Factors influencing smallholder farmer participation in tobacco contract farming arrangements in mount Darwin district of Zimbabwe

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Abstract

Zimbabwean smallholder tobacco farmers encounter many challenges in accessing agricultural finance. Tobacco production is done under contract and auction systems. Under contract system, farmers borrow inputs from contractors and are obliged to sell the crop to the contractors. The auction system allows farmers to finance production and sell the crop to the highest bidder. This study looked at factors influencing smallholders tobacco farmers' decision to participate in contract farming arrangements in Mount Darwin District; Zimbabwe. The decision to participate in contract farming was the dependent variable whilst the variables like gender, marital status and education level, were the explanatory variables. The logit model was used to analyse the factors that influence the farmers' decision to participate in tobacco contract farming. The results showed that male tobacco farmers are more likely to participate in contract farming than their female counterparts. Older farmers are less likely to participate in contract farming than young farmers. Other variables such as land tenure and distance from the tarred road were also statistically significant in negatively influencing smallholder participation in contract farming arrangements. Education level, farming experience, labour force size, cattle owned and access to extension positively influenced smallholder farmer participation in tobacco contract farming arrangements.

Keywords: Tobacco Contract Farming; Smallholder Farmers; Mt Darwin District; Binary Logistic Model

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1. Introduction

Tobacco is the major agricultural export earner in Zimbabwe (Goger et al., 2014) accounting for 23% of the country's total exports (ZimStat, 2014). Before Zimbabwe's Fast Track Land Reform Programme, (FTLRP), tobacco production was dominated by close to 4500 white commercial farmers [few] who produced close to 95% of the country's total output (Cole and Cole , 2006). The tobacco farmers had access to agricultural finance from the country's financial institutions (Mukwereza, 2015). The land reform which started in 2000 resulted in the transformation of the tobacco sector with production now taking place among a far wider group of often small-scale farmers (Scoones et al., 2017). Following the FTLRP, tobacco production tumbled (Dube and Mugwagwa, 2017; TIMB, 2015). Some of the reasons for the decline in tobacco output and productivity were attributed to inadequate agricultural finance to support the smallholder tobacco value chain and lack of farming experience and among other reasons (Chimbwanda and Chikukwa, 2013). The government introduced contract farming in 2004 in order to boost tobacco output through improved access to agricultural finance (Dube and Mugwagwa, 2017). Before FTLRP Zimbabwe, tobacco production and marketing was done through auctions (Goger et al., 2014) where tobacco contractors were not directly involved in production and marketing. The tobacco farmers sold their tobacco to the highest bidder.

The auction institutional arrangement is contrary to the contract farming institutional arrangement where tobacco merchants provide agricultural finance in form of inputs [seed, fertilisers, chemicals and extension support] under agreed terms and conditions. The value of the inputs is deducted when the farmer delivers the tobacco to the market. Contract farming has become common accounting for over 80% of the tobacco produced and marketed in Zimbabwe (TIMB, 2018).

2. Review of Literature

Previous studies conducted by (Simmons et al., 2005) in East Java, Bali and Lambok, Indonesia revealed that participation in contract farming arrangements is influenced by farm size, farmer's age, education level and level of participation in groups. The findings concurred with results carried by Swain (2012) in India where results from the binary logistic model indicated that education levels, access to productive assets and access to markets influenced farmer participation in contract farming. The research findings from the same study revealed that farmers with access to irrigation facilities and those with bigger family sizes are more likely to participate in contract farming arrangements.

Nkurunziza and Ngabitsinze (2015) used the probit model to analyse the socio-economic factors influencing smallholder participation in coffee value chain in Huye District of Rwanda. The results concluded that gender, farm size, education level, off-farm income, non-access to credit were main factors determining farmer decision to participate in coffee production under contract.

In Urambo, Tanzania, Sumbao (2014) used the Heckman's two stage model incorporating the probit model and regression analysis to examine the factors influencing smallholder participation in tobacco value chain.

The findings from the study indicated that farming experience, age of farmer, credit, agricultural assets, and farm group positively influenced the farmer's decision to participate in tobacco contract farming.

