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Article

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Cogent Economics & Finance

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Fedi, Gutema Bati; Asefa, Fekadu Dereje; Waktole, Abebe Tafa (2022) : Farm households' perception about sugarcane outgrowers' scheme: Empirical evidence around Wonji/Shoa Sugar Factory, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 10, Iss. 1, pp. 1-17,
<https://doi.org/10.1080/23322039.2021.2009664>

This Version is available at:

<https://hdl.handle.net/10419/303542>

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To cite this article: Gutema Bati Fedi, Fekadu Dereje Asefa & Abebe Tafa Waktole (2022) Farm households' perception about sugarcane outgrowers' scheme: Empirical evidence around Wonji/Shoa Sugar Factory, Cogent Economics & Finance, 10:1, 2009664, DOI: [10.1080/23322039.2021.2009664](https://doi.org/10.1080/23322039.2021.2009664)

To link to this article: <https://doi.org/10.1080/23322039.2021.2009664>



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Published online: 22 Dec 2021.



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Received 17 February 2021
 Accepted 18 November 2021

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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

Farm households' perception about sugarcane outgrowers' scheme: Empirical evidence around Wonji/Shoa Sugar Factory

Gutema Bati Fedi^{1*}, Fekadu Dereje Asefa¹ and Abebe Tafa Waktole¹

Abstract: The study assessed the perception of contract farm households about sugarcane outgrowers' scheme around the Wonji/Shoa sugar factory. The study utilized primary data collected from randomly selected samples of 200 members of sugarcane-producing farmers' cooperatives through a structured survey questionnaire. Purposively selected ten KIIs and six FGDs were also conducted with contract farmers and stakeholders. The five-point Likert scale measurement was created and applied to measure the perception of respondents about the scheme on considered 26 attributes and analyzed through descriptive statistics. Results revealed that the overall perception of the respondent contract farm households about the scheme was unfavorable with a weighted mean/index score of '2.32' with a mixed perception index score on considered 26 attributes. The study discussed the policy implications of the findings. The main areas of concern are the payment system, the relationship of contract farmers with representatives (from the union, factory, and cooperatives), the income of contract farm households, the provision of services

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PUBLIC INTEREST STATEMENT

We are interested in assessing contract farm households' perception about the sugarcane outgrowers' scheme around Wonji/Shoa sugar factory. We applied both quantitative and qualitative research approaches to analyze the response; on the given Likert-type items questions; of sampled contract farm households that were selected from 15 sugarcane producing cooperatives within the union. We found that the weighted average perception measure on considered factors was poor with mixed results on attributes. Furthermore, we find that the main areas of concern are the payment system, the relationship of contract farm households with their representatives, the income of contract farm households as compared to other economic activities, provision of services like free training, extension services, technical advice; transparent and comprehensive contract terms and conditions; provision of basic inputs and production services; an effective and efficient clear legal framework; additional support by third parties and trust for mutual benefits. Finally, the appropriate recommendations have been forwarded in this research article.

package (like free training, extension services, technical advice), the transparent and comprehensive contract terms and conditions, the provision of basic inputs and production services as per agreement (like adequate land preparation, infield irrigation), the effective and efficient legal framework system, additional support by third parties (on pre and post-harvest, production input provision, basic skill training, and etc.), and both parties should develop trust by having confidence on each other and not by acting opportunistically.

Subjects: Agriculture and Food; Environment & Economics; Economics; Development Economics

Keywords: perception; sugarcane outgrowers scheme; contract farming; Wonji/Shoa; Oromia; Ethiopia

1. Introduction

Contract farming is “An agricultural production carried out according to an agreement between a buyer and farmers, which establishes conditions for the production and marketing of a farm product or products.”¹ Following this definition, Food and Agricultural Organization (FAO) articulates that contract farming creates an agreement in which the farmer agrees to provide agreed quantities of a specific agricultural product that should meet the quality standards of the purchaser and be supplied at the time determined by the purchaser. In turn, the buyer commits to purchase the product and, in some cases, to support production through, for example, the supply of farm inputs, land preparation, and the provision of technical advice (Asian Development Bank (ADB), 2015). According to Glover (1990), an outgrower scheme is a special type of contract farming that involve management or ownership by public enterprises and define such scheme as “a central facility surrounded by growers who produce on their own land under contract”.

Ethiopia targets agriculture as a major source of economic growth with strategic objective of intensifying commercialization through the involvement of smallholder farmers and large commercial farms (Holtland, 2017). This acknowledges the increasing importance of outgrowers scheme farming in linking smallholder farmers with high value markets like sugar company, in the context of a fundamental shift to the production of high value crops such as sugarcane and others alternative crops (Nijhoff & Trienekens, 2012; Da Silva, 2005). However, linking smallholder farmers to the market economy of agro-processing companies like sugar factories are one of the major development challenges in the transformation of smallholder farmers (Kirsten & Sartorius, 2002). Yet, contract farming has emerged as one of the best approaches that promote the commercialization of smallholder farmers in developing countries. In another talk, contract farming is a vehicle of transition to modern agriculture (Minot, 2011; Simmons, 2002).

