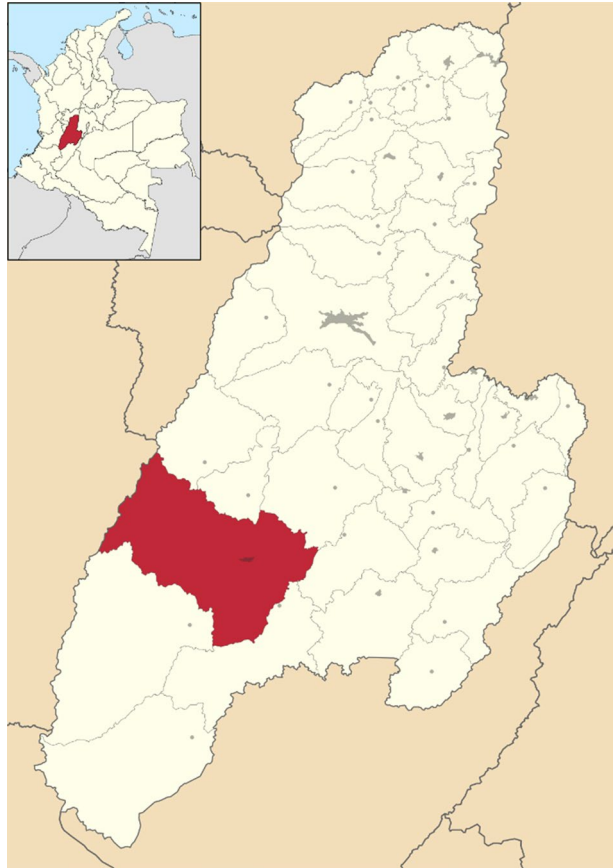
its primary suppliers of inputs and raw materials for coffee cultivation (Reyes Martinez, 2013). These organizations support project management, provide technical guidance, and facilitate the commercialization of certified coffee. They are committed to broader goals of organizational, social, and environmental development in the region. The inheritance system in Chaparral, as in the rest of Colombia, is based on the principles of the Colombian Civil Code. This legal framework, which is based on civil law, governs the inheritance process. The process begins with the death of the landowner. Legitimate descendants are entitled to inherit according to the Code. In the absence of a will, the property should be divided equally among them. The surviving spouse is also entitled to a share of the estate if there is inadequate provision for their well-being. If the deceased did not leave any direct descendants, the inheritance goes to the next of kin. The order of precedence for the next of kin is determined. If there were no eligible heirs from the above categories, the property would be inherited by the tax authorities (Mirow, 2000).

3.2 Study design

This study employs a mixed-methods approach, utilizing household surveys and FGDs, to comprehensively investigate the process of farm succession among coffee farmers in

Chaparral, Colombia. This approach has been commonly used in similar studies (Bavorová et al., 2023; Ullah et al., 2023a).

3.2.1 Household survey

A household survey was conducted from February to March 2021 using a pre-tested questionnaire. A total of 169 respondents, all coffee farmers, were randomly selected from a list of farmers obtained from the FNC of the study area. This method allowed us to strategically capture a diverse cross-section of coffee farmers within our research context. Data was collected using telephone and face-to-face interview methods. The telephone interviews were conducted due to the restrictions imposed by the COVID-19 pandemic. Telephone interviews were chosen as a method in accordance with the prevailing circumstances, particularly during the COVID-19 pandemic, to ensure the safety and well-being of both participants and researchers, following established protocols (Ullah et al., 2022d). A pre-designed questionnaire was used during the interviews. The questionnaire was translated from English to Spanish, and the interviews were conducted in Spanish, the native language of the region. The developed questionnaire was pretested by administering it to 20 households that were not included in the final survey. The final questionnaire was modified based on the pre-test survey. The questionnaire was divided into 3 sections based on the "theory of inheritance", which typically refers to how ownership and control of a family farm are transferred from one generation to the next (Kennedy, 1991). This theory has been widely used in the literature in similar studies (Leonard et al., 2017; Luhrs, 2016). The questions included: (1) socioeconomic characteristics/household factors such as age, gender, number of children, number of economically active members, education level, marital status, etc. In this part, some demographic data (age, sex, education level, marital status, and place of residence) were collected for each of the farmer's children as additional information; (2) farm characteristics including farm size, land tenure, annual farm income, etc.; and finally, (3) succession process with information on the existence of family incentives for succession, the farmer's opinion on the succession process, and the possibility of succession. Recent literature by Cavicchioli et al. (2019) and Ullah et al. (2023b2023b) highlights the importance of including variables related to the socioeconomic environment around the farm to improve the explanatory power of farm succession.

