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# Fairtrade and Sustainability: Motivations for Fairtrade Certification among Smallholder Coffee Growers in Tanzania

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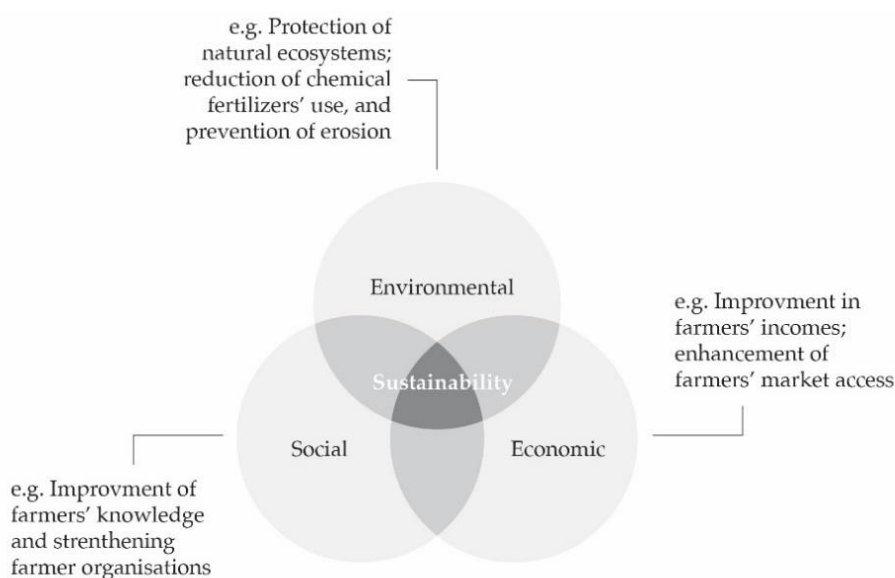
**Abstract:** Drawing on a survey of 148 Fairtrade-certified smallholder coffee farmers in the Kagera region of Tanzania, a quantitative investigation was performed on the farmers' motivations for Fairtrade certification. A factor analysis approach was used to analyze the importance of economic, social, and environmental motivations in farmers' decision-making on Fairtrade-labeled coffee certification. Moreover, three ordered logit models were estimated to assess the determinants of motivational behavior for Fairtrade certification among different socioeconomic groups in the survey sample. Overall, the results indicate that Fairtrade certification is predominantly economically motivated. Particularly, farmers are relatively less environmentally motivated to adopt the Fairtrade system. However, female coffee farmers are significantly more environmentally driven to adopt Fairtrade certification. Surprisingly, the results suggest that farmers' level of education has no significant influence on their motivation for Fairtrade certification. Moreover, lower-income and smaller-scale coffee farmers are less economically and environmentally motivated for Fairtrade certification. In light of these findings, we suggest that efforts to promote Fairtrade certification among smallholder growers should be designed in ways that balance economic, social, and environmental outcomes. Furthermore, the findings call for targeted measures to strengthen Fairtrade's commitment to empowering disadvantaged smallholder farmers, including women, to achieve sustainable development goals in the region.

**Keywords:** Fairtrade; small farmers; coffee; Tanzania; factor analysis; ordered logit model

## 1. Introduction

Agricultural systems in sub-Saharan Africa (SSA) already face considerable challenges due to population growth, urbanization, natural resource degradation, volatile food prices, and changes in consumer diets, among others [1]. Projections of climate and environmental changes are likely to further compound these challenges in the coming decades [2]. While most livelihoods in SSA rely heavily on agriculture and natural resources, these burgeoning challenges will have further significant implications for food security in SSA countries, and may jeopardize efforts to reduce poverty and achieve the United Nations Sustainable Development Goals in the region [3]. In this context, building a more sustainable agricultural system has gained increasing relevance to policy and practice, and has become a principal endeavor for agricultural research as a way to adapt to environmental changes, foster food security, and meet the needs of the increasing population [4]. As Antunes et al. [5] note, such sustainable agricultural systems should adopt farming practices that conserve natural resources and protect the environment, produce efficiently, compete commercially, and enhance the quality of life for farmers and society overall.

Fairtrade (FT) is one of these production systems, which has emerged over the past few decades to promote sustainable agriculture in developing countries [6]. According to De Pelsmacker and Janssens [7], FT is an alternative trade approach, which aims to offer better trading conditions to marginalized producers and workers in developing countries. Specifically, FT certification provides small farmers with higher prices, access to pre-financing, protection against price fluctuations, and price premiums which enable them to adopt sustainable agricultural production techniques [8]. To access these benefits, farmers are required to comply with certain sets of environmental and socioeconomic “sustainability” measures and regulations [9]. The socioeconomic measures aim to enhance small farmers’ income stability, strengthen farmer organizations, and improve farmers’ access to markets on fairer terms. The environmental measures aim to foster sustainable agricultural production by imposing stricter regulations on pesticide use, water conservation, soil erosion, biodiversity, and energy use, and reducing the carbon footprint of agriculture [10]. That is, FT is an integrated multi-dimensional approach that is closely linked to the sustainability concept, and can be viewed as the intersection of its three main dimensions, as illustrated by Figure 1. The means through which FT attempts to achieve the sustainability objectives includes payment of higher and therefore “fair” prices to developing country producers, which allow those producers not only to increase their income, but also to develop their skills and knowledge and benefit their communities and environment [11].