Ethiopian Sugar Corporation is encouraging the factory to expand its sugarcane estates within the limited farm land supply and supporting sugarcane outgrowers scheme in supplying their sugarcane to the factories in win-win solution both for farmers and factory. This transforming subsistence agriculture to market oriented agriculture in modern way as well as links the sugar factories to the local communities (nearby smallholders' farmers) for sustainable economic development. In Ethiopian sugar industry, the outgrowers scheme was mostly practiced in Wonji/Shoa sugar factory (WSSF) since 1975/76 to fulfill the demand of sugarcane supply. For example, currently WSSF has total crushing capacity of 6,250 tons of sugarcane per day. To fulfill this demand, producing sugarcane in its sugarcane estate was not enough. Thus, to fill these demand, sugarcane outgrowers scheme have supplying significant quantities of sugarcane for the factory. For instance, data obtained from the factory show that in 2012/13, 2013/14, and 2014/15 campaign year, sugarcane supplied from outgrowers scheme was about 54%, 55%, and 52% of total cane crushed by the factory, respectively.

The farmers in the scheme are usually responsible for activities such as assisting infield irrigation, weeding, fertilizer application, while tasks such as planting, harvesting, and transportation of sugarcane to the bridge weigh are organized by the factory. The smallholder farmers also have access to production inputs such as agro-chemicals and others inputs, credit, or technical assistance and can count on a guaranteed market for their produce. However, many time complain from scheme farmers on different aspects of outgrowers scheme was heard on different forum and meeting. With these regards, little has been done on household level perception of sugarcane outgrowers scheme. Thus, the objectives of the study was filling this gap by assessing the perception of contract farm households on sugarcane outgrowers scheme around WSSF, on specified statement of attributes.

2. Materials and methods

2.1. Description of study area

Wonji sugar factory was established in 1954, as a share company with a foreign investor HVA (Handlers-Vereeniging Amsterdam, a Dutch firm) and Ethiopian government on 5000 hectares for sugarcane cultivation, the first commercial sugarcane plantation. Then, in 1962 included Shoa Sugar Factory which is 7 km away from Wonji. The Wonji/Shoa sugar Factory (WSSF) is located at Oromia Regional state, lies downstream of the Koka dam in the central rift valley of Ethiopia in the upper reaches of Awash river basin, about 100 km southeast of Addis Ababa/Finfinne and about 10 km south of Adama town. WSSF is elevated as 1500 m above sea level located at 8°21' to 8°29' N and 39°12' to 39°18' E. Its mean rainfall is 800 mm. The maximum and minimum mean temperature is about 26.9°C and 15.3°C, respectively.

On the other hand, around WSSF there are five clusters of sugarcane producer farmers' cooperatives (SPFC) that produce and sell sugarcane to the factory in three-year contract/product agreement. These are (i) the Wonji old cluster have seven SPFC that were established in 1975/76 namely (Wonji Kuriftu, Boku Korabo, Adulala Boku, Hargitiy and Bishola), in 1978/79 (Wake Miya) and lately in 1986/87 (Wake Tiyo); (ii) the Wake Tiyo expansion cluster was established in 2008 and has four SPFC namely Wake Dire, Wake Denbi, Awash Melkasa, Adulala Hate Hofi Genet; (iii) the Dodota cluster was established in 2011 and have six SPFC namely Awash Abdi Boru, Hargity Denaba, Awash Bishola, Horsis, Kormine Tuja, and Jitu Marabe; (iv) Bofa and Wolensu cluster have ten SPFC namely Ulaga, Tedecha Goda, Misoma Gudina, Temseana Sekala, Kilo gudina, Sire dagagina, Shembeleta, Kechachule, Boruf Jiregna, and Oddo Furo Tegeri and (v) Wolenchity cluster have six SPFC were established in 2013 (namely Letu, Dandi gudina, Furda gudina, Goshu furda, Golba utte, and Qurqura irrecha) (Sugarcane producers cooperatives union, 2019).

2.2. Research approach and design

The research is descriptive and exploratory type that utilizes survey method. It adopts both quantitative and qualitative approach that involved the gathering of both numeric and text information. This is because it employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problems (Creswell, 2014).

The design for study was involves sequential embedded, in that first qualitative observation, preliminary key informant interviews (KIIs) and focus group discussions (FGDs) was made to have the first-hand understanding about the sugarcane contract farming in study area (e.g., on local context, how the scheme organized, the practice of farmers cooperatives and union system) on institutional arrangements functioning in scheme system. Second, household survey data was collected from respective samples. Then, after cleaning and coding, the data was entered into computer. Third, full-fledged KIIs and FGDs were conducted to support survey data. Finally, a comprehensive data analysis and report writing was done.

