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Factors influencing smallholder cardava banana farmers' participation in collective marketing in Southern Philippines

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Abstract. *Orejudos RD, Duka JU, Baladjay AA. 2022. Factors influencing smallholder cardava banana farmers' participation in collective marketing in Southern Philippines. Asian J Agric 6: 87-96.* Cardava banana farming is a good source of living for smallholder rural farmers in Cotabato province in the Southern Philippines, but they are often faced with constraints in finding the right buyers and good prices. This research examined the factors influencing smallholder cardava banana farmers' participation in collective marketing in the Southern Philippines. The data from 172 respondents were gathered using a pre-tested survey questionnaire. Means, Percentages, and linear regression analysis were used to address the study's objectives. The study results established that smallholder cardava banana farmers' participation in collective marketing is predominantly determined by household size, price, and payment scheme. In addition, they are also determined by the delivery schedule, distance to the market, access to extension services, access to production inputs, access to credit assistance, access to market information, and membership in farmers' organizations. This study's findings offer empirical evidence that socio-economic, market,- and institutional factors can influence the participation of smallholder cardava banana farmers in collective marketing.

Keywords: Group marketing, institutional market, linkSfarM project, market participation, poverty alleviation

INTRODUCTION

The Philippines, with some 2.85 million metric tons shipped out in 2017, is one of the top five highest banana exporters worldwide. In 2018, the nation harvested some 9.36 million metric tons of bananas from 447,889-hectare plantations, with cardava banana accounting for about 27% of the overall production (Vézina and Van den Bergh 2020). Cotabato province in the Southern Philippines considers the banana as one of the major contributors to its robust agricultural economy and other high-valued commercial crop sectors, including sugarcane, coconut, rubber, and oil palm. Today, there are 14,787.7 hectares of land occupied by banana plantations, of which 34.40% are planted with cardava bananas. Cotabato province is harvesting 30 MT per hectare per year of cardava banana (Province of Cotabato 2020). That implies cardava banana farming is a good means of living for rural farmers in Cotabato province.

However, they are faced with the harrowing fact concerning the low prices of commodities. Banana prices depend on fundamental variables, such as supply and demand, world prices, dollar barter rates, and other variables. These affect farmers who, after ensuring that the bargain amount would be acceptable to offset their production costs, embrace the risks and costs of production. Insufficient market facilities, such as drop-off points, bargain markets, and aggregate marketing facilities, abide by the local or domestic business of bananas. Domestic/local trading is about agitated out by small traders with minimal aggregate activities that are inefficient and difficult to manage in terms of quality and price.

One important action to alleviate smallholder farmers' abjection and poverty is access to markets (Gyau et al. 2016; Tanielian 2020). Increased market access can drive sustainable product growth and increase food security. However, owners of infant industries and enterprises cannot participate in those markets and charge collective activity to strengthen their negotiating accommodation and abate transaction costs (Tefera et al. 2016; Mango et al. 2017).

Collective market participation also increases farmers' negotiating power as market sellers; according to Mango et al. (2017), they are likely to get better prices for their produce than individuals collectively. Farmers perceive that collective marketing helps them achieve better value, decreases input and output market transaction costs, increases negotiating powers, and improves revenue (Mugwe et al. 2019).

Hence, the Department of Agrarian Reform (DAR), the country's lead agency in the implementation of the comprehensive agrarian reform program, in partnership with the Catholic Relief Services, a non-government organization, piloted the "Linking Smallholder Farmers to Markets (LinkSFarM) Project" in Tulunan, Cotabato in 2016. DAR has introduced the LinkSFarM project to reduce the impact of declining prices on agricultural products and increase the negotiating power of emerging farmers by giving them a voice in cooperation.

However, the market involvement of smallholder farmers is still limited (Mugwe et al. 2019). Therefore, there is a need to look at the factors influencing farmers' participation in the collective marketing of cardava bananas. In addition, Kehinde and Adeyemo (2017) emphasized that the usefulness of technology is not permanent. Therefore, farmers' interest may decline, contributing to technical disappointment and rejection. That requires that farmers' decisions to adopt or innovate be considered.

Theoretical background

The study's main arguments were based on the Social Capital Theory and Transaction Cost Economics Theory. Bourdieu (1985) conceptualizes social capital based on recognizing that capital is not just economic, social exchanges are not solely self-interested, and capital and benefits in all forms need to be included. The Social Capital Theory also underscores the importance of networks and connections in providing access to resources that can be leveraged to identify and exploit entrepreneurial opportunities. In the context of this study, cardava banana farmers, as social beings, are equipped with the emotional prowess to establish and maintain relationships. Therefore, social capital can substantially contribute to the empowerment of small-scale farmers by providing access to information and reducing communication and contracting costs in circumstances where transaction costs are high. Leenders (2014) underscored that people benefit from their own social networks at the individual level as well as from the relations maintained by collectives that they are part of, while organizational groups derive the outcomes from both their own contact with other groups and the relationships maintained by some of their members.