This study used the logit model to identify the socio-economic and institutional factors influencing smallholder farmer participation in contract farming arrangements in Mount Darwin District of Zimbabwe. No similar studies have been carried out in Zimbabwe's smallholder tobacco value chain and this makes this study unique. This paper is going to bridge the current knowledge gap.

3. Research Methodology

3.1. Description of the study area

The research was conducted in Mt Darwin District of Zimbabwe. The district is one of the eight districts in Mashonaland Central Province where tobacco is the major cash crop grown by the smallholder farmers. Mount Darwin district has a total population of 212 190 [109 522 female, and 103 203 male] making it the most populated district in Mashonaland Central Province (ZimStat, 2012). Only 0.2% of the area's total population lives in Mt Darwin urban (ZimStat, 2012) with the majority of the residents living in rural areas. According to the statistics released by the TIMB (2018), Mount Darwin district produced 13 000 tons out of 53000 tons produced in the Mashonaland Central Province (25%) in the 2016/17 season. Tobacco is commonly grown in the southern parts of the districts as shown on Figure 1.
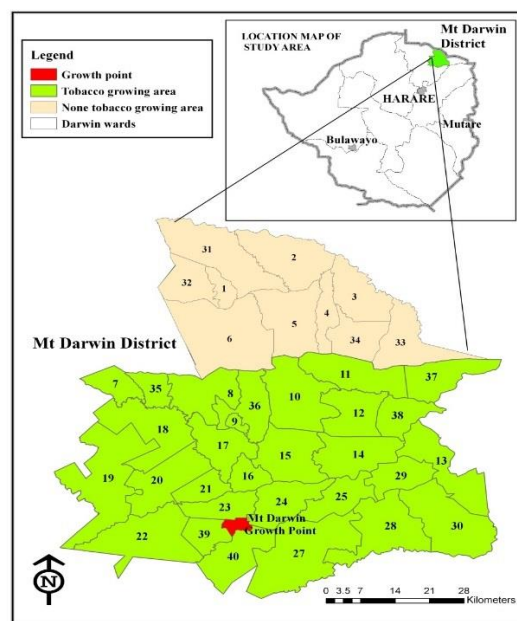

Figure 1. Location map of Mount Darwin District showing tobacco growing areas. (Source: Bindura University of Science Education, 2018)

3.2. Sampling procedure

In this study, a sample size of 380 farmers comprising of 293 tobacco smallholder farmers producing under contract farming and 87 producing under auction arrangement were interviewed. The stratification of the sample into contracted and non-contracted farmers was because tobacco production and marketing is done either under contract or non-contract/auction farming arrangements in Zimbabwe. Close to 80% of the tobacco is produced under contract with the remaining 20% under auction (TIMB, 2018). Primary data was collected using questionnaires administered by ten trained enumerators.

3.3. Data collection instruments and analysis

Descriptive and econometric methods of data analysis were used in this study. Data was analysed using SPSS. A farmer was considered to be producing under contract farming arrangement when he/she accessed tobacco growing inputs, extension and output market from tobacco merchants under agreed production terms and agreements. On the other hand, a farmer was considered to be producing under auction when he/she used own resources to finance crop production and was free to sell the output to auctions of his/her choice. In the study, only farmers who had a minimum of two years tobacco farming experience were interviewed.

The binary logistic regression model was used to determine the socio-economic and institutional factors influencing smallholder tobacco farmers' participation in contract farming arrangements. This was because the decision to participate in contract farming arrangement is a dichotomous outcome which can be modelled by a logit or probit model (Greene W, 2000). According to (Fang, 2013), the binary logistic regression is the best model when some of the variables are qualitative rather than quantitative or when the required assumptions for multiple regression analysis (e.g., linearity, independence, etc.) are not met. The logit model is also able to provide valid estimates, regardless of study design (Harrell, 2001). The dependent variable is the decision to participate in contract farming. Participation in contract farming was coded 1, whilst participation under non-contract/auction was coded 0. The independent variables and the codes were as follows:

1. gender of household head (male=0, female=1);
2. marital status (married=1, Otherwise=0)
3. education level (number of years at school-continuous),
4. age (discrete);
5. employment status (1=full time farmer; 0= otherwise);
6. farming experience (number of years-discrete);
7. household size (discrete);
8. land tenure (1=communal, 0=Otherwise=);
9. land size (number of hectares-continuous);
10. access to irrigation (yes=1, no=0);
11. number of cattle owned (discrete);
12. access to extension (yes=1, no=0) and

13- distance from tarred road (continuous).