2.3. Study area and sampling strategy

The study is based on the primary data at the household level collected from sugarcane producer farmers' cooperatives union around WSSF between October 2018 and June 2019. A multistage

sampling techniques was used to pin down the contract farm households surveyed. First, the sugarcane outgrowers scheme farmer's cooperatives around WSSF were selected purposively because this scheme is the major (for smallholder farmers) in Ethiopian sugar industry. Second, 15 sugarcane producers farmers' cooperatives were selected purposively based on their duration of establishment (i.e. more than 10 years since establishment). In the next step, the total 2932 farm households (as of 2019) included under selected cooperatives were used as the sampling frame, and the total of 200 member farm households² were drawn randomly based on stratified proportionate sampling formula to sample size (Table 1).

2.4. Method of data collection

Primary data were gathered through personal interviews with contract farm household heads using structured survey questionnaires, and in-depth interviews/discussions with purposively selected ten KIIs and six FGDs (that considers age and gender differences as well as that are knowledgeable about the scheme and are active participants in the direct implementation of the scheme) using a list of guiding questions. After the transcription of the FGDs and KIIs in verbatim, narration and thematic issues were identified and narrated during data presentation and analysis.

Survey questionnaires contain data on socio-demographic characteristics and critical factors on sugarcane contract farming. The instrument was written in English and translated into the local language (Afaan Oromoo). To assess the level of agreement or disagreement of respondents on critical factors of sugarcane contract farming, a series of positive five-point Likert-type items statements were developed and each rating has a weight attached to it: strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). Before the actual survey administration, the instrument went through the process of checking for content validity by using a focus group followed by panels of experts before checking the construct validity. Then, the instrument pilot test was conducted, which would also ensure the reliability of the research items. Depending on feedback from the respondents in the pilot test, the instrument was improved by correcting and rectifying errors in the instrument as well as removing questions that were not relevant and adding questions as required therefore readjusting and clarifying the questions. The designed instrument allowed approaching the sugarcane contract farm households in the sugarcane outgrowers' scheme to identify their perception about the scheme system. To validate the instrument, a test on a preliminary trial (on 20 respondents from the population) was conducted, which yielded a Cronbach's alpha of 0.807 (it is probably reasonably good). The value exceeds the recommended threshold of 0.7, indicating that all items in the scale fulfill (acceptable) with the underlying instruments (De Vaus, 2004). It should also be noted that a high value for Cronbach's alpha indicates good internal consistency of the items in the scale. Finally, the survey was administered, under close supervision of the researcher, by four enumerators (that know the local language Afaan Oromoo) who were trained how to use the instrument before data collection. The enumerators would administer, i.e. read the questionnaires, and write the response of respondents who cannot read and write.

2.5. Method of data analysis

In this study, the respondents' perception regarding 26 attributes/items, explaining the overall aspects of sugarcane outgrowers' scheme farming, were created using the five-point Likert scale measurement (LSM) and analyzed through descriptive statistics such as mean indexes. The highest score of 5 was given to the "very strong" agreement with the "favorable (positive)" statements on the overall aspect of sugarcane outgrowers' scheme arrangement, which also implies that the concerned respondents perceived the specified statements of the attributes highly. The lowest score of 1 was assigned to "very little" agreement with the "favorable (positive)" statements, implying that the concerned respondents poorly perceived the specified statements/items of the attributes. The calculated mean scores of the respondents' perception about the scheme arrangement on considered attributes, as designed by Sarrafzadeh et al. (2010), were grouped and interpreted as follows: very low = 1 to 1.44, low = 1.45 to 2.44,

Table 1. Sampling distribution of sugarcane producer farmers' cooperatives

No	Name of cooperatives	Site/cluster	Total number of household head	Net area of farm land	Total sampled household head
1	Awash Abdi Boru	Dodota	296	606.01	20
2	Hargity Deneba	Dodota	390	760.04	27
3	Awash Bishola	Dodota	314	159.78	21
4	Horsis	Dodota	210	477.01	14
5	Kormine Tuja	Dodota	53	132.91	4
6	Jitu Merebe	Dodota	93	68.9	6
7	Wake Tiyo	Wake Tiyo expansion	57	233.9	4
8	Wake Dire	Wake Tiyo expansion	158	220.63	11
9	Wake Miya	Wake Tiyo expansion	279	298.88	19
10	Wake Dembi	Wake Tiyo expansion	228	168.81	16
11	Adulala Hate Hofi Genet	Wake Tiyo expansion	45	33.93	3
12	Awash Melkasa	Wake Tiyo expansion	164	74	11
13	Wonji Kuriftu	Wonji old	182	236.48	12
14	Boku Korabo	Wonji old	246	183.8	17
15	Adulala Boku	Wonji old	217	202.81	15
			2932	3857.89	200

Source: Respective Sugarcane Producer Farmers Cooperatives, 2019

neutral = 2.45 to 3.44, high = 3.45 to 4.44, and very high = 4.55 to 5. Statistical processing of the collected data was performed by using the IBM SPSS Statistic 26 program.