Cardava banana farming is also considered an agri-enterprise where some smallholder farmers depend on their income and sustenance. However, as a business, there are market factors that they need to consider to take advantage of the opportunities to earn more. In cardava banana farming, farmers are engaged in various activities, from land preparation to the delivery of their products to the market, which entails a lot of costs. Hence, this study was also anchored on Ronald Coase's transaction costs economics theory. Coase (1960) explains that it is important to figure out who one wants to meet with to carry out a market agreement, to perform negotiations leading up to a bargain, to draw up a contract, to carry out the necessary checks to ensure that the terms of the contract are respected, and so on. The theory suggests that farmers aim to avoid markets that incur high transaction costs such as fare, travel time, waiting time, and delays in transactions, which should significantly impact the cost of transactions, leading to greater uncertainty and greater cost of transactions (Carlson and Bitsch 2019).

MATERIALS AND METHODS

Research design

A descriptive causal research design was used in this study because it can evaluate the factors influencing smallholder cardava banana farmers' participation in collective marketing in the Southern Philippines. Descriptive research was used because its purpose is to describe and analyze the current situation of individuals, locations, conditions, or events or to explain the features of the sample (Mertler 2014). Data may be collected intuitively in such studies, but it is frequently examined quantitatively, with frequencies, percentages, averages, and other statistical analyses used to discover associations (Nassaji 2015). Causal analysis was used to determine if the socio-economic, market, and institutional factors significantly influence smallholder cardava banana farmers' participation in collective marketing. Causal research, also known as explanatory research, is conducted to identify the extent and nature of cause-and-effect relationships.

Locale and respondents of the study

The study was conducted in Cotabato Province in the Southern Philippines (Figure 1). The province's most extravagant land assets are over 656,590 hectares, representing 36% of the district's territory zone (1,815,500 hectares). It positions topographically first in the four provinces of Region XII. Cotabato Province comprises 17 municipalities and one city, with Kidapawan City as its city, and is divided into three legislative districts (Province of Cotabato 2020).

The study involved three different municipalities of Cotabato province where the LinkSFarM project was implemented. These municipalities include Aleosan, highlighted in yellow, and belong to the first legislative district, Pres. Roxas is in blue and allied with the second legislative district; Tulunan is in red and affiliated with the third legislative district.

Cotabato Province in the Southern Philippines has planted some 14,787.7 hectares of different cultivars of banana, where 34.40% is cultivated for cardava banana (Province of Cotabato 2020). The majority of banana production in the Philippines comes from its northern and southern portions due to its highly suitable and marginally suitable climate conditions. Among the banana cultivars planted in the country, the cardava banana accounts for 28% of the total production (Solpot et al. 2016).

The study's respondents were smallholder cardava banana farmers who are members of the cooperatives from the three municipalities of Cotabato Province, where the collective marketing of cardava bananas was implemented. A total of 172 smallholder cardava banana farmers were selected using the proportionate sampling, where 98 were taken from the members of the Bla'an Klayag Amda De Du Sansato Agrarian Reform Beneficiaries (ARB) Cooperative in Tulunan; 42 from Sto. Niño Farmers ARB Cooperative in Pres. Roxas; and 32 from New Leon Multi-purpose Cooperative in Aleosan. Smallholder Farmer refers to a farmer owning farmland with an area of not more than three hectares.

Sampling procedure

A multi-stage sampling technique was used in selecting the respondents for the study. The first stage used the purposive selection of the three recipient municipalities. Purposive sampling was used to concentrate on people with particular characteristics who will provide unique and rich information of value to the study (Etikan et al. 2016). In the second stage, purposive sampling was also used by selecting one barangay in each municipality where a huge number of cardava banana farmers involved in the LinkSFarm project could be found.

In the third stage, stratified random sampling was used so that the participating farmers in the collective marketing of the LinkSFarM project would have an equal chance of being selected to represent the population properly. Finally, a simple random sampling was used to administer the questionnaire based on the required number of respondents on each site to represent the population. Then, using stratified random sampling, adequate samples could be obtained from all strata in the population. In contrast, simple random sampling is used when the whole population is accessible and the researchers have a list of all the respondents in the target population (Elfil and Negida 2017).

In determining the sample size from the total number of participating farmers, Slovin's formula was used:

$$n = \frac{N}{1+Ne^2}$$

Where, n = is the sample size, N = is the population size, and e = is the level of precision (for a confidence interval of 95%, equal to 5%). When the formula was applied, the study's sample size was specified at 172.07 and rounded up to 172.