**Figure 1.** Conceptual model for FT and sustainability. Adapted from [11].

As 80% of the farmland in SSA is managed by small farmers, Fischer and Qaim [12] point out that those farmers’ inclusion in high-value agro-food supply chains is crucial for triggering a structural transformation towards sustainable agricultural in the region. However, this objective remains one of the dominant development challenges in SSA, while the majority of small farmers are increasingly facing various structural barriers that restrict their ability to enter these high-value chains, and access the better-paying markets of developed countries [13]. In this respect, Jayne et al. [14] show that FT certification can be a potential mechanism to enabling small farmers in SSA to access these markets, while ensuring that they receive a price commensurate with the cost of production and contribute effectively to community development and environmental sustainability.

In this framework, it is widely acknowledged that coffee can effectively contribute to integrating small farmers in high-value chains, and promote sustainable agricultural and economic development in SSA [15]. This is mainly because at least 70% of coffee growers in SSA are small farmers [16], and the region is home to the largest number of coffee-producing countries, contributing around 15% and 11% of the global coffee supply and exports, respectively [17]. Moreover, coffee contributes

significantly to national incomes in SSA, and represents a vital source of the foreign exchange earnings that governments rely upon to improve health, education, infrastructure, and other social services [18]. In relation to FT, coffee was the first product to become FT-certified in 1988, and is the most established item in the global market for FT-labeled products [19]. Today, of the 1.6 million farmers and workers involved in FT around the globe, nearly 50% are small coffee farmers [20].

Although recent years have witnessed steady increases in the number of FT organizations in SSA and increased consumer demand for FT-certified coffee, the full potential of the FT system is constrained due to a wide range of obstacles [21,22]. Particularly, Tellman et al. [23] show that small coffee farmers face several sets of barriers that limit their participation in FT markets, including certification costs, economies of scale in coffee production, stringent quality requirements, and altitude constraints. As a result of these barriers, Valkila and Nygren [19] point out that small FT coffee farmers in SSA are able to sell only 30–60% to FT markets, and direct the remainder of their FT-labeled coffee to conventional and domestic markets.

Despite the recent surge in research on FT, two main gaps can be identified. First, the majority of existing studies examine FT from the perspective of developed-country consumers, by focusing on consumer willingness to pay for FT-certified products [24–26] and their ethical buying behavior, including the determinants of buying environmental friendly and fairly traded products [27,28]. However, little is known about small coffee farmers' motivations for FT certification, as very few empirical studies have examined how various factors affect the probability of FT certification, in SSA countries in particular [21,28]. Second, much of the FT adoption literature focuses on socioeconomic and demographic factors associated with farms and farmers, while little attention has been paid to environmental motivations [29,30].

Against this background, this study addressed these deficiencies in the existing literature by conducting a comprehensive quantitative investigation of smallholder farmers' motivations for FT certification in Tanzania. In a further step, the study assesses the role of the three dimensions of sustainability (that is, economic, social, and environmental aspects) in small coffee farmers' decisions for FT certification. The selection of Tanzania as a case study was justified for three main reasons. First, Tanzania is the fourth largest coffee-producing country in SSA, and the coffee sector contributes around 3% to its GDP. Second, coffee is the second largest export commodity in Tanzania after tobacco, and close to 95% of Tanzanian coffee is exported [31]. Furthermore, Coffee exports generate earnings of about USD 100 million per year, or 15% of the country's agricultural exports and 5% of its total export earnings [32]. Third, small farmers produce more than 90% of Tanzanian coffee, and coffee provides direct income for 400,000 households and livelihoods for around 2.5 million Tanzanians, indicating the significant contributions of the coffee sector to incomes and food security [33,34].

The results of this study are intended to help Tanzanian policymakers develop policies to promote FT certification among small coffee producers. Specifically, insights into motivations can be instrumental in developing a better understanding of farmers' decisions on FT certification, and can therefore foster discussions around FT and small farmers in SSA, and around economic growth and the sustainability of agricultural systems in developing countries.

The remainder of this paper is structured as follows. Section 2 provides an overview of the Tanzanian coffee sector. Section 3 describes the survey design and the data collection process, and presents the empirical model used for analysis. Section 4 presents the empirical results, while Section 5 discusses the findings and presents some concluding remarks.

## 2. An Overview of the Tanzanian Coffee Sector and FT Certification

Coffee is produced in three areas in Tanzania, namely the Northern Highlands (the Kilimanjaro and Arusha regions), the Southern Highlands (the Mbeya, Ruvuma, and Ludewa regions), and the Western Lake Zone (the Kagera region) [34]. Figure 2 shows the quantities of Tanzanian coffee produced during the period 1990–2016. Overall, coffee production in the period was characterized by sharp fluctuations, particularly during the past decade. The amount produced ranged between 34,000 tons

in 1994 and 90,000 tons in 2005, averaging 53,000 tons per year during the study period. Part of these fluctuations is attributable to the biennial bearing nature of coffee trees, i.e., yielding a heavy crop in one year and a light crop in the following year [35]. As coffee production is significantly price-elastic, market prices are another main driver causing fluctuations in production [31]. For instance, following the international price spike in 2009 resulting from a global food crisis, Tanzanian coffee production increased from 43,000 tons in 2008 to around 70,000 tons in 2009.