In this study, the probability that a smallholder tobacco farmer produces and markets under contract is Prob(Y=1) and Prob(Y=0) when producing under non-contract. The farmer's decision to produce and market under contract farming institutional arrangement is an indirect utility derived from participating in contract farming. The conceptual model for the linear function of (X) variables is as given below:

$$Z_i = \beta_\circ + \sum_{i=1}^{n} \beta_1 Xk_i \qquad (1)$$

$\beta_\circ$= intercept

$\beta_1, \beta_2, \beta_3, \dots\dots \beta_i$=coefficients of the independent variables.

X_1, X_2, X_3 ..... Xk_i = independent variables [socio-economic, institutional factors and other household-characteristics] that are likely to influence the smallholder tobacco individual farmer's decision to participate in contract farming institutional arrangements namely;

X_1= Gender of household head

X_2=Marital status

X_3=Education level of household head

X_4=Age of household head

X_5=Employment status

X_6=farming experience

X_7=household labour size

X_8=land tenure

X_9=land size

X_{10}=access to irrigation

X_{11}=number of cattle owned

X_{12}=access to extension

X_{13}=distance from the tarred road

Given that $P_i = \frac{e^{z_i}}{1 + e^{z_i}}$ (Zhu et al., 2005) where e is the base of the natural logarithm and P_i is the probability that the ith farmer decides to produce and market tobacco under contract farming, 1- P_i is the probability that the farmer decides to produce and market under non contract/auction. The odds of the farmer's decision to produce under contract (Y=1) and the odds of decision to produce under non-contract (Y=0) is expressed as the ratio of the probability of the decision to produce under contract to the decicion to produce under non contract. This is expressed as: Odds=$\frac{P_i}{1-P_i}$; (Greene W, 2000) $\qquad$ (2)

The prediction equation for the individual smallholder tobacco farmer's production choice is derived from the natural logarithms as given by the equation below;

$$Ln(\frac{P_i}{1-P_i}) = \beta_\circ + \sum_{i=1}^{n} \beta_1 Xk_i = Z_i \quad \text{(Pindyck and Rubinfeld, 1991)} \quad (3)$$

Z_i=odds ratio of farmer's decision to produce tobacco under contract farming institutional arrangement.

In this study, the binary logistic regression model for the farmer's decision to produce under contract or non-contract institutional arrangement is as expressed below:

DPCF= β_0 +β_1(Gender)+β_2(MariSt)+β_3(Educat)+β_4(Age)+β_5(Empsta)+β_6(Farmex)+β_7(Hholdsz)+β_8(Landtn)+β_9(landsz)+β_{10}(Accsirr)+β_{11}(Nofcat)+β_{12}(Accxtn)+β_{13}(Distar)+ μ   (4)

Where;

1- DPCF=Decision to produce under contract farming
2- Gender= sex of the farmer (male; female)
3- MariSt=Marital status of the farmer
4- Educat=Farmer education level (years)
5- Age=Age of head of the farmer
6- Empstat=Employment status
7- Farmex= farming experience (years)
8- Labsiz= household labour size
9- Landtn=land tenure
10- Landsz= land size
11- accirr= access to irrigation
12- Nofcat=number of cattle that the household owns
13- Accxtn=access to extension services.
14- Disftar=distance from tarred road
15- μ=error term