Research instrument

In this study, a researcher-made questionnaire and informal or oral interviews of the respondents were used to elicit primary data related to this study. The factors used in this study were adopted from previous research that also dealt with farmers' market participation and collective marketing. The socio-economic factors used in this study were adopted from the studies of Amao (2017), Kyaw et al. (2018), Melesse (2018), and Mutonyi (2019). The market factors were patterned from the studies of Mbitsemunda and Karangwa (2017), Maponya et al. (2018), and Abate et al. (2019). The institutional factors were in line with the studies of Kyaw et al. (2018), Abate et al. (2019), Mugwe et al. (2019), and Ssajakambwe et al. (2019).

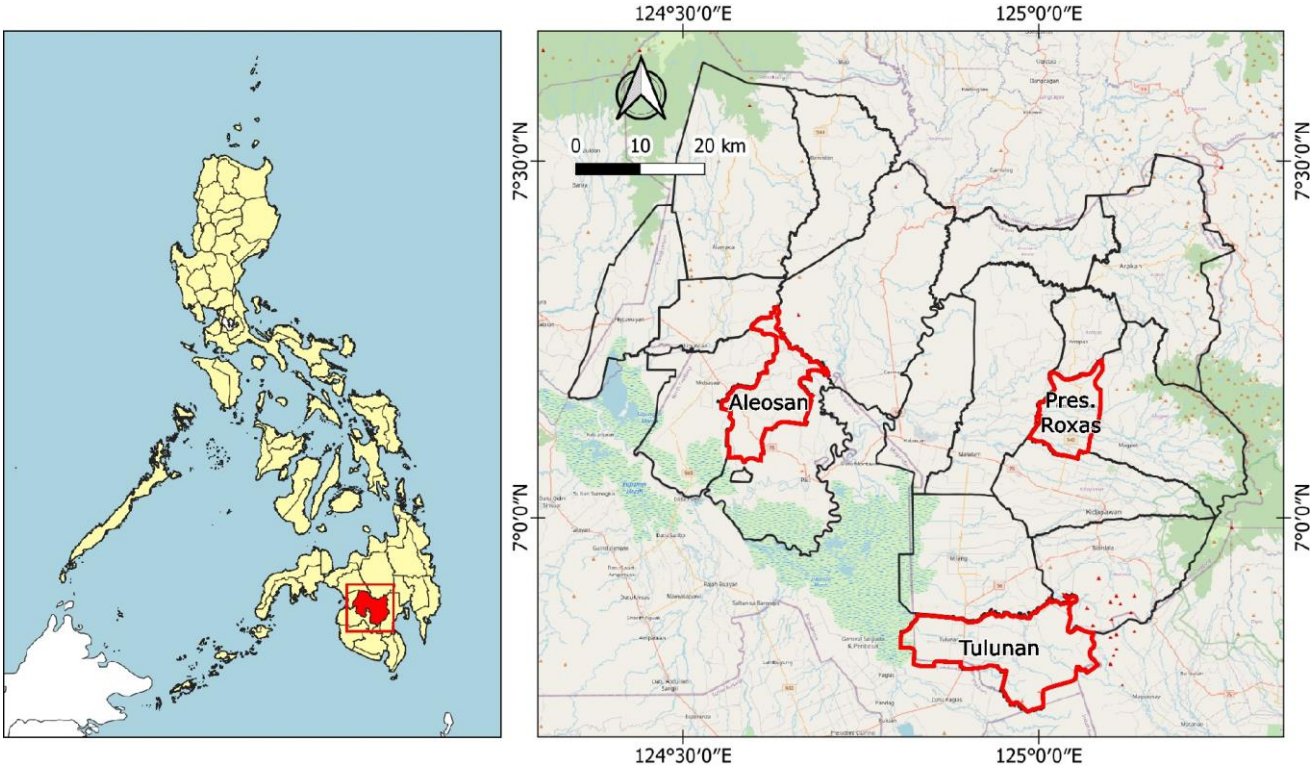

Figure 1. The provincial map of Cotabato in the southern part of the Philippines highlights the three municipalities where the study was conducted

In measurement validation, the questionnaire was pre-tested on 20 farmers to verify the validity of the items. Pre-testing is a method of examining the items, addressing any misunderstanding of the wording of the questions as intended and understood by those individuals who are likely to respond to them (Hilton 2015).

In determining the validity of the questionnaire, Cronbach's alpha was used. Cronbach's alpha is used to establish that tests and scales used in the constructed or adopted research instruments are reliable and fit to be used for their intended purpose (Taber 2018). The base proposed composite unwavering quality worth is 0.80. In addition, a base alpha of 0.803 was received. That implies the items and scales used in this study were reliable.