**Figure 2.** Trends in Tanzanian coffee production (1000 tons), 1990–2016 (source: FAOSTAT [36]).

In recognition of the central importance of the coffee sector, the Government of Tanzania has implemented several strategies to address the challenges that limit the potential of the coffee sector. For instance, as part of the country's Agricultural Sector Development Strategy, in 2011 the government adopted the "Tanzania Coffee Industry Development Strategy 2011–2021". The overall objective of this strategy is to improve income across the entire value chain by increasing coffee production, quality, and value added. This objective is achieved through various policies, including (i) supporting the coffee production and expansion program, which involves increasing yield on existing coffee farms and encouraging the private sector to set up new farms; (ii) improving coffee quality by increasing the availability of extension services; (iii) establishing the Tanzanian Coffee Development Fund (TCDF) to help small farmers access production inputs; and (iv) improving the business environment through revision of regulations that guide operations in the coffee industry, and creating a conducive environment for investment in the industry [34].

Nevertheless, small coffee farmers are, in particular, increasingly exposed and affected by the challenges facing the coffee sector. Mwakaje [37] and Parrish et al. [33] point out that small coffee farmers are generally underperforming as they face volatile global coffee prices, interrelated pressures of rapid market liberalization, variable production and unreliable coffee quality, higher input costs, and financially and organizationally tenuous cooperative unions. Potts et al. [38] show that small coffee farmers in Tanzania are adversely impacted by the highly volatile coffee prices in recent years, low productivity, poor agricultural practices adopted by many small producers, and limited access to credit, among other factors. Baregu et al. [39] demonstrate that an increase in the value of Tanzanian coffee exports does not necessarily translate into benefits to small farmers, because it is a result of increases in free-on-board prices, and not farm-gate prices. Low farm-gate prices make it difficult for Tanzanian coffee growers to invest in their farms, which adversely affects coffee production and hence farmers' income [40].

With regard to FT-certified coffee production in Tanzania, there has been little research on the extent to which FT certification could help small farmers in Tanzania respond to these challenges. Questions such as what motivates small farmers to become certified, and the impacts FT certification

may have on their income and livelihood, remain widely unanswered [41]. Among the few studies performed to date, Potts et al. [38] show that adoption of FT by coffee farmers in Tanzania is associated with having better knowledge regarding good agricultural practices, and achieving higher yields and more revenue. Parrish et al. [33] recommend further promotion of the FT system among coffee growers in Tanzania, since FT certification could improve small farmers' income and enhance their knowledge. In the following sections, we provide empirical evidence on farmers' motivations for FT certification in Tanzania.

### 3. Materials and Methods

#### 3.1. Survey Design and Data Collection

Based on comprehensive desk research that was undertaken to review relevant literature on FT in developing countries (see the references cited in the introduction), a paper-based questionnaire was designed to investigate motivations for FT certification among small coffee farmers in Tanzania. The first version of the questionnaire was submitted to a local expert affiliated with a FT organization in the Kagera region of Tanzania for review and comments. Based on the expert's feedback, a revised version of the questionnaire was pre-tested, in order to identify misunderstandings or ambiguities in the questionnaire. The final version of the questionnaire included structured and open-ended questions, and consisted of seven sub-sections to obtain specific information on (1) farmers' characteristics and their specialization in the production of FT-certified coffee, (2) farm characteristics, (3) farmers' motivations for FT certification, (4) farmers' perceptions of the benefits they may gain from FT certification, (5) major perceived obstacles and problems encountered in the FT business, (6) the role of institutions and the assistance provided by Tanzanian coffee authorities to promote FT certified coffee production, and (7) farmers' views on how to promote a business-friendly environment for small growers of FT-certified coffee in Tanzania.

Data collection was carried out between March and April 2017 in the Kagera region of Tanzania. The region is located in northwestern Tanzania, bordering Rwanda, Uganda, and Burundi. The landscape of the Kagera region is characterized by hills and fertile soil, making it more suitable for coffee production than dry regions to the south. According to the statistics of the Tanzanian Coffee Board, around 43% of the country's coffee supply in 2016/2017 was produced in the Kagera region [42]. Due to budget constraints, data collection was conducted in two out of the eight districts in the Kagera region (Karagwe and Kwyera). Around 30% of the population of the region lives in these two districts, where small-scale farming is the main income source for the inhabitants. Coffee and sugar are the two most cultivated crops in the study area, but coffee is the only cash crop produced and exported, making income from coffee critical for employment and livelihoods.

Respondents to the questionnaire consisted of farm owners ("farmers"), who were assumed to possess the knowledge and experience necessary to provide precise information about FT-certified coffee. The interviews were carried out in collaboration with the Kaderes Peasants Development Public Limited Company (KPD Plc). KPD Plc has been operating in the Kagera region since 2007, providing FT certification, agricultural inputs, and training on sustainable farming and good agricultural practices to small farmers in the region. Due to the high rate of illiteracy and poor English reading skills of the respondents, an interpreter was hired to assist in the interviews. Before the interviews, the farmers were informed about the objectives of the study and the structure of the questionnaire. Based on our discussions with the representative of KPD Plc, the target sample consisted of 200 small FT-certified coffee farmers. However, 52 farmers did not show up for the interviews, for various reasons. Thus, our final sample consisted of 148 farmers. This sample size can be considered satisfactory when compared with that in similar recent studies on Tanzanian small coffee farmers, such as Mhando et al. (103 respondents) [43] and Nelson et al. (168 respondents) [44].