3.2.2 Focus group discussions

Qualitative data was collected through two focus group discussions (FGDs) conducted in both rural (FGD-1) and urban (FGD-2) areas with coffee farmers. The purpose of the FGDs was to gather information on the barriers to farm succession and to explore the community's perspectives on the issue. The FGDs were conducted by one of the authors in the farming communities. The FGD participants were selected randomly based on their availability during the study. Each FGD had a group of 15–30 people with ages ranging from 30 to 60 years. At the participants' request, no voice recorder was used during the FGDs. However, detailed notes were taken of the group discussions in each FGD. A script was prepared for the focus group discussions (FGDs) to address the challenges encountered by coffee farmers and the potential for land succession in the community. The same script was used for all group discussions. A written consent form, clearly explaining the purpose of the FGDs, was prepared in Spanish, the local language of the participants, and distributed to each FGD. Each FGD lasted between one and two hours. The facilitator created a

welcoming and encouraging atmosphere during each focus group discussion (FGD) to promote active participation from all participants. All FGDs took place in March 2021.

3.3 Ethical considerations

Ethical standards were carefully followed throughout this study. Informed consent was obtained from all participants, and strict measures were taken to protect the privacy and confidentiality of their data. In addition, the research protocol was approved by the Study Committee of the Czech University of Life Sciences in accordance with its ethical guidelines.

3.4 Data analysis

3.4.1 Analysis of quantitative data

Descriptive statistics were used to report means, percentages, frequencies, and standard deviations. Inferential analysis was conducted using the binary logit model (BLM). Prior to running the logit model, we checked for multicollinearity among the explanatory variables and found that the VIF value for all variables was less than 5, indicating no multicollinearity problem.

The dependent variable was measured by the question, 'Do you expect to have successors to continue the current activities on the farm?' The variable Y represents the farmer's response to whether a potential successor has been identified, with possible answers of 1 for yes and 0 for no. To predict the probability of farm succession based on various independent variables (such as socio-economic and institutional characteristics), we used the binary logit model, given that our variable was dichotomous. The logistic analysis also reveals the relationships and strengths between variables. This model is frequently utilized in academic literature to analyze dummy variables (Ullah et al., 2020b, 2021). For a binary response variable Y and an explanatory variable X, let $\pi(x) = P(Y = 1|X = x) = 1 - P(Y = 0|X = x)$. The logistic regression model is:

$$\pi(x) = \frac{e^{(\alpha+\beta x)}}{1 + e^{(\alpha+\beta x)}}$$

Equivalently, the log odds, called the logit, have the linear relationship

$$logit[\pi(x)] = log\frac{\pi(x)}{1 - \pi(x)} = \alpha + \beta x$$

The logit link function is equated to a linear predictor (Agresti, 2001). The independent variables were chosen based on previous literature. Table 1 presents information on both the dependent and independent variables.

3.4.2 Analysis of qualitative data

For the qualitative data analysis, we utilized content thematic analysis, a recognized and rigorous methodological approach (Braun & Clarke, 2006). This method was selected for its ability to systematically examine patterns and themes within textual data, ensuring a comprehensive exploration of the responses obtained from the FGDs in our study.

Table 1 Socio-economic characteristics of the sample

	Description	Measurement	Mean	SD
Dependent variable				
Farm succession	Farmer's expectation to have successors to continue current farm activities	1 = Yes; 0 = Otherwise	0.88	0.49
Independent variable				
Demographic characteristics				
Gender	Gender of the farmer	1 = Male; 0 = Female	0.68	0.73
Age	Age of the farmer	Years (continuous)	56.80	9.391
Marital status	Marital status of the farmer	1 = Married/ In partnership; 0 = otherwise	0.76	0.43
Education	Farmer's education	Years (continuous)	4.77	5.13
Number of children	Number of children of a farmer	Number (continuous)	2.14	1.562
Farm location	Distance to nearest city center by public transportation	Minutes (continuous)	97.54	41.177
Economic factors/resources				
Farm income[a]	Farm income per season	In Colombian peso (continuous)	2,333,333.33	1,267,632.15
Off-farm income	Farmer participation in off-farm economic activities	1 = Yes; 0 = Otherwise	0.76	0.43
Farm size	Total area used for agricultural production (ha)	Hectares (continuous)	8.814	7.2723
Source of labour	A farmer labour source	1 = Mixed labour, 2 = Family labour	0.64	0.66
Land tenure	Land is owned by the Farmer	1 = Yes; 0 = No	0.89	0.47
Economically active members	Total number of economically active members in the household	Number (continuous)	2.84	1.279
Social factors				
Association membership	The farmer is a member of a farmer organization	1 = Yes; 0 = No	0.20	0.33
Farmer motivation	Farmer motivates children to stay on the farm?	1 = Yes; 0 = Otherwise	0.79	0.46