Research ethics

Before survey administration, a request letter was sent to the implementing agency informing them about the study. Permission was also sought through written consent from all the Barangay Chairmen and the heads of the cooperatives involved. They were also informed of the specific dates for the enumerators to gather the data in the community. Consent of the participants was also sought before proceeding with the interview. All respondents gave their affirmative responses and agreed to participate in the interview. The participants were assured that their answers would be treated with the utmost confidentiality and that the data would be used purposely for the study (Surmiak 2018). The enumerators were also reminded to observe safety and health protocols during the data gathering, such as physical distancing (Nilsen et al. 2020), wearing a face mask (Matuschek et al. 2020), and hand hygiene (Głabska et al. 2020). A face mask is provided for the respondent when they are not wearing one during the face-to-face interview.

Data gathering procedures

In conducting the study, the researcher closely coordinated with the Department of Agrarian Reform as a project implementer. The researcher also sought the assistance of the said agency, especially in field coordination. The researcher also employed eight enumerators with at least a college level of education to assist in data gathering. The enumerators were briefed and oriented to the questionnaire content and the process of interviewing the respondents before proceeding with data gathering from 30 April to 9 May 2021. The respondents were randomly selected and interviewed in their respective barangays or the comfort of their homes. Since the questions were written in English, the enumerator translated the long sentences into the vernacular. The enumerators were urged to examine the questionnaire before leaving the area to ensure that all items were properly filled-out and all information was completely supplied.

Data analysis

The researcher coded the data by assigning a numerical value to facilitate easier workability on the statistical software. Two types of statistical methods were used to analyze the data. First, descriptive statistical methods such as frequency counts, means, and percentages were used to analyze the respondents' socio-economic characteristics and describe the market and institutional factors in the participation of smallholder cardava banana farmers in collective marketing. Descriptive Statistics is used to give a picture by summarizing the samples and measures included in the study (Sharma, 2019). A four-level Likert scale was used to describe the factors influencing the smallholder cardava banana farmers' participation in collective marketing (Table 1). The extent of market participation (Y) was also interpreted using a four-level Likert scale as an indicator (Table 2).

Second, the multiple regression model was used to analyze whether the socio-economic, market, and institutional factors significantly influence smallholder cardava banana farmers' participation in collective marketing. Burton (2021) opined that researchers could use regression modeling to look at the specific impacts that variables have on one another while also controlling for other factors effects. An Ordinary Least Squares (OLS) linear regression process generates a line of best fit, which is the most accurate way of representing the distribution of data points on a single line.

The OLS model is given by:

$$Y = \beta_0 X_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_n X_n + e \ldots$$

Where: Y denotes the extent of market participation, β_0 is a constant, $\beta_1 \ldots n$ are parameters to be estimated X_{is} are a vector of explanatory variables. Hypotheses were tested at a 5% level of significance. The statistical analysis for the study was carried out using statistical software.

Table 1. A four-level Likert scale

Mean	Verbal interpretation
3.51-4.00	Strongly agree
2.51-3.50	Agree
1.51-2.50	Disagree
1.00-1.50	Strongly disagree

Table 2. The extent of market participation (Y) was also interpreted using a four-level Likert scale as an indicator

Mean	Verbal interpretation
3.51-4.00	Always
2.51-3.50	Often
1.51-2.50	Sometimes
1.00-1.50	Rarely

RESULTS AND DISCUSSION

Socio-economic characteristics of the smallholder cardava banana farmers engaged in collective marketing

The analysis using the descriptive statistics, as shown in Table 3, on the socio-economic profile of the respondents revealed that collective marketing in the study areas is mostly participated by men. That implies that men still dominate the decision to participate in collective marketing. The result is consistent with Mango et al. (2017) and Yaméogo et al. (2018) that men mostly participate in collective marketing. Furthermore, Mishra et al. (2014) emphasized that family units led by men are bound to obtain innovation. That can reinforce the workforce that is always needed when fostering innovation today. On the contrary, Mugwe et al. (2019) claimed that female-led households are more active in collective market transactions than male-led households. However, a closer look at the data revealed that there was only a slight difference between the number of men and women participants. Hence, the study's results also showed that women were actively engaged in cardava banana farming and collective marketing.

Farmers with higher educational marks are more likely to acquire agricultural ideas and innovations for advancement, thus, easily increasing market access (Kiprop et al. 2020). However, the findings of the study show otherwise. The result revealed that the study's populations possessed lower levels of educational attainment. That implies the participants of collective marketing are less educated, receiving an elementary level of education. It is interesting to note that a large portion of the population was taken from an indigenous community of the B'laan tribe at Bacong, Tulunan, where several respondents only reached the elementary level of education. The result is consistent with Khapayi and Celliers's (2016) findings that many farmers remained less educated. Thus, they are more prone to deception and financial abuse.