### 3.2. Empirical Model

Small farmers in this survey were asked to rate their responses on a Likert scale of 1 to 5. The ordered nature of the categories had therefore to be accounted for in the analysis. An Ordered Logit Model (OLM) was used to analyze farmers' economic, social, and environmental motivations for FT certification. OLM is a regression model for an ordinal response variable, which is based on the cumulative probabilities of the response variable. The logit of each cumulative probability is assumed to be a linear function of the covariates, with regression coefficients constant across response categories [45]. Compared with multinomial logit and ordinary least squares (OLS) regression models, OLMs are better for quantifying the effects of the contributing factors on the ordinal response variable while avoiding losing valuable information about the ordering. This is because despite being ordered, the scores are not continuous outcomes or normally distributed [46]. While all observations are required to be independent, according to Wooldridge [47], we used a clustered sampling technique to estimate robust standard error for non-independent responses that belonged to one interviewee, and therefore corrected for intra-group correlation. According to the OLM hypotheses,  $y$  can be observed through the scale ratings; however, there is a continuous, unmeasured latent variable  $y^*$  that captures the value of  $y$ . Thus, the value of  $y$  is given by:

$$y_i = j \text{ if } \tau_{j-1} \leq y_i^* < \tau_j \text{ for } j = 1 \text{ to } 5 \quad (1)$$

where  $\tau$  is the threshold between the Likert scale ratings and  $j$  is the scale value. The likelihood can be defined as:

$$\ln L(\beta, \tau | y, x) = \sum_{j=1}^5 \sum_{y_i=j} \ln [F(\tau_j - x_i\beta) - F(\tau_{j-1} - x_i\beta)] \quad (2)$$

where  $\beta_0 = 0$ ,  $F(\cdot) = \frac{\exp(\cdot)}{1 + \exp(\cdot)}$  and  $x$  represents a set of socio-demographic and farm characteristic explanatory variables.

## 4. Empirical Results

### 4.1. Descriptive Survey Analysis

Table 1 summarizes the descriptive statistics on our sample. Over 75% of the farmers surveyed were aged 44 years or younger, 16% were aged between 45 and 60 years, and 9% were over 60 years. Around 17% of the primary farm operators were female. As the survey designated only one operator per farm, the percentage of women involved in farming operations in our sample might have been underreported. The majority of the farmers surveyed had low levels of education, with 81% having a primary school diploma or lower and 19% having a secondary or higher education diploma. Nearly 63% of the farmers surveyed had been in farming for more than 20 years, while only 6% were relatively new to farming, with less than 10 years in the business.

With respect to farm size, around 64% of the farmers surveyed farmed up to 5 acres of land, with an average of 4.4 acres, while around 33% farmed slightly more than 5 acres. Generally, the majority of farms in Tanzania vary in size from slightly less than 3 to 7 acres [48]. On average, the farmers surveyed allocated an area of around 3.6 acres to the cultivation of coffee beans, and the majority of the respondents (95%) cultivated other crops, mainly green bananas, maize, beans, and cassava.

In relation to experience of FT, 93% of the farmers reported having experience with FT activities for less than 10 years. Although Tanzania was the first country in which the FT organizations began their operations in SSA in 1990, it was not until the 2000s that the FT sector became institutionally organized, and FT farmer organizations developed their capacity to operate and attract farmers [49]. Around 79% of the farmers surveyed had a FT-certified area of less than five acres, and another 21% reported planting five or more acres. This means that almost all coffee production on the respondents' farms is certified for FT. It is worth mentioning that some respondents reported that although their whole farm

area was FT-certified, some plots remained uncultivated for several reasons, including financial and labor constraints. The statistics of the FT Organization show that FT coffee farmers in Africa cultivate an average of two acres of FT-certified coffee [50], so the farmers surveyed in this study are more specialized in certified FT coffee production than other FT-certified farmers in Africa.

**Table 1.** Characteristics of respondents in the survey ( $n = 148$ ) (source: survey results).

Variables	Variable Categories	Number	%
Gender	Male	123	83
	Female	25	17
Age	15–24	47	32
	25–44	64	44
	45–60	23	16
	>60	13	9
Experience in farming	<10	9	6
	10–20	47	32
	>20	92	62
Years in FT	<5	76	52
	5–10	61	41
	>10	11	7
Level of education	Illiterate	18	12
	Primary	102	69
	Secondary	17	11
	Post-secondary	11	8
Total farm size (Acres)	<2	19	13
	2–5	76	51
	>5	53	36
Area under FT (Acres)	<2	46	31
	2–5	71	48
	>5	31	21
Number of FT-certified coffee bags (70 kg/bag)	<20	71	48
	20–40	44	30
	40–60	23	16
	>60	10	7
Farm income	Low	36	24
	Moderate	81	55
	High	31	21

In terms of FT sales and revenue, the study failed to obtain reliable information from the farmers surveyed for two reasons. First, almost all the farmers practiced intercropping by simultaneously growing two or more crops on the same plot, making it challenging to precisely calculate their profits from FT-certified coffee production, due to difficulties in isolating the production cost associated with each crop. Second, most of the farmers surveyed had a low level of education (see Table 1), which makes farm accounting and bookkeeping a complex task for them, and therefore they were unable to provide precise values on sales. However, the farmers surveyed were able to provide rough estimates of the number of FT-certified coffee bags produced annually on their farms. On average, each farmer produced around 25 bags per year, although this figure varied widely between less than 10 bags (23% of farmers) and more than 60 bags (7%), due to differences in farm size, age of coffee trees, and the biennial bearing nature of coffee trees. Moreover, farmers were asked to assess their annual profits from FT coffee production using a three-point Likert scale consisting of low, moderate, and high profit levels. Almost 80% of them reported moderate profits from FT-labeled coffee sales, while 10% and 12% reported low and high profits, respectively.