2.5.1. Weighted average scheme perception index (SPI)

The contract farm household perception indexes from data were computed by first assigning values from 1 (strongly disagree) to 5 (strongly agree) to the five-point Likert-scale ordinal responses of the respondent and a higher value signifying stronger agreement to the question that made up the attributes. To get the weighted average of respondents' perceptions about the scheme. First, the total weight value for each of the variables (SWV) was computed by summing the product of the number of responses for each rating to a variable and the respective weight value and it is expressed mathematically as:-

$$SWV = \sum_{i=1}^5 f_i s_i$$

Where SWV is the summation of the total weight value, f_i is the number of respondents to rating i , and s_i denotes the scale value/weight assigned based on the response.

Second, the weighted average perception index to a variable (VPI) is employed to assess the member farmers' perception about the variables/attributes and determined by dividing the SWV by the summation of the respondents to each of the five ratings of the variable and is expressed as:

$$VPI = \frac{SWV}{n}$$

Where n is the total number of respondent farm households

Finally, the weighted average perception index to scheme (SPI) (combined items) is employed to assess the member farmers' perception about the scheme, and SPI is derived by summing up the index for each variables and dividing it by the number of the identical variables. It is computed mathematically as:-

$$SPI = \frac{\sum^v PI}{v}$$

Where v is the total number of attributes.

3. Results and discussion

3.1. Socio-demographics characteristics of respondents

As indicated in [Table 2](#), the majority (75%) of respondent sugarcane outgrowers' scheme farmer was male. With regards to educational status, the majority (48.5%) of the scheme farm households' respondents had no formal education; out of these majority (40.5%) of them cannot read and write and 23.5% of them had primary education. This indicates that the contract farm households are challenged on understanding the written contract/production agreement and to undertake their responsibilities and rights. In the same way, the respondents in the survey were on average 46 years of age with about 16 years of sugarcane growing experience and have about 6 persons of household members.

3.2. Farm households' perception about the sugarcane outgrowers' scheme

This section presents the responses of 200 contract farm households' perceptions about the sugarcane outgrowers' scheme. The respondents were asked to rate sources of critical factors for their contract farm, from a list of 26 potential attributes that need to be incorporated into any Outgrowers' scheme on a Likert-type scale of one to five-where five and one indicate strongly agree or strongly disagree, respectively.

The mean rating of factors that determine the success of the sugarcane outgrowers' scheme as rated by sampled contract farm households is presented in [Table 3](#). Results in [Table 3](#) indicate that the contract farm households' perception about sugarcane outgrowers' scheme based on considered 26 attributes. Based on the weighted mean/index, the respondents' perception is '2.32' which corresponds to something slightly higher than 'disagree' that was rated '2'. This shows that the overall perception of the respondent about the scheme was unfavorable. Further analysis indicates that the perception of the respondent about the scheme has mixed weighted mean/index on considered 26 attributes as presented and analyzed in details as follows.

The result of data ([Table 3](#)) indicated that the respondents' aggregate mean perception were neutral about contract members clearness on production agreement terms and conditions (with mean rating = 2.59; SD = 1.43) and about their level of participation and full knowledge on contract agreement terms (with mean rating = 3.06; SD = 1.47). This result indicates that the majority of contract farm households in the scheme have weak know-how (i.e. have weak bargaining power) about the production/contract agreement term and conditions as well as the participation was not based on their interest and full knowledge. This harms farmers' sense of control/decisions on outgrowers' system and the sustainability of the scheme as well. This view is in line with the explanation of the key informant during the interview that explained as the factory and union prepare a strictly obligatory contract agreement that would create ways to manipulate us. Nevertheless, Gent (2010)

Table 2. Socio-demographics characteristics of respondent farm households (n = 200)

Variable	Unit	Frequency	Percent
Gender	Male	150	75
	Female	50	25
Educational status	Cannot read and write	81	40.5
	Can read and write	16	8
	Grade 1 to 4	31	15.5
	Grade 5 to 8	42	21
	Grade 9 to 12	21	10.5
	Certificate and above	9	4.5
Marital status	Single	7	3.5
	Married	159	79.5
	Divorced	3	1.5
	Widow	31	15.5
Ethnicity	Oromo	186	93
	Amahara	12	6
	Wolayita	2	1
		Mean (Std. dev)	SE
Age of head	Years	46.03(14.34)	1.01
All household members ³	Number of persons	5.54 (2.29)	0.16
Size of total farm land	Hectare	2.06 (1.54)	0.11
Farm household experience since sugarcane contract farming	Years	16.37 (12.44)	0.88

Source: Computed from farm household survey data, May 2019

pointed out that contracts or production agreements between companies and farmers should be transparent and comprehensive. Farmers should understand the agreement, and how these affect them. This may require translation of agreement into the local language; if necessary, the company or a third party must provide a degree of training and capacity building among the farmers to ensure that they understand and accept the terms of the contract, and copies of the agreement must be made available to the farmer. Similarly, Eaton and Shepherd (2001) also pointed out that the successful implementation of contract farming depends on the understandings of the farmers engaged in the scheme and the way the contract agreements are written and designed, the provision of inputs, the pricing and market situation, the roles and responsibilities of each party, which in turn affects the decision to participate or not to participate.