Regarding the landholdings planted for cardava bananas, the respondents had an average land size of 1.64 hectares. Almost all respondents have small landholdings, which translates into one hectare or less (89.5%). That implies the participants of collective marketing have easier disposal of their produce on the market, given the minimum production area. The findings support the claim of Nwafor et al. (2020) that minimal land area cultivation entails a manageable yield volume, meaning that respondents do not require multiple market channels for selling their produce.

The average household size of cardava banana farmers involved in collective marketing was 4. The result implies that the participants of collective marketing have strong support systems regarding farming activities. That is consistent with the claim of Oh and Kim (2019), Simtowe and Mausch (2019), and Kiprop et al. (2020) that farming families with a high number of members are more likely to engage in higher production. Thus, the propensity to participate in collective marketing is also high. On the contrary, Kyaw et al. (2018) and Nwafor et al. (2020) claimed that family size greatly influenced the flow of production and consumption of households. They argue that the higher the number of persons in a family, the higher the consumption level. That entails a smaller market surplus, lowering the likelihood of participation in collective selling.

Table 3. Socio-economic profile of the smallholder cardava banana farmers engaged in collective marketing

Variables	Frequency (n=172)	Percentage
Sex		
Male	99	57.6
Female	73	42.4
Highest educational attainment		
Elementary Level	70	40.7
Elementary Graduate	29	16.9
High School Level	5	2.9
High School Graduate	33	19.2
College Level	19	11.0
College Graduate	16	9.3
Post Graduate		
Farm size		
1 hectare & below	154	89.5
1.1-3.0 hectares	16	9.3
3.1-5.0 hectares	2	1.2
5.1 hectares & above		
Household size		
2 & below	11	6.4
3-4	90	52.3
5-6	51	29.7
7-8	16	9.3
9 & above	4	2.3
Number of years in farming		
1-2	39	22.7
3-4	73	42.4
5-6	42	24.4
7-8	12	7.0
9 & above	6	3.5
Average monthly quantity produced and sold		
100 kg. & below	27	15.7
101-300 kg.	104	60.5
301-500 kg.	32	18.6
501-700 kg.	6	3.5
701-900 kg.	1	0.6
901-1100 kg.	2	1.2
1101 & above		
Average monthly income		
1, 000 & below	42	24.4
1,001-3,000	90	52.3
3,001-5,000	28	16.3
5,001-7,000	8	4.7
7,001-9000	2	1.2
9001 & above	2	1.2

As to farming experience, the results revealed that the participants in collective marketing had an average of 3.9 years of cardava banana farming. That implies many respondents were new to the cardava banana agri-business. It also showed that the respondents' number of years in cardava banana cultivation was almost the same as the number of years that the LinkSFarM project has existed in the study areas. The result is consistent with the findings of Mango et al. (2017) and Mugwe et al. (2019), which stated that farmers with fewer experiences are more likely to participate in collective marketing than those farmers with more experiences because they tend to dwell in the traditional ways that they used to. On the other hand, Abebe et al. (2016) also confirmed that farmers honed by time are more inclined to transact with wholesalers because they can meet the required volume, and dealing with them causes no delays.

Out of 172 respondents included in the study, 60.5% produce and sell an average monthly cardava banana volume, ranging from 101 kg to 300 kg or 256.97 kilograms a month. The result implies that farmer-respondents produced a minimal number of cardava bananas every month. Therefore, smallholder farmers could not directly penetrate the available markets to get good prices for their produce with a limited viable harvest volume. Collective action is one way to address the gap in low production volume to penetrate the market. Institutional buyers prefer transacting with suppliers with great harvest volumes (Abate et al. 2019).

The average monthly income of the respondents from selling cardava bananas is P2,131.71, as depicted in Table 2. That implies farmers still live below the poverty line as far as income from their main crop is concerned. According to Balogbog et al. (2019), most farmers continue to be impoverished, earning less than Php10,000 for every cropping of their main crop. As a result, farmers should make the most of their property by cultivating various crops, particularly cash crops, to supplement their income and boost farm production.

The extent of participation of smallholder cardava banana farmers in collective marketing

The extent of participation of smallholder cardava banana farmers in collective marketing was measured using four factors which were rated as rarely, sometimes, often, and always. The factors include the delivery of products as scheduled, patronization of organizations' services, attendance to meetings, participation in training sessions, and putting up capital build-up.

Table 4 reflects the results of farmers' behavior regarding the extent of participation in collective marketing. The weighted mean score of 3.79 or Always showed that the respondents were highly engaged in the collective marketing of their cardava banana. However, further evaluation of the data collected showed that the average mean score of the first four factors used was consistently rated as "Always," while the factor about putting up capital build-up was only rated as "Often." That implies the members of the organizations, as a strong social capital, were not actively and consistently contributing to their capital build-up. The cooperative must empower and convince the members to strengthen the pooling of capital through the capital build-up to harness economic opportunities. Previous research findings by Yaméogo et al. (2018) presented that combining funds when farmers in each sector come together will provide informal financial outlets with a mechanism to ease credit limitations. It additionally allows producers to carry out bundled income while keeping off wholesalers and intermediaries.