#### 4.2. Analysis of Farmers' Motivations for FT Coffee Certification

Based on our review of the literature, 19 motivational factors were identified as major reasons why small coffee farmers may decide to adopt the FT system. The farmers interviewed were asked to indicate how much each of these factors influenced their decision to certify, using a five-point Likert scale from “strongly disagree” (1) to “strongly agree” (5). Table 2 summarizes the mean and standard deviation of farmers' responses. As can be seen from the table, all the suggested motivational factors received a mean score higher than the mid-point of the scale. Farmers were most motivated by economic drivers, such as gaining higher prices (rating 4.95), increasing income (4.95), and increasing production efficiency (4.82), as well as accessing high-value agricultural markets (4.54) and improving coffee quality to enhance their competitiveness (4.82).

**Table 2.** Farmers' rating of their motivations for FT certification.

Motivation	Mean	SD
Avoid price uncertainty	4.94	0.31
Improve productivity and income	4.95	0.36
Increase production efficiency	4.82	0.60
Gain higher prices	4.95	0.21
Increased demand for FT-certified coffee	4.43	1.02
Access high-value agricultural markets	4.54	0.95
Increase market share	4.65	0.97
Improve coffee quality and enhance competitiveness	4.82	0.60
Improve knowledge about good agricultural practices	4.85	0.44
Use FT certification as a promotional or sales tool	2.64	1.39
Feel better & improve performance relative to other farmers	4.73	0.69
Gain benefits from joining a FT cooperative	4.80	0.50
Support local community development	2.66	1.43
Enhance soil fertility	4.50	1.03
Protect the environment and natural resources	4.78	0.61
Complement other environmental friendly systems (e.g., organic)	3.03	0.62
Reduce chemical and pesticide use	2.55	0.84
Reduce vulnerability to climate change & environmental hazards	2.52	1.42
Protect wildlife	3.38	1.06

The dominance of economic motivations over other motivational aspects was expected, especially since small farmers are less likely to invest the additional resources often required to adopt FT production practices without the promise of economic returns. This finding substantiates previous findings in the literature, suggesting that farmers' decisions to participate in certification schemes are primarily driven by economic motivations [12,51–53]. For instance, Bacon et al. [52] found that farmers' decisions to adopt sustainable agricultural production systems are influenced more by economic motivations than by a commitment to the ideological and agroecological aspects of sustainability. In this context, Oya et al. [51] illustrate that the FT system builds centrally on the idea that certified (coffee) production gives unique access to niche markets, and that prices paid in FT markets should be higher than those attainable outside of such markets which are the prime motivations for shouldering the costs of FT certification in the first place.

To better understand farmers' motivations for FT certification, an explanatory principal component analysis was carried out (Table 3). Based on the eigenvalue estimates generated from the Varimax-rotated factor analysis, three distinct factors with eigenvalues greater than unity were identified, which collectively accounted for about 66% of the variance in the original variables. To check the suitability of our data, we computed the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and the Bartlett test of sphericity. The KMO value was 0.785, and the Bartlett test result was 567,794, with a significance level of  $p < 0.0001$ , confirming the reliability of testing the motivations for FT certification among interviewees using factor analysis.



**Table 3.** Economic, social, and environmental motivational factors affecting farmers' decisions on FT certification.

Motivational Factor	Category of the Motivational Factor		
	Economic	Social	Environmental
Improve productivity and income	0.8274		
Avoid price uncertainty	0.8553		
Access to high-value agricultural markets	0.7897		
Improve knowledge about good agricultural practices		0.6624	
Self-satisfaction and improve performance relative to others		0.6868	
Gain benefits from joining FT cooperative		0.6651	
Reduce chemical and pesticide use			0.6156
Increase soil fertility			0.6184
Protect environment and sustain natural resources			0.6084
Eigenvalue	3.847	1.485	1.330
Proportion of variance explained	28.65	19.90	13.87
Cumulative proportion of variance explained	28.65	48.55	62.42

Note: blanks represent abs (loading) <0.6.

The first of the three factors with eigenvalue >1, which had a scale reliability coefficient (Cronbach's alpha) of 0.7748, was denoted "economic motives" (Table 3). It consisted of motives such as improving productivity and income and avoiding price uncertainty. It also included the motive of gaining access to high-value agricultural markets, which to some extent reflects farmers' proactive behavior in anticipating future market trends, in light of the increased demand for FT-certified coffee. While small farmers often face the highest access barriers to more remunerative markets, Jari et al. [54] point out that market access is one of the major motives for small farmers to adopt certification schemes, when their only alternative are the low prices offered in the local market. That is, FT certification seems to be a means on which small farmers can rely to gain better access to these targeted markets.

The second factor (Cronbach's alpha 0.5705), denoted "social motives", included gaining more knowledge about good agricultural practices, which could enable farmers to penetrate high-paying markets in developed countries. This factor also included farmers' desire to be part of a FT cooperative, so that they could improve their bargaining power with regard to coffee prices and benefit from the services provided to cooperative members. This is in complete agreement with Herman [55], who indicates that access to support from specialist organizations is a proactive factor for farmers' adoption of certification schemes. Given that the farmers surveyed had quite small farms, collective action for market access through FT certification seems to help them cope with market imperfections, such as high transaction costs and poorly functioning credit markets, as noted by Markelova et al. [56]. Another motive in this factor was achieving self-satisfaction through the adoption of FT, which involves higher quality and much safer coffee, and thus performing better than other conventional coffee farmers. As reported by Ratanachai [57], when a farmer has decided to adopt new practice, such as the FT system, self-satisfaction and satisfaction of others to whom a farmer often refers become important. Overall, this factor reveals that social motivations play an important stimulating role in farmers' decisions for FT certification, which could be explained by the significant effect that FT certification may have on farmers' social capital through providing them with better access to information on market trends and forecasts, and enhancing their competitiveness and connectedness to the global coffee industry.