[a] 1 USD = 3793.59 COP—Colombian peso (Colombian currency) on 15.07.2021

Thematic analysis of content involves systematically coding, identifying themes, and interpreting transcribed data (Braun & Clarke, 2006). Following this approach, all FGD responses were transcribed verbatim from their original Spanish form into English. The transcripts were then converted into rich text format for further analysis. Codes and themes were derived systematically throughout the analysis process to capture the essence of the qualitative data. The justification for selecting content thematic analysis was based on its compatibility with the research objectives and the nature of the collected data. This method enabled us to uncover and understand the underlying meanings, patterns, and nuances embedded in participants' responses. Additionally, content thematic analysis facilitated a comprehensive exploration of the qualitative findings, complementing the quantitative data collected in our study. To enhance the credibility and reliability of our qualitative findings, the analysis was validated by both independent researchers and the research team. This multi-faceted approach to validation strengthens the trustworthiness of the qualitative data interpretation.

4 Results

4.1 Descriptive analysis

Table 1 presents the descriptive statistics of the socio-economic characteristics used in this study. In the study area, 68% of the respondents were male, while 32% were female. Of the total 169 respondents, 76% were married or in a partnership, and the remaining 24% were either widowed or divorced. The respondents had an average education of 4.77 years and received an average of 2,333,333.33 Colombian Pesos (COP) per season. The income of the respondents is primarily generated from agricultural activities, particularly coffee harvesting. 76% of the respondents reported that agriculture was their sole activity, while the remaining 24% reported involvement in off-farm activities. Farmers mostly utilized a combination of hired and family labor for their farm work. During the coffee harvest season, hired labor was commonly used in conjunction with family labor. Of all the respondents, 20% were members of a farmers' association. Regarding land tenure, 89% of farmers are registered landowners, leaving only 11% with other types of tenure, such as leaseholders, tenants, and those working the land in partnership with the legal owners. Regarding parents motivating their children to continue farming, 79% of respondents reported doing so, while only 21% do not encourage potential successors to continue farming and land management. The average age of the respondents was 56.8 years, and the average number of economically active family members was 2.84. The average number of children in the sample was 2. The average farm size found in this study was 8.8 hectares. Eleven farmers were found to possess more than 20 hectares of land, with the largest farm being 58 hectares. When asked about the time it takes to reach the nearest urban center, the most common response was 97 min, which is over an hour and a half. The time was explained in terms of public transportation or private vehicles.

4.2 The future of farm succession

To determine farmers' perspectives on the future of their farm in the presence of a successor, 75% of respondents indicated that they would continue farming if they had a
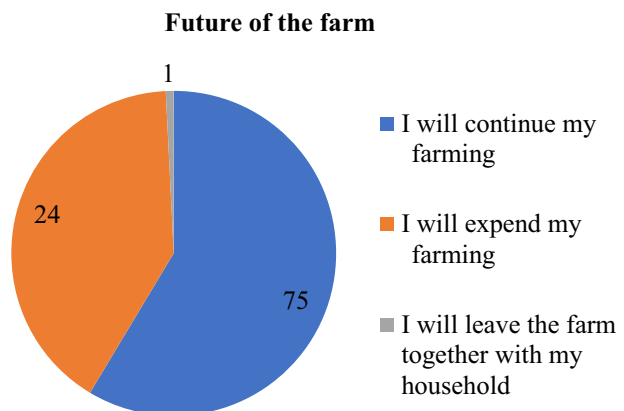
successor (Fig. 2). Conversely, 24% of respondents stated that they would stop farming, while only 1% had already decided to leave the farm (Fig. 2).