The study included some socio-economic, market, and institutional factors hypothesized to influence farmers' decision to participate in collective marketing and included in the linear regression model. The pseudo-R^2 was found to be 0.506, which suggests that the specification fits the model well. It further suggests that the variables included in the model explain a 50% variation in the extent of market participation in collective marketing, signifying the model's goodness of fit.

Influence of socio-economic characteristics on the participation of smallholder cardava banana farmers in collective marketing

Table 5 revealed that using the linear regression analysis, only household size (p-value of 0.043) out of the seven factors assumed to have significant influence emerged to have significantly influenced smallholder cardava banana farmers' participation in collective marketing. However, it also revealed a significant positive influence on smallholder cardava banana farmers' participation in collective marketing, having a t-value of 2.040*. That implies an increase in household members will potentially encourage smallholder farmers' participation in the collective marketing of cardava bananas. The significant positive influence further entails that families with more members engaged in farming will also maximize the potential land area for production, thus, increasing the economic opportunity to gain greater yield and income through collective marketing. The result of the study concurs with the previous work of Oh and Kim (2019), Kiprop et al. (2020), and Nwafor et al. (2020), who presented that the number of family members significantly impacts farmers' deliberate choices in selecting market options. They further stressed that the number of individuals in every family has tremendous encouragement in deciding to join the collective action initiatives.

Table 4. The extent of participation of smallholder cardava banana farmers engaged in collective marketing

Extent of participation	Frequency (n=172)	Percentage	Weighted mean
Always	136	79.1	3.79
Often	36	20.9	-
Sometimes	-	-	-
Rarely	-	-	-

Note: 1.0-1.50: Rarely, 1.51-2.50: Sometimes, 2.51-3.50: Often, 3.51-4.0: Always

Table 5. Influence of socio-economic characteristics on the participation of smallholder cardava banana farmers engaged in collective marketing

Model	Standardized coefficients	t	Sig.
(Constant)		-1.062	0.290
Sex	-0.036	-0.562	0.575
Education	-0.027	-0.389	0.698
Farm size	0.081	1.216	0.226
Household size	0.123	2.041*	0.043
Years in farming	-0.088	-1.350	0.179
Average monthly produce & sold	0.000	0.000	1.000
Average monthly income	0.023	0.325	0.745

Note: ***, **, * means significant at P≤0.001, P≤0.01, P≤0.05, respectively. a. Dependent Variable: Extent of Participation. b. Predictors: (Constant) sex, highest educational attainment, household size, farm size, years in farming, average monthly quantity produced and sold, and average monthly income. c. R= 0.711[a], R^2 =0.506, Adjusted R Square=0.448, Std. Error of the Estimate= 0.21425

Table 6. Influence of market factors on the participation of smallholder cardava banana farmers engaged in collective marketing

Model	Standardized coefficients beta	t	Sig.
(Constant)		-1.062	0.290
Price	-0.557	-3.903***	0.000
Payment Scheme	-0.231	-2.410*	0.017
Delivery Schedule	0.644	6.195***	0.000
Distance to the Market	0.353	3.605***	0.000
Transportation Cost	-0.092	-0.982	0.328

Note: ***, **, * means significant at P≤0.001, P≤0.01, P≤0.05, respectively. a. Dependent Variable: Extent of Participation. b. Predictors: (Constant) price, payment scheme, delivery schedule, distance to the market, and transportation cost. c. R= 0.711[a], R^2 =0.506, Adjusted R Square=0.448, Std. Error of the Estimate= 0.21425

Kiprop et al. (2020) further expounded that the more family members participate in farming activities, the higher the chances of partaking in collective marketing. Hence, when there is high available labor in the family, the probability of producing a greater volume of the agricultural crop is also high. Therefore, the high production volume will also increase the likelihood of contributing to group selling.

On the contrary, the result of the study is inconsistent with the studies of Kyaw et al. (2018), which noted that households with a greater number of members are more likely to hold back from participating in group marketing or selling their produce. They further argue that the bigger the size of the family, the higher the degree of setting some volume of yield for the family's consumption, which can result in a very low surplus.

On the other hand, socio-economic factors such as sex, highest educational attainment, farm size, number of years in farming, average quantity produced and sold, and average monthly income were found to be statistically insignificant and do not necessarily influence the participation of smallholder cardava banana farmers' participation in collective marketing.

Influence of market factors on the participation of smallholder cardava banana farmers in collective marketing

As to the influence of market factors, linear regression analysis, as shown in Table 6, revealed that four out of five market factors were found to have a significant influence on smallholder cardava banana farmers' participation in collective marketing. These include price, payment scheme, delivery schedule, and distance to the market.