The third set of factors (Cronbach's alpha 0.5185), termed "environmental motives", comprised three motivational factors, namely reducing chemical and pesticide use, increasing soil fertility, and protecting the environment and sustaining natural resources. Despite the special emphasis that the FT organization places on environmental sustainability, our results presented in Tables 2 and 3 imply that the farmers surveyed were relatively less environmentally motivated to adopt the FT system.

During the interviews, we observed a widespread lack of clear understanding of the environmental aspects of FT among the farmers. Environmental issues related to FT certification (e.g., sustainability of natural resources, integrated crop management) remained abstract concepts to many interviewees, while their knowledge of economic and social aspects was quite well developed. This concurs well with Hagggar et al. [58], who found that although FT coffee labeling includes environmental requirements; its focus is on the terms of trade, especially the guaranteed price premium, labor rights, and community development. This finding raises concerns about the success of FT system in achieving its intended environmental objectives.

#### 4.3. Results of the Ordered Logit Models

Table 4 presents the results of the OLM for the economic, social, and environmental motivations for FT certification among smallholder coffee farmers in Tanzania. The parameter estimates (coefficients) for the independent variables indicate that the log odds change in the respective motivational score for each variable relative to the reference category, holding other variables constant. Overall, the OLM results in Table 4 provide a more nuanced picture of economic, social, and environmental motives for FT certification among different sociodemographic groups of farmers surveyed.

**Table 4.** Ordered logit model (OLM) estimates on farmers' motivations for FT coffee certification.

Explanatory Variable	Ordered Logits: Coffee Farmers' Motivations for FT Certification					
	Model 1		Model 2		Model 3	
	Economic Motives		Social Motives		Environmental Motives	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
<b>Age (Ref = 15–24)</b>						
26–44	0.698	(0.522)	−0.866 *	(0.497)	0.150	(0.600)
45–60	−1.059 *	(0.624)	1.159 **	(0.542)	−5.242 ***	(1.289)
>60	−0.875	(0.845)	1.660	(1.109)	−5.865 ***	(1.277)
<b>Gender (ref = Female)</b>	2.175 ***	(0.649)	−5.004 ***	(0.886)	−5.673 ***	(1.030)
<b>Experience (Ref = Short)</b>						
Medium	2.682 ***	(0.741)	0.323	(0.534)	1.358 *	(0.721)
Long	4.309 ***	(0.880)	2.114 ***	(0.625)	0.648	(0.739)
<b>Education (Ref = None)</b>						
Primary	1.767	(2.650)	2.492	(2.558)	−0.267	(1.897)
Secondary	4.386	(2.745)	4.034	(2.639)	−1.327	(2.040)
Post-secondary	4.639 *	(2.817)	4.071	(2.664)	0.155	(2.016)
<b>Farm Size (Ref ≤ 2 Acres)</b>						
2–5	0.653	(0.610)	−1.301 **	(0.525)	2.376 **	(1.015)
>5	1.841 **	(0.731)	−2.085 ***	(0.698)	5.265 ***	(1.182)
<b>Farm Income (Ref = Low)</b>						
Moderate	1.654 **	(0.732)	−0.0429	(0.449)	3.452 ***	(1.238)
High	3.405 ***	(0.846)	−1.422 **	(0.718)	4.734 ***	(1.414)
Chi2 (d.f.)	218.47		160.10		303.89	
R2	0.557		0.423		0.6914	

Note: Standard errors in brackets. Significance level: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

With respect to the economic motivations (Model 1), the OLM results revealed that older coffee farmers (>45 years) were less economically motivated with regard to FT certification, although the age effect remained either poorly statistically significant or non-significant. In this regard, Marenya and Barrett [59] found that older farmers are less likely to adopt agricultural innovations, since the more a farmer grows old, the more the planning horizon shrinks, and therefore there are fewer incentives to invest in FT certification. Gender (ref = female) was found to be highly statistically significant and positively associated with a coffee farmer being economically motivated for FT certification. This finding is in agreement with previous FT studies, which undertook gender analysis, showing that women often are less economically-driven and less likely to benefit economically from FT than men [60,61]. The results of Model 1 showed also that farmers with medium- to long-term experience in coffee farming were significantly more economically motivated. Moreover, farmers were more economically motivated to adopt FT with increasing farm size and with increasing level of farm income. This result is given further credence by the results of Nelson et al. [44], which show that in unequal economic contexts, FT certification benefits the larger producers more than the smaller ones. As shown by Yang et al. [26], the guaranteed price under the FT system is often not sustained, and many small farmers in particular may end up indebted, rather than boosting their incomes. During our interviews, local experts in the Kagera region claimed that many small farmers in the study area have taken loans at high interest rates, hampering their ability make repayments and hence negatively affecting their income from coffee production.

In relation social motivations (Model 2 in Table 4), the logit model estimates showed that coffee farmers with a larger farm size and higher farm income were significantly less socially motivated to adopt the FT system. Furthermore, the results indicated that experienced farmers in coffee cultivation were more socially driven to become FT-certified. This finding meshes well with Breukers [62] who found that older and experienced farmers are more likely to be more motivated for certification due to three reasons: (i) they often have good ties with the extension services and FT organizations, and therefore might be favored when certification is available; (ii) most of them have previously been certified for a particular certification, and thus they are more likely to obtain an additional one, being FT certification; and (iii) they may have developed production techniques that give better production quantity and quality, which are more suitable for FT certification. Considering gender, the results of Model 2 indicated that female coffee farmers were significantly more socially motivated to become FT-certified than male farmers. This finding could be explained by the fact that FT certification provides opportunities to female coffee farmers, who traditionally face several challenges in participating in agricultural markets due to gender stereotypes and access to finance, by strengthening their socioeconomic independence and their role in farm decision-making. In this respect, McArdle and Thomas [61] point out that the empowerment of women is one of the underlying principles for the FT system, which includes criteria to recognize and secure their employment, improve income levels, improve their access to technology and credit, and to ensure their participation in the decision-making processes.