As shown in Table 3, the aggregate mean perception of respondents' member farmers were neither agree nor disagree on knowing their rights and responsibilities in contract farming agreement (with mean rating = 3.25; SD = 1.54) and on their commitment to act responsibilities set in the agreement as per standard (with mean rating = 3.4; SD = 1.42). This shows that the member farmers were relatively poor in performing major agronomic practices such as manual weeding, infield irrigation, and manual fertilizer application and like on their fields as per standard operation. These results were also supported with the responses of one key informant, which replied that many of the member farmers in the scheme are not committed to performing tasks and responsibilities given to them as per standard and given time as a result this affects sugarcane yield that has negative impacts of farm income. In addition during FGDs, the interviewer supported this view and putting their concern as:

Table 3. Contract farm households' perception about sugarcane Outgrowers' scheme on considered 26 attributes (n = 200)

No	Attributes	Mean	Deviate from overall mean	Std. error of mean	Standard deviation
1	The terms of the contact agreement were created with the full knowledge and participation of the member farmers	3.06	0.74	0.1	1.47
2	The terms and conditions of contact agreement were clear for the individual farmers	2.59	0.27	0.1	1.43
3	The scheme farmers know their rights and responsibilities in the contract farming agreement	3.25	0.93	0.11	1.54
4	Sugarcane Outgrowers' is committed to act the responsibilities stipulated in the agreement	3.4	1.08	0.1	1.42
5	Sugarcane Outgrowers' scheme provided you the inputs such as seeds, fertilizers, pesticides readily available as per agreement	2.23	-0.09	0.09	1.34
6	Sugarcane Outgrowers' scheme provided you irrigation water to your farm readily available as per agreement	2.41	0.09	0.11	1.52
7	Sugarcane Outgrowers' scheme provided land preparation to your sugarcane farm properly	2.23	-0.09	0.09	1.28

(Continued)

No	Attributes	Mean	Deviate from overall mean	Std. error of mean	Standard deviation
8	Sugarcane Outgrowers' scheme brought proper technical advice on sugarcane field cultivation	2.16	-0.16	0.09	1.31
9	Sugarcane Outgrowers' scheme created access to extension services on sugarcane production	2.12	-0.2	0.09	1.29
10	Sugarcane Outgrowers' scheme created access to free training on sugarcane production	1.59	-0.73	0.07	1.02
11	Sugarcane Outgrowers' scheme facilitated access to credit offered by the factory	2.34	0.02	0.11	1.53
12	Sugarcane Outgrowers' scheme has enabled you to increase the production of crops	1.98	-0.34	0.09	1.29
13	Sugarcane Outgrowers' scheme reduced/overcome the market price risks of your product	2.63	0.31	0.12	1.68
14	Sugarcane Outgrowers' scheme has communicated the farmers with the new sugarcane production technologies	2.75	0.43	0.11	1.55

(Continued)

Table3. (Continued)

No	Attributes	Mean	Deviate from overall mean	Std. error of mean	Standard deviation
15	Sugarcane Outgrowers' scheme has transferred appropriate technological skill applicable to other farming activities	2.68	0.36	0.11	1.49
16	Sugarcane Outgrowers' scheme has improved local infrastructure like rural roads	2.3	-0.02	0.1	1.4
17	Sugarcane Outgrowers' scheme has lowered your sugarcane transpiration cost	2.6	0.28	0.1	1.48
18	Outgrowers' farmers have made timely supply of sugarcane to the factory weighbridge	2.24	-0.08	0.09	1.28
19	The factory undertakes payment within the period as stipulated in the agreement after the sugarcane harvesting	1.22	-1.1	0.05	0.74
20	The quantity of sugarcane harvested is clearly communicated to the individual participant farmers	2.29	-0.03	0.11	1.57
21	Sugarcane Outgrowers' scheme farmers earned better income than the surrounding farmers not included in the scheme	1.83	-0.49	0.1	1.37

(Continued)

No	Attributes	Mean	Deviate from overall mean	Std. error of mean	Standard deviation
22	Sugarcane Outgrowers' farmers earned better income than returns from others alternative activities	1.88	-0.44	0.1	1.41
23	There is good relation between the Outgrowers' scheme households and the sugarcane cooperative committee	3.01	0.69	0.1	1.41
24	There is a fair and good relation between the Outgrowers' scheme households and cooperatives union	1.73	-0.59	0.08	1.17
25	There is a fair and good relation between the scheme households and the factory representative	1.76	-0.56	0.08	1.15
26	Government support for sugarcane Outgrowers' scheme farmers was increased from year to year	2.03	-0.29	0.1	1.36
	All respondent aggregate mean perception on considered attributes	2.32	-0.0004	0.01	1.37

Source: Own estimation result based on farm household responses, May 2019

[—] the designing and negotiating a contract is only the starting point between the farmers and factory but there is no guarantee that commitments made will be implemented by the factory and/or union [—] and also not enforced by the government.