Table 6 indicates that the coefficient of price has shown a significant influence on the collective marketing participation of smallholder cardava banana farmers at a p-value of 0.000. The results also showed a significant negative influence, having a t-value of 3.903 ***. That implies the lower the price offered for farmers' produce, the probability of participation in collective marketing will also be reduced. That is because farmers are persistently and consistently looking for a higher price and gain to defray expenses for transaction costs from making the trade. Higher prices will provide sufficient revenue for farmers to finance their farming activities and will eventually encourage them to produce more. Therefore, cooperatives need to find institutional buyers that offer higher prices to sustain the participation of smallholder farmers in collective marketing. Yaméogo et al. (2018) discussed that farmers would only be interested in producing more and selling it through collective marketing if they can get a good offer for their harvest. The findings of Anh and Bokelmann (2019), Ssajakambwe et al. (2019), and Nwafor et al. (2020) noted that price is a strong factor that would influence farmers' decision in choosing a market channel for their agri-produce. Hence, market options offering higher prices for their commodities are vital to influencing the volume sold and encouraging smallholder farmers' participation in group marketing (Khapayi and Celliers 2016).

The payment scheme was also found to have a significant negative influence with a p-value of 0.017 and a t-value of 2.410*, which implies that the delays in receiving the expected profit can discourage farmers from selling their products through collective marketing. Farmers' daily subsistence and sustenance depend mainly on the revenue of their produce. Therefore, payment delays will affect their future decisions about whether to continue or withdraw their participation in collective marketing detrimentally. Previous research findings by Nandi et al. (2017), Poku et al. (2018), and Ssajakambwe et al. (2019) also found that payment mechanism has a negative influence on smallholder farmers' decision to participate in collective marketing. The result of the study also coincided with the findings of Poku et al. (2018); and Nwafor et al. (2020), which emphasized the importance of direct payment and concluded that direct payment schemes must be strengthened by farmers' organizations engaged in collective marketing.

The delivery schedule was found to positively influence smallholder cardava banana farmers' participation in collective marketing, with a p-value of 0.000 and a t-value of 7.117***. The results only showed that smallholder farmers' participation in collective marketing is directly associated with the delivery schedule. The result implies that when the delivery time and schedule are strictly followed, the participation of smallholder farmers in collective marketing also increases. Buyers must show up on the agreed time and schedule to avoid wasting farmers' time waiting, which will cause dissatisfaction and discouragement. Anh and Bokelmann (2019) noted that setting a delivery date and time is necessary, especially when there is an understanding between a buyer and a seller. Scheduling the collection and distribution of perishable products must be thoroughly considered. Proper coordination must be taken into consideration before the delivery schedule.

Distance to the market also positively influences smallholder cardava banana farmers' participation in collective marketing, having a p-value of 0.000 and a t-value of 3.605***. The result implies that the nearer the farm is to the market or consolidation center, the higher the chance of farmers' participation in collective marketing. The significant positive influence was attributed to the fact that farmers' produce was picked up at a certain collection point near their farm gates, or at least at a lesser distance to the consolidation center, which would not incur high transportation costs. Melesse (2018) and Simtowe and Mausch (2019) affirmed that the market proximity of farmers' farms plays a critical role in reducing transportation costs and accessing market information from various sources. Previous research findings of Melesse (2018), Yaméogo et al. (2018), Simtowe and Mausch (2019), and Ssajakambwe et al. (2019) underscored that the distance absolutely defines farmers' visibility and actual participation in the market to the most accessible market where they could sell their produce.

Influence of institutional factors on the participation of smallholder cardava banana farmers in collective marketing

As presented in Table 7, five out of six variables used in the study were found to have a significant influence on the participation of smallholder cardava banana farmers in collective marketing. The result suggests that five out of six model parameters were strongly significant in elucidating the dependent variable.

The results indicated that explanatory variables such as access to extension services, access to market information, and membership in farmers' organizations have positively and significantly influenced the participation of smallholder cardava banana farmers in collective marketing. While access to production inputs and access to credit assistance had a significant negative influence on the participation of smallholder cardava banana farmers in collective marketing.

The study also revealed that membership in farmers' organizations significantly positively influences smallholder cardava banana farmers' market participation in collective marketing, with a p-value of 0.010 and a t-

The study's results revealed that access to extension services positively influences smallholder cardava banana farmers' participation in collective marketing with a p-value of 0.000 and a t-value of 5.675***. The result indicates that the higher the access of smallholder cardava banana farmers to extension services, the higher the probability of market participation in collective marketing. Study results also showed that farmer respondents have access to agricultural skills and technology training, technical coaching, and mentoring services since they have direct access to Agricultural Extension Workers (AEWs) in their respective areas. The result of the study is consistent with the previous findings of Kyaw et al. (2018), Mugwe et al. (2019), and Ssajakambwe et al. (2019), which concluded the impact of extension services offered by extension workers could enhance farmers' understanding of the technologies and various market opportunities that could encourage farmers' participation in collective marketing.