With regard to environmental motivations, the estimates of Model 3 in Table 4 reveal that older coffee farmers were significantly less environmentally motivated to adopt the FT system. This finding corresponds with evidence from previous studies showing that younger farmers are more likely to be drawn to certification schemes for environmental reasons [59,63]. Female coffee farmers were significantly more environmentally driven to FT adoption than male farmers. In general, several studies have shown that female farmers are more environmentally motivated to adopt agricultural friendly practices than males, due to their biospheric orientation and the fact that women are disproportionately vulnerable to environmental risks and have lower adaptive capacity [64,65]. Farmers' experience of coffee cultivation had a positive, but less statistically significant effect on their environmental motivations to become FT-certified. Likewise, but statistically more significant, farmers with higher incomes and larger farms were more environmentally motivated to become FT-certified. Similarly, younger coffee farmers were found to be more environmentally motivated to seek FT certification.

Kamau et al. [66] and Murendo et al. [67] found that young farmers are likely to adopt sustainable agricultural practices and natural resource management technologies. This is because older farmers are in most cases risk averse, and thus less likely to adopt newer agricultural practices compared to young farmers [68].

Overall, our OLMs estimates indicate that lower-income and smaller-scale coffee producers are less economically and environmentally motivated for FT certification. In line with this, Wilson [68] claims that some of the larger FT cooperatives have begun behaving more like export firms, which may reduce their effectiveness in improving livelihoods among small-scale farmers. Oya et al. [51] further illustrate that in a context of farmer heterogeneity, including differentiation among small farmers, the benefits of FT certification are unlikely to be equally shared, unless interventions by FT organizations radically alter the balance of power and existing inequalities.

Noteworthy, in the three estimated OLM models, farmers' level of education was surprisingly found to have no significant influence on their motivation for FT certification. While Zabala [69] shows that the quality of training and extension services is positively correlated with an increase in the adoption of good agricultural practices among small farmers, our results imply that there are deficiencies in the training and extension services provided to the surveyed small coffee farmers. This finding lends support to Parrish et al. [33], who show that education and training programs aimed at building the capacity of Tanzanian coffee farmers and promoting sustainable coffee production systems are less effective.

## 5. Discussion and Concluding Remarks

In this study, a quantitative investigation based on a sample of 148 FT-certified small coffee farmers in Tanzania was undertaken to analyze the farmers' motivations for FT certification. While the emphasis of most related studies has been on the economic aspects of farmers' motivations, we took a further step and investigated the role of the three dimensions of sustainability (economic, social, and environmental) in small coffee farmers' decisions about FT certification. The empirical results revealed important findings with policy implications. The results have also pointed towards a number of research gaps, providing an opportunity to support additional research to improve the adoption of sustainable certification schemes among small farmers in developing countries.

First, consistent with the literature, the results indicated that decisions for FT certification among Tanzanian small coffee farmers were driven primarily by economic motivations. The dominance of economic motivations over other motivational aspects was expected, since small farmers are less likely to invest the additional resources often required to adopt the FT system without the promise of economic returns. This research finding reinforces the importance of strengthening the link between sustainability-related certification schemes, such as FT, and economic incentives (e.g., lower interest rate loans, higher farm gate prices) to make these schemes more attractive to small producers, and help them pay for investments in sustainable agricultural production processes. As noted by Emertson [70], incentives are needed when conservation does not make economic sense. Therefore, the essential aim of "economic" incentives in the FT system should be intended to influence small farmers' behavior and their resource-use decisions, by making it more economically desirable for them to adopt sustainable coffee production and environmentally friendly farming practices.

Second, in connection with the previous finding, the results indicated that the farmers surveyed were less environmentally motivated to adopt the FT system. This supports the findings of Mook and Overdevest [71] showing that small producers perceived environmental motives as less important, and did not rate FT highly in terms of promoting sustainable agriculture. This raises concerns about the extent to which the FT system is successful in achieving its intended environmental objectives. In theory, FT certification incorporates environmental measures aiming to elevate standards for sustainable agricultural production—for example, by minimizing agrochemical use, reducing wastes, enhancing soil and water management, and promoting biodiversity and adaptation to climate change. In light of the increasing demand for eco-friendly products and the raising of public and private

standards in developed countries, it is reasonable to expect that environmental requirements will become more important in the short to medium term. Thus, efforts to promote FT certification among small coffee growers in Tanzania should be designed and applied in ways that support sustainable development by balancing environmental, social, and economic outcomes. In particular, the way in which the environmental dimensions of the FT system are introduced to small coffee farmers has to improve, so that FT certification becomes an effective environmental policy tool to change the practices of farmers regarding the environment and the use of natural resources.