This result is opposed by the view of Eaton and Shepherd (2001) that pointed as the roles and responsibilities of each party participating in contract farming is one of the important requirements that determine the perception of farmers.

With respect to the provision of basic inputs and production services for the scheme, the results (in Table 3) show that the respondent farmers' perception were least satisfied with the provision of basic inputs such as seeds, fertilizers, and pesticides (with mean rating = 2.23; SD = 1.34); the conditions of proper land preparation for their farm (with mean rating = 2.23; SD = 1.28) and the readily accessible infield irrigation water for their farm (with mean rating = 2.41; SD = 1.52) as per the agreement in contract terms. These results show that the basic inputs and production services were poorly provided to the sugarcane outgrowers' scheme farmers; this has adverse effects on achieving the intended sugarcane yield on their farms as per an agreement. This may be due to: (i) shortage of finance in providing basic inputs and production services; (ii) poor commitment of the scheme representatives (the factory, union, and cooperatives); (iii) poor monitoring and evaluation system at operation level (particularly on operators, field supervisors, and managers); (iv) problem related to electricity and irrigation water supply (e.g., infield irrigation problem) and (v) poor communications between union and factory. These findings are supported by the work of Eaton and Shepherd (2001), indicating that providing the production inputs and services are primarily important to ensure the proper crop husbandry practices to achieve the projected yields and required qualities. Similarly, Gent (2010) pointed out that timely delivery of inputs and other services needs to be properly planned and must respond to farmers' needs, creating incentives for farmers to honor contracts. The better and wider the range of services offered, the closer the relationship between farmers and the company, and the more the farmer will lose by breaking the relationship.

Results (presented in Table 3) indicated that the respondents' perception was least pleased with the created access to free training (with mean rating = 1.59; SD = 1.02) and to extension services on sugarcane production (with mean rating = 2.12; SD = 1.29) as well as proper technical advice on sugarcane field cultivation (with mean rating = 2.41; SD = 1.52). These results show that the Outgrowers' scheme system and other concerned bodies are failed to access the proper training, extension, and technical advisory services to farmers. However, the sugarcane field activities, mainly, manual weeding, infield irrigation, manual fertilizer application, disease scouting, and sugarcane collecting, need technical advice as sugarcane has its own nature as compared to other subsistence crops in the area. During focus group discussion, the interviewer supported this view and explained as:

[—] the farm household members are not obtaining technical advice on sugarcane field operations like weeding, infield irrigation, manual fertilizer application, etc ... As a result, we lost our freedom related to farm management decisions.

About the facility of credit access to the scheme farmers, the result (in Table 3) indicated that the aggregate respondents' perception disagreed about the facilitated access to credit (with mean rating = 2.34; SD = 1.53). However, in-depth interview, the interviewer contradicted the respondents' view and explained as:

[—] the farm household members have access and obtained the credit [—] but used this money for other non-farm activities that need corrections.
 [Male out grower, in-depth interview: Hargitiy Denaba]

This shows that there is a limitation in obtaining advances/credit and on financial management skills⁴ in the scheme; this affects the farmer's confidence in the integrity of the factory. This may be due to: (i) using the advances/credits given to them for other purposes; (ii) the abuse of credit by some farm households and scheme representatives.

Concerning the introduction of appropriate technologies for the scheme and increased the production of crops, the results (in Table 3) show that respondents' perceptions were least perceived about the transferred appropriate technological skill applicable to other farming activities (with mean rating = 2.68; SD = 1.49); about the communicated contract farm households with

new sugarcane production technologies (with mean rating = 2.75; SD = 1.55); about the scheme to enabled them to increase the production of crops (with mean rating = 1.98; SD = 1.29). This shows that the majority of respondents perceived that the Outgrowers' scheme inadequately transferred appropriate technologies and communicates with the new sugarcane production technologies that have a significant effect on sugarcane production and productivity. This view is also supported by the explanation of one of the member farmers who pointed out that:

One of our challenges in our outgrowers' scheme is obtaining the new and approved sugarcane production and productivity-enhancing technologies as well as research result outputs that enhance sugarcane productivity and decrease the cost of production.