Access to market information was also found to positively influence smallholder cardava banana farmers' participation in collective marketing, with a p-value of 0.041 and a t-value of 2.059*. The result implies that the more farmers have access to market information, the more they participate in collective marketing. The study also confirmed that smallholder cardava banana farmers have access to market information such as price information, the delivery time and schedule, and information on the demand and supply of the cardava banana industry that helped their decision-making in joining the collective marketing. The result of the study was consistent with the findings of Kyaw et al. 2018, Ssajakambwe et al. (2019), and Muzemil (2020); they found that market data and information have a significant positive influence on encouraging farmers to participate in collective marketing.

Table 7. Influence of institutional factors on the participation of smallholder cardava banana farmers engaged in collective marketing.

Model	Standardized coefficients beta	T	Sig.
(Constant)		-1.062	0.290
Access to extension services	0.654	5.675***	0.000
Access to production inputs	-0.289	-2.926**	0.004
Access to credit assistance	-0.137	-2.023*	0.045
Access to icts	0.132	1.542	0.125
Access to market information	0.287	2.059*	0.041
Membership in farmers' organization	0.171	2.614**	0.010

Note: ***, **, * means significant at P≤0.001, P≤0.01, P≤0.05, respectively. a. Dependent Variable: Extent of Participation. b. Predictors: (Constant) price, payment scheme, delivery schedule, distance to the market, and transportation cost. c. R= 0.711[a], R^2 =0.506, Adjusted R Square=0.448, Std. Error of the Estimate= 0.21425

value of 2.614**. The result implies a farmer is a member of a group, an association, or a cooperative, the probability of participation in collective marketing is higher than those who do not belong to a group. That is true because farmers are social beings with social networks that have access to various sources and resources that they could use to advance their trade. The result of the study is supported by the findings of Mango et al. (2017), Maspaitella et al. (2017), Kyaw et al. (2018), and Nwafor et al. (2020), which presented that having an alliance with farmers' organizations has a significant positive effect on the optimal selection of market channels among smallholder farmers.

Access to production inputs was found to have a significant negative influence on smallholder cardava banana farmers' participation in collective marketing, having a p-value of 0.004 and a t-value of 2.926**. That implies that smallholder farmers who do not have enough access to production inputs are less likely to participate in collective marketing. It implies further that in the absence of production inputs, smallholder farmers will have difficulty producing more yield, restricting them from participating in the market. The result of the study is in line with the findings of Simtowe and Mausch (2019), who believed that expensive agri-inputs and lack or late provision of production supplies had an insurmountable impact on the rejection of smallholder farmers to any agricultural innovations.

Access to credit assistance was also found to have a significant negative influence on smallholder cardava banana farmers' participation in collective marketing, having a p-value of 0.045 and a t-value of-2.023*. That implies a lack of insufficient opportunity to avail the credit schemes can lead to a higher likelihood of farmers not participating in collective marketing because agricultural cultivation depends greatly on input availability. When accessing agri-inputs is not feasible for smallholder farmers due to lack or limited financing, farmers will have difficulty producing marketable surpluses for a certain market. Sanou et al. (2017) emphasized the importance of credit accessibility for smallholder farmers who frequently face financial constraints.

In conclusion, collective marketing in Southern Philippines, specifically in Cotabato province, is always participated in and patronized by smallholder cardava banana farmers where household size showed the only triggering socio-economic factors that influenced their participation. That implies the number of household members who also serve as the workforce in cardava banana farming plays a crucial role in joining the collective marketing. The more family members are involved in cardava banana farming, the higher the chances of participation in collective marketing. Other socio-economic factors used in the study do not necessarily influence the participation of smallholder cardava banana farmers in collective marketing. Transportation costs and access to information and communication technologies were no longer issues in the areas where collective marketing was implemented. These imply that the smallholder cardava banana farmers are no longer spending significant amounts on fares for transporting their produce owing to a strategic drop-off point established near their farm gates. The availability of functional ICT infrastructures was also accessible in the project areas. Other market and institutional factors greatly influenced smallholders' participation in collective marketing. Hence, the findings suggest the need for the government to provide strategic interventions to the factors that significantly influence the participation of smallholder cardava banana farmers in collective marketing. Policymakers consider enacting policies to strengthen the roles of farmers' organizations in rural development, the provision of extension services in areas where collective marketing is being implemented, and the improvement of infrastructures and development modalities for faster diffusion of information, particularly in the marketing aspect. In light of opportunities for future research, it is also recommended to explore the factors used in a larger group of respondents since the study was only limited to 172 smallholder cardava banana farmers. Qualitative research on collective marketing is also recommended.

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