Third, the results revealed that larger-scale and higher-earning farmers were less economically and environmentally motivated for FT certification. This is further explained by de Janvry et al. [72], who pointed out to the inability of small-scale farmers to compete with larger-scale farmers and to benefit equally from the FT certification. In this respect, the existing literature provides mixed evidence on the impact of FT certification on upgrading economic, environmental, and market standards for small farmers. One strand in the literature argues that FT certification is associated with better access to consumer markets, better prices, and higher incomes [73,74]. In contrast, another strand in the literature claims that the FT system operates in ways that favor the interests of larger producers over small growers [75–77]. Accordingly, it is likely that small farmers pay the costs of FT certification without achieving the promised benefits [72]. In that case, rather than improving the market power of small farmers, as the principals of the system suggests, FT might leave “traditional” market relations intact. Therefore, it is important that FT reaffirms its commitment to marginalized and disadvantaged small coffee farmers by implementing better targeted measures which can help them expand coffee production and marketing, and thereby improve their incomes and livelihoods.

Fourth, considering gender, the results suggested that female coffee farmers were significantly more socially and environmentally driven to adopt FT certification than male farmers. As highlighted by Reynolds [78], a key social justice aspect of the FT system is to extend participation of women in agricultural activities and in farm decision-making processes. Despite the deeply rooted gender inequality in local cultures in developing countries, Macdonald [79] found that FT certification had a positive effect on female participation in coffee production and increased equality within farmer organizations. While agricultural commercialization often reduces women’s control of farm production and revenues, Chiputwa and Qaim [80] point out that this loss of control can be prevented and even reversed through the adoption of sustainability standards, which generally emphasize zero tolerance to discrimination, marginalization, and unfair treatment of women and female workers employed on certified farms. Overall, our results imply that empowering women and their full inclusion in coffee value chains, decision-making processes, and environmental planning is crucial to promote the adoption of environmentally friendly production systems in developing countries.

Fifth, the empirical results showed that younger coffee farmers were both more economically and more environmentally motivated to seek FT certification. This finding coincides nicely with a study by Läßle and Rensburg [63], which showed that younger farmers are more environmentally and economically motivated to adopt certification schemes, since they are less integrated into the dominant social order that is deemed to have caused environmental problems, and because they are more concerned with the environment and open to new ideas [64]. Moreover, younger farmers may incur relatively lower switching costs in adopting the FT system, since they have only limited experience and their learning and adjustment costs involved in adopting new sustainable agricultural practices may be lower [59]. Hence, government and extension agencies should undertake more efforts to attract and facilitate rural youth’s involvement in agricultural value chains in order to promote FT and sustainable farming practices.

Sixth, surprisingly, farmers’ level of education in the three estimated OLM models was found to have no significant influence on their motivations for FT certification. This result is contrary to earlier studies on farmers’ adoption of sustainable farming practices, e.g., [69,81], where education was found to render the farmers more open to change and create a favorable attitude for the acceptance of new agricultural practices, especially those practices that are information- and management-based.

However, our finding aligns well the findings of Parrish et al. [33], which showed that the “quality” of farmers’ training and extension services in Tanzania represents a major barrier to farmers’ adoption of sustainable farming practices. In sum, institutional factors (for example, support from extension services and farmers’ cooperatives) could play a determinant role in the adoption of FT processes among small farmers; however, the issue here is more related to the “quality” of educational and training programs provided by Tanzanian institutions. Therefore, enhancing the quality of these services by designing capacity-building programs that are tailored to the needs of small coffee farmers is likely to improve the adoption of FT among small coffee farmers in Tanzania. While our results indicated that younger farmers are more likely to adopt FT, extension systems need to differentiate their clientele based on demographic characteristics of the farmers, such as age. In this respect, designing innovative pedagogic tools, such as videos and mobile phone technology, could foster learning and enhance the role of education in achieving the agricultural sustainability goals.

Finally, although this study provides useful insights into small farmers’ motivations for sustainability standards in Sub-Saharan African countries, several key questions remain for future research. First, as discussed in previous sections, despite the growing body of the literature on FT and small producers in developing countries, existing studies provide conflicting empirical evidence on farmers’ motivations for FT adoption, and even much conflicting evidence on the impacts of FT on these farmers. Further research to understand how FT functions and how it delivers benefits to small farmers in developing countries is fundamental to evaluate the policy warrants surrounding the FT system. Second, while this study has focused exclusively on “FT”, which is the most widely adopted certification system by small coffee farmers in the Kagera region of Tanzania; there is a large marketplace for sustainability standards and certification schemes in developing countries. Many of these sustainability standards have been introduced during the past few decades as a result of the prevalence of agricultural and food standards and market-based certifications. Especially for coffee, even within the same certification scheme, small farmers have a variety of certifiers to choose from, including FT, Organic, UTZ (Note: UTZ and Rainforest Alliance have merged in January 2018. For more information, please refer to this website: <https://utz.org/new-certification-program/>), or Rainforest Alliance, among others. Future research should explore similar questions in relation to other sustainability certification schemes. Particularly, a comprehensive analysis that considers farmers’ motivations and decision-making regarding certification for sustainability standards offered by different certifiers would have empirical significance for the environmental and socioeconomic outcomes of these schemes. Third, future research would benefit from considering the environmental motivations and impacts of the FT system, as they tend to be overlooked by existing studies because their effects lie outside the certified farms and the impact assessment practices of FT organizations. In particular, it would be useful to move towards a more holistic approach that integrates socioeconomic and environmental aspects related to FT to understand the dynamics of sustainable coffee production and consumption, and the conflict of short-term economic benefits with long-term sustainability goals. Fourth, we observed that the majority of studies on FT have focused on either farmers or consumers, widely ignoring other actors along the coffee value chains who may have an influential impact on farmers’ adoption of FT. Future analyses should more carefully investigate the motivations and constraints for decisions by other actors in the FT-certified coffee value chains, and the implications for the socioeconomic and environmental outcomes of FT certification.

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