4.3 Factors affecting farm succession—binary logistic regression

Binary logistic regression was utilized to evaluate the impact of various factors on the probability of farm succession. The model consisted of fourteen independent variables, and the outcomes are displayed in Table 2. The -2 log likelihood value for the data in the model is 68.394, and the R^2 value is 0.554, indicating the model's fitness.

The model's results indicate that out of the 14 variables hypothesized to affect the farm succession process in the chaparral of Tolima, Colombia, only five were found to be statistically significant. These variables are farmer income, parental motivation, land tenure, farmer association membership, and labor source. The other nine variables showed no significant influence on the farm succession process ($p > 0.10$). The study found that farm income has a statistically significant ($p < 0.01$) and positive impact on the farm succession process. Specifically, for each unit increase in farm income, the probability of farm succession increases by 4.99%. Additionally, the research revealed that land tenure security also has a statistically significant ($p < 0.10$) and positive effect on the farm succession process. For every unit increase in the probability of being a registered landowner, the likelihood of a farmer having a successor increases by 4.385 percent. Additionally, the source of labor has a statistically significant ($p < 0.10$) and positive impact on the farm succession process. The findings indicate that for each unit increase in the probability of having access to family and non-family labor, the probability of the farmer having a farm successor increases by 3.378 percent. Cooperative membership has a positive effect on the farm succession process, as shown by statistically significant results ($p < 0.01$). For each unit increase in the probability of being a member of a cooperative, the probability of a farmer having a farm successor increases by 43.615 percent. Additionally, parents' motivation of their children to get involved in farming also has a statistically significant ($p < 0.01$) and positive effect on the farm succession process. The data indicates that for every unit increase in parental motivation for their children to participate in farming, there is a 35.10% increase in the likelihood of having farm successors. This highlights the importance of parental involvement in the succession planning process (Figs. 1, 2).

Fig. 2 Farmers' views on the future of their farms in the next 10 years


Future of the farm

1

24

75

■ I will continue my farming

■ I will expend my farming

■ I will leave the farm together with my household

Table 2 Factors affecting farm succession

Variables	B	SE	Wald	Sig	Exp(B)
Demographic characteristics					
Gender	0.575	0.683	0.708	0.400	1.777
Age	−0.055	0.039	2.055	0.152	0.946
Marital status	−0.493	0.323	2.334	0.127	0.611
Education	−0.359	0.528	0.462	0.497	0.699
Number of children	0.104	0.180	0.333	0.564	1.110
Farm location	−0.001	0.009	0.011	0.915	0.999
Economic factors/resources					
Farm income	1.607	0.659	5.944	**0.015**	4.990
Farm size	0.001	0.060	0.000	0.990	1.001
Off-farm income	−0.531	0.782	0.443	0.354	0.432
Economically active members	−0.021	0.032	1.783	0.167	0.973
Land tenure	1.478	0.893	2.742	**0.098**	4.385
Source of labour	1.014	0.693	3.778	**0.083**	3.378
Social factors					
Association membership	3.433	0.619	31.320	**0.000**	43.615
Farmer motivation	3.558	0.753	22.353	**0.000**	35.104
Constant	0.493	3.097	0.025	0.874	1.637

Summary statistics: −2 Log-Likelihood = 68.394; Pseudo-R Square = 0.554; Prob > χ^2: 0.00

Bold denotes statistically significant variables

4.4 Qualitative analysis of factors influencing farm succession

Following the household survey, we conducted FGDs to determine the groups' opinions on the factors that could influence the family succession process. The results of the FGDs showed that 62.7% of the respondents considered farm income to be extremely important and a significant factor when carrying out the farm succession process (Fig. 3). Among
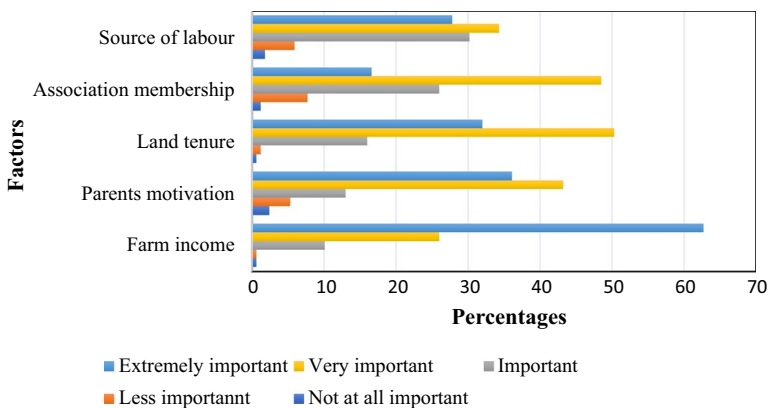
Fig. 3 Farmers' opinions on factors influencing the farm succession process