4. Results and discussion

4.1. Education level of the sampled population

As shown on Figure 2 below, the majority (67%) of the 380 sampled smallholder tobacco farmers revealed that they attained secondary level education.
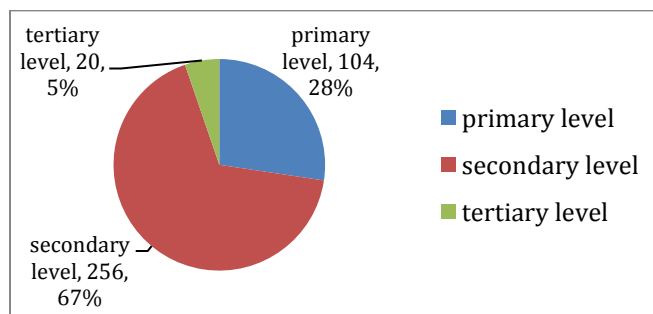

Figure 2. Education level for tobacco farmers in Mt Darwin (n=380) (Source: Survey Data, 2018)

One hundred and four farmers (28%) of the population attained primary education and the remaining 5% tertiary education.

4.2. Age of household heads

The highest number of smallholder tobacco farmers (104/360=28.8%) had ages ranging between 36 and 40 years. This was followed by the 41-45 years range which recorded 98 farmers (27.2%). Only 5 farmers (1.3%) were above sixty years of age and 7 farmers had ages ranging between 20 and 25 years. The detailed statistics of the ages for the household heads are as shown on Figure 3 below.
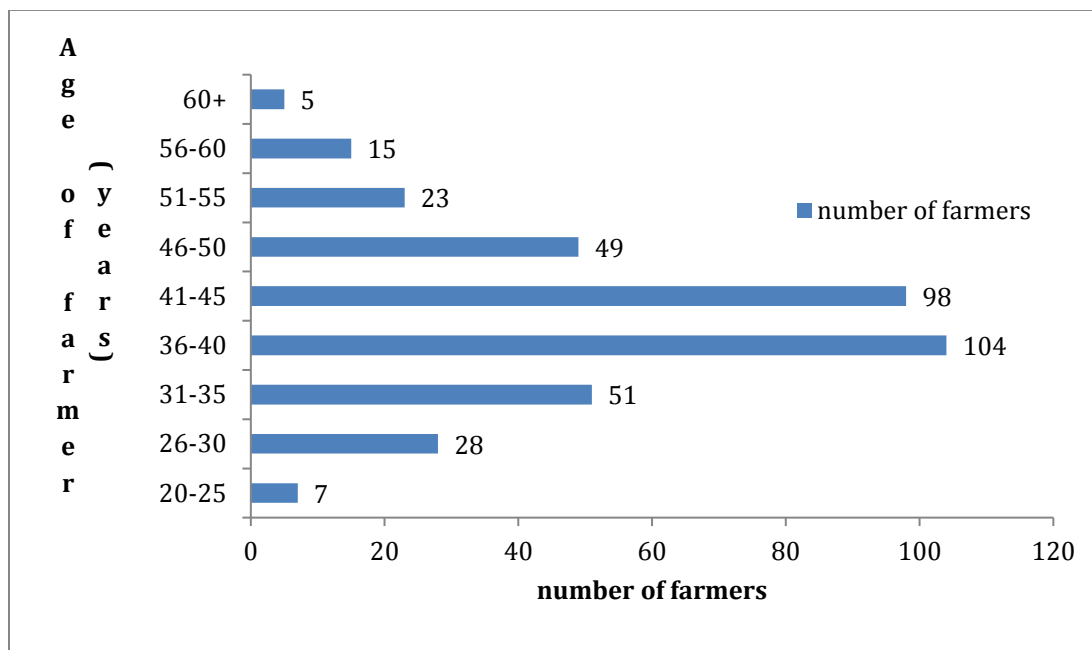

Figure 3. Ages for household heads producing tobacco in Mount Darwin District (n=380)
(Source: Survey data, 2018)

The age distribution could possibly be because tobacco is considered a labour intensive crop (Keyser, 2002) which requires the participation of the economically active. As farmers get old, they lose energy and may not be able to participate in labour intensive value chains such as tobacco. However, the maximum age for the sampled farmers was 66 and the minimum of 22 years. The 22 years minimum age of the sampled farmers participating in tobacco production supports the accession by (Murinda, 2014) that agriculture [tobacco farming included] is one of the main sources of livelihood for the youths.