With regards to the time of payment, supply (timely and quantity) of sugarcane to the factory, the result (in Table 3) indicated that the respondents' perception was strongly dissatisfied (i.e. it is the worst among all considered 26 contributes) with 'the factory undertakes payment within the period as stipulated in the agreement after the sugarcane harvesting' (with mean rating = 1.22; SD = 0.74). In addition, the results also indicated that the respondents' perception was least satisfied with the timely supply of sugarcane to the Factory weighbridge (with mean rating = 2.24; SD = 1.28) and with clear communication about the quantity of sugarcane harvested to individual farm households (with mean rating = 2.29; SD = 1.57). This claim is also supported by the explanation of one of the member farmers who pointed out that:

One of the major challenges in contract relation is the time of payment system. First, [—] the payment for executed cane field activities like manual weeding, infield irrigation, manual fertilizer application, and others by member farmers are not at the required time (agreement say payment made within 15 days after the transfer of products has taken place but, the practice was up to 3 months after an appeal to the union); as a result, these discouraged us to do the activities as per required standard and time [—] this affect the productivity of cane yield as a result lower our income. Second, the time of payment system after the cane harvest and sell to the factory was not as per agreement (9th agreement say after harvest and sell to a factory, the payment made within one month to the union; but the actual practice was at any time or more than one year even delays of up to two years) as a result it affects our livelihood and that make us complying the contract term.

[Male out grower, in-depth interview: Wake Tiyo]

This indicates that the late payment (for performed sugarcane farm activities and sugarcane output delivered to the factory) is one of the major areas of disagreement in the scheme that reduces the trust between them; as a result, the farmers' disappointed on different sugarcane farm activities that reduce the productivity of sugarcane. This result agrees with the findings of (FAO, IFAD and UNIDROIT, 2017), which found that slow payment or payment delays are a major cause of loss of trust between the parties. Clearly expressed provisions in the agreement regarding whom, when, and how payment is to be made promote certainty and reduce the possibility of disputes.

With regard to the earning of the farm households, the result (in Table 3) indicated that the respondent contract farm households' perception disagreed about the contract members earning better income than the surrounding farmers not included in the scheme (with mean rating = 1.83; SD = 1.37) and about the earning of better income than returns from others alternative activities (with mean rating = 1.88; SD = 1.41). This result clearly shows that the Outgrowers' scheme farm households were not completely happy about the return from the scheme; may earn less return than that of those farmers that produce non-sugarcane crops and other alternative activities. This may affect their own decisions in the scheme system and the sustainability of the scheme on improving the overall livelihoods of the contract farmers. This result was supported by an in-depth interview of one respondent who stated:

[—] As to me (even others), I am not considering my sugarcane fields as mine so that I externalize all sugarcane field activities that reduce sugarcane yield, which affects our farm income. In addition, during harvest sometimes the sugarcane yield from cane fields was not harvesting properly as per standard (i.e. the quality of work on bottoming, topping, and others are not maintained and collected properly) this decrease cane tonnage that affect our farm income. On the other hand, the increment of production cost from time to time; the factory was also not considering the value of cane by-product for us. These all decreased the net income from our cane fields; [—] that is why our net earnings were not better than that of other crop producing farmers in our surroundings.

[Male out grower, in-depth interview: Wake Miya]

When we look at market price risk and transportation cost, the results (in Table 3) show that the respondents' perceptions were neutral with the reduced/overcome the market price risks of their product (with mean rating = 2.63; SD = 1.68) and about the lowered their sugarcane supply transpiration cost (with mean rating = 2.6; SD = 1.47). This result shows that the scheme has poorly solved the problem related to the price risk and transportation cost; this may reduce the relationship between the scheme and the factory.

With regard to the relationship of sugarcane Outgrowers' scheme to others stakeholders, the aggregate results (presented in Table 3) show that the respondent farmers' perceptions disagreed with a fair and good relationship between the Outgrowers' households and sugarcane cooperatives union (with mean rating = 1.73; SD = 1.17) and the factory representatives (with mean rating = 1.76; SD = 1.15) as well as neutral about the good relation between the Outgrowers' households and the farmers' cooperative committee (with mean rating = 3.01; SD = 1.41). This finding shows that the management of contractual relations between the union and the factory representatives was not based on mutual trust that may lead to a sense of fear, mistrust, and resentment, and created operational difficulties for the factory and/or union. In this respect, the finding of (Kirsten & Sartorius, 2002) argued that the perceived high levels of contract manipulation by agribusiness firms, distrust by farmers of the contractual relationship, and perception of loss of autonomy have characterized contract farming in developing countries another scholar (Nielson, 1994) study indicated that the relationship benefits for the sugarcane growers can be either strategic (money, market, or technological) or psycho-social, for example, the satisfaction derived from being in a relationship. Further, these dimensions have associated strategic costs like costs of maintaining or coordinating the relationship, investment in trust, and costs associated with governance mechanisms and psycho-social costs such as anticipated switching costs that could be incurred when the relationship is terminated. The main strategic benefit to the farmer is the actualization of the strategic aims or goals that motivated the relationship.