the coffee farmers who participated in the FGDs, 50.3% reported land ownership as 'very important' in carrying out the farm succession process, followed by 48.5% who reported association membership and 43.2% who reported parental motivation. Additionally, 34.3% of the respondents identified the source of labor as a very important factor influencing the family farm succession process. In the study region, access to education and credit were found to have little importance in the farm succession process.

5 Discussion

In this study, we analyzed the factors that influence the farm succession process among coffee farmers in the municipality of Chaparral, Tolima, Colombia. We found that most households do not want to leave coffee farming, and many farmers even want to expand it. Most respondents were confident that they would have successors to continue the current activities on the coffee farm. Our results showed that five main factors influenced the farm succession process. First, increasing monthly income from coffee farming led farmers to have a farm successor. This result from the binary logit model was also supported by the FGDs, where most of the respondents agreed that income was an important factor influencing the farm succession process. This result is in line with the literature from different countries, such as Bertoni and Cavicchioli (2016b) in Upper Austria, Hennessy (2002) in Ireland, Kimhi and Nachilieli (2001) in Israel, and Foguesatto et al. (2020) in Colombia. These studies report that the higher a farmer's income from a crop, the higher the likelihood of family succession. The importance of family income is also emphasized by the respondents in the FGDs, as they reported, *"Coffee income is important for the decision to continue farming as a livelihood. Farm succession is no longer a matter of emotional importance, but of great economic importance (FGD 01, FGD 02)"*.

Our study found a positive and significant effect of secure land tenure on farm succession. This means that if the farmer has secure land tenure, he/she is more likely to have a farm successor. We found no literature on the process of family farm succession in Chaparral, Colombia. However, results from other regions, such as those of Parker et al. (2007), Bednaříková et al. (2016), Jiménez Barbosa et al. (2018), and Piras and Botnarenco (2018), are consistent with our study, as they reported that secure land tenure has a positive impact on the farm succession process, thus influencing the desire to continue farming and the succession process. In Colombia, land tenure is determined by land ownership certificates or titles. In this regard, a study in China found that holding a land tenure certificate significantly influenced the likelihood of participating in the farm transfer process (Min et al., 2017). FGD participants also reported that secure land tenure is an important factor influencing the farm succession process. They reported that prior to 2013, most coffee farmers held their land informally, meaning they did not have title deeds and therefore had limited access to credit, government support, and other benefits. With the joint support of public and private organizations in the southern region of Tolima, campaigns were launched to provide these farms with titles. Between 2013 and 2016 alone, around 430 farms were formalized with the help of CAFISUR and the NGO Mercy Corps in the region (Mercy-Corps, 2016). By obtaining a title that secures ownership, farmers find reasons to continue working on their farms and, most importantly, to expect that their children will be the next generation in charge of the family farm. This view is supported by the following comment from FGD participants, *"You look for projects and support, and the first thing the organizations ask you is if you have a title deed. I had not had the opportunity to get my title deed*

because it always costs at least 300 or 400 thousand COP, plus the 20,000 COP transportation ticket, one way. Now that I have the title, it looks better (FGD 01, FGD 02)".

Our results showed that the other important and significant factor that positively influenced the farm succession process was the farmer's access to mixed (family and non-family) labor. Farmers in the study area usually use mixed labor in coffee farming, and access to labor is considered an important component of farming in the study area. This aspect is also confirmed by the FGDs as an important component of the farm succession process. Respondents in the FGDs reported, ""*Among the factors that systematically influence the farm succession process is a farmer's access to labor. Labor is an important resource in agriculture, and access to this resource can motivate children to take over the farm. In addition to access to non-family labor, the family farm laborer also promotes the farm succession process* (FGD 02)." This is also consistent with previous findings by Fischer and Burton (2014), Kandel et al. (2024) and Labarthe et al. (2022), who reported that poor access to farm labourers has a major impact in the countries that experienced a farm succession crisis. They further reported that access to farm labor ultimately leads to a successful farm succession process and access to land for young farmers.

The logistic regression showed that being a member of a farmer organization is a significant and positive predictor of farm succession. This means that farmer organizations and farmer membership in these organizations positively influence the farm succession process. The results of the FGDs also confirmed the findings of the logit model as most of the community members reported in the FGDs, "*A farmer's membership in a farmer's association plays an important role in the farm succession process in our community. Our membership in the farmers' association has improved our access to extension services and farming practices, and we are farming in a much better way. Our membership in the farmers' association has improved our morale to get our children involved in farming* (FGD 01, FGD 02)." A study by Ullah et al. (2022c) reported that such associations provide opportunities for knowledge sharing, access to resources, and a supportive community, ultimately facilitating the continuity of family farming practices. These findings are consistent with those reported by Wheeler et al. (2012) and Cavicchioli et al. (2015), who found that membership in a cooperative or producer organization plays an important role in sustaining family farming.

Our study found that parental motivation is also a significant and positive factor influencing the farm succession process. This means that as parental motivation increases, the likelihood of farm succession increases. This result confirms the hypothesis that parental motivation has a positive influence on family succession. In the FGDs with coffee farmers, they claim to be role models and as guides, their influence on their children's decisions is very important. Many FGD participants reported this, *"With the new opportunities the government is offering in terms of technology and support for farmers, I motivate my children every day. I show them the beauty of farming. In farming, you are your own boss. You work when you want to and if you don't want to, you don't, nobody forces you* (FGD 01, FGD 02)." We found that those farmers who encouraged their children to take up farming had their children involved in farming. However, those parents who did not encourage their children to take over the farm did not have their children involved in farming. In the FGDs (Fig. 3), we observed farmers who reported that they did not motivate their children to take over the farm and that their children were not involved in farming. Many FGD respondents reported this, *"There is nothing to do in the countryside. Life in the countryside is difficult and I want my children to study and seek new horizons* (FGD 01, FGD 02)".

Consistent with our study, previous findings also suggest that children's motivation to farm plays a critical role in the farm succession process (May et al., 2019). Morais et al.

Fig. 4 FGD 01

(2017) also reported in their study that the role of parents as motivators of potential successors is significant, which increases children's desire to continue farming (Fig. 4).

6 Conclusion and policy implications

This paper examines the process of farm succession among coffee farmers in the Chaparral municipality of Tolima, Colombia. Data were collected through household surveys and FGDs in 2021. Data were analyzed using a binary logit model to identify factors that contribute to or influence the farm succession process. The results showed that most respondents expected to have a farm successor and to continue or even expand coffee farming. The results of our binary logit model confirmed most of the previous studies and showed that especially economic factors such as stable coffee price and income from coffee farming and resource security/access such as secure land tenure, membership of farmers' association and access to mixed labor for coffee farming as well as the motivation of the children of the transferor significantly and positively contribute to the farm succession process in the area.

The factors identified as influencing the farm succession process are important to take into account when designing policies for the farm succession process. For this reason, farmer associations can be established in each community and efforts can be made to increase farmer membership in these organizations. Secure land tenure policies and output price policies that stabilize coffee prices and increase household income from coffee

farming are important. Those farmers who have been using the land "informally"—even if some have been doing so for several decades—are not eligible for government subsidies or loans, which needs to be changed. Parents are encouraged to motivate their children to become involved in farming and to influence the transfer of farms to family members, especially if the economic situation and access to resources improve. In addition, families and young people who leave farming because of money problems might consider renting their land, creating local employment opportunities and ensuring a steady income.

6.1 Limitations of the study

The survey data were collected within a specific time frame, and seasonal variations could potentially affect respondents' perceptions and responses. Different stages of coffee production and climatic conditions at different times of the year may influence participants' views on farm succession. Future studies may benefit from more extended data collection periods that include all stages of coffee production to provide a comprehensive understanding of the potential impact of seasonal variations on perceptions of farm succession.

Availability of data and materials The authors confirm that the data supporting the findings of this study will be available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate All the procedures performed in the studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee. Informed consent was obtained from all the individual participants involved in the study.

Consent for publication The participants have consented to the submission of the survey results to the journal.

Conflicts of interest The authors have no relevant financial or non-financial interests to disclose.

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