Similarly, with this regards to the relation between the scheme households and the farmers' cooperative committee result was explained by an in-depth interview of one respondent as shown in an interview stating:

[—] farmers' cooperative committee should be managed by educated professionals that know cooperative principles rather than selected member farmers committees.

[Male out grower, in-depth interview: Awash Abdi Boru]

With regard to the Government's support and improved local infrastructure for the Out grower's scheme, the results (in Table 3) show that the respondent farmers' perception were least satisfied with the Government support (with mean rating = 2.03; SD = 1.36) and the improved local infrastructure like rural roads (with mean rating = 2.3; SD = 1.4) to participant sugarcane Out grower's scheme farmers. This result clearly indicated that the Government support and improved local infrastructure like rural roads for the scheme farmers were poor. This may hamper the sustainability of the out grower's scheme in the area. However, the role of government plays a significant/essential role in the success and failure of contract farming arrangements in commercial agriculture (Prowse, 2012). For instance, in raising the awareness of farmers on the Outgrowers' scheme provide the necessary support through agricultural experts and development

agents as well as designing policies, guidelines, laws, and legal frameworks that guide the overall implementation of outgrowers' scheme practice. Similarly, according to (Eaton & Shepherd, 2001; Simmons, 2002) the government plays two significant roles in improving the drawbacks of Outgrowers' scheme farming. First, it may regulate the market situations in designing contract policies, guidelines, strategies, law and legal frameworks, rules, and regulations that are geared towards outgrowers' scheme farming and may sanction the agri-business company not to abuse the market. Second, it facilitates the conditions for agri-business firms to initiate new contracts and provide farmers' support, train them and make them suitable for contract selection.

4. Conclusion and recommendation

This study assessed the perception of contract farm households about the sugarcane outgrowers' scheme around Wonji/Shoa Sugar Factory. The study utilizes household-level data collected between October 2018 and June 2019 from randomly selected samples of 200 members of sugarcane producing farmers' cooperatives through a structured questionnaire as well as ten KIIs and six FGDs were also made with contract farmers and different stakeholders. From the descriptive statistics analysis of respondents' perceptions, the overall perception of the respondent was about disagreement (with the overall level of the scheme perception measure index score of '2.32'). The considered attributes measures about the scheme have had mixed indexes. The result concluded that the contract farm households in sugarcane outgrowers' scheme were not satisfied with the performance of the scheme system and gives the impression to lose hope to the solutions of their problems. The study finding revealed that the major dissatisfaction areas about the scheme were the late payment, lack of training, a poor relation of the scheme farmers with representatives, low income of scheme farmers as compared to surrounding farmers not included in the scheme, and other alternatives economic activities, untenable the scheme farmers on crops production, poorly supported by government, poor access to extension services on sugarcane production, low proper technical advice on sugarcane field cultivations, inadequately provided land preparation for their farms, problems with timely and quantity of provided inputs and production services like infield irrigation as per an agreement.

Based on the finding the following recommendation were made (i) the time of payment for contract farm households (e.g., for performed field operations and delivered sugarcane to the factory) should be improved; (ii) the relationship of the scheme farmers with union and/or factory representatives shall be improved (these might be on bargaining power and/or designing on clear contract agreement terms and condition (in their language Afaan Oromoo), on accessing information through communication channel on production, production inputs and services and others issues); (iii) improving the income of contract farm households should be given attention; (iv) services package (like extension, technical advice and training on enhanced agronomical practices of sugarcane production and training) should be provided to the outgrowers' farmers; (v) additional support on basic inputs and production services, basic skill training should be given attention (these might include pre and post-harvest service, credit access, training on (record keeping, efficient use of farm resources, business skills, cash management and saving); (vi) adequate and timely basic inputs and production services (i.e. land preparation, infield irrigation, and others) should be provided to the sugarcane outgrowers' farmers as per an agreement; (vii) the effective and efficient clear legal framework system shall be well-developed, that ensuring contract enforcement at minimal costs (viii) all parties should establish trustworthy relationships for mutual by removing all elements of mistrust.

Acknowledgements

The data collection for this study was supported by the Ethiopian Sugar Corporation Research and Development Center in Socioeconomics Research Program.

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Funding

The authors received no direct funding for this research.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Citation information

Cite this article as: Farm households' perception about sugarcane outgrowers' scheme: Empirical evidence around Wonji/Shoa Sugar Factory, Gutema Bati Fedi,

Fekadu Dereje Asefa & Abebe Tafa Waktole, *Cogent Economics & Finance* (2022), 10: 2009664.

Notes

1. Food and Agriculture Organization of the United Nations <http://www.fao.org/ag/ags/contract-farming/faq/en/>
2. Farm household is the households with primary operation are farms.
3. Household members include all persons dependent on the household for financial support, whether they live in the household or not.
4. The financial management skills in this research requires the understanding of money-saving system (money that provide to the contract farm households for their living until the next sugarcane harvest) and the loan repayments skill to develop (money has to be used to pay off the previous year's debts).

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