4.3. Farming experience

As shown on Figure 4, the majority (42%) of the smallholder tobacco farmers had less than five years farming experiences. Thirty-six per-cent (36%) of the farmers had 6-10years farming experience. Fifteen per-cent of the interviewed farmers had 11-15years of tobacco farming experience.
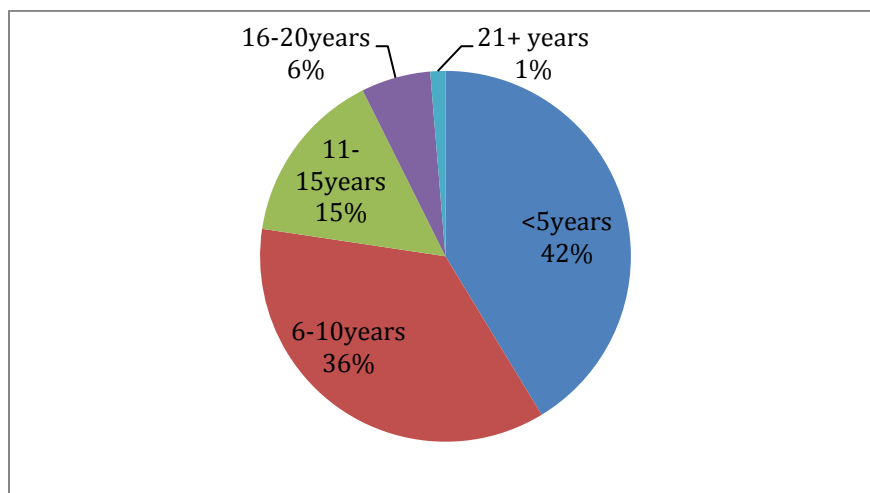
Figure 4. Years of farming experiences for smallholder tobacco farmers
in Mount Darwin District (n=380) (Source: Survey data, 2018)

The remaining combined total of 7% consisted of farmers with more than 16 years of tobacco farming experience. The probable explanation could be because tobacco production was previously dominated by the white Large-Scale Commercial Farmers before the Fast Track Land Reform Program which was spearheaded in 2000. The majority of the smallholder farmers switched on to tobacco production some five years ago following the poor performance of the cotton sector Scoones et al. (2017).

Table 1. Descriptive statistics for variables used in the econometric model (n=380)

Variable	mean	minimum	Maximum	Standard deviation
Land size	4.73	3	12	1.793
Distance from tarred road	13.53	1	30	6.105

Source: Survey data (2018)

The mean landholding size was 4.73ha with the maximum and minimum land ownership of 12 and 3 hectares respectively. The farmer distances from tarred road averaged 13.53. The minimum distance from the tarred road was 1kilometre and the maximum farmer distance from the tarred road was 30km. The results from the study showed that most farmers did not have access to better road networks and this was likely affecting tobacco production and marketing activities.

The results from the study (Table 2) revealed that out of 380 farmers interviewed, 162 household heads (42.6%) revealed that they had labour size of 4 family members. This was followed by 98 farmers (25.8%) with labour size of 5 members. The detailed frequencies for the household labour sizes are as shown on Table 2 above. Given that tobacco is a labour intensive crop, the results from the study suggests that the farmers need to supplement family labour during critical operations such as planting weeding, harvesting and curing.

Table 2. Labour force size for smallholder tobacco farmers in Mount Darwin

Labour size (active adults)	Frequency	Percentage
2	13	3.4
3	14	3.7
4	162	42.6
5	98	25.8
6	67	17.6
7	22	5.8
8	3	0.8
10	1	0.3
Total	380	100

Source: Survey data (2018)

Table 3. Cattle ownership by smallholder tobacco farmers in Mount Darwin District

Number of cattle owned	Frequency	percentage
0-5	46	12.10
6-10	128	33.68
11-15	167	43.95
16-20	29	7.63
21-25	8	2.11
26+	2	0.53
Total	**380**	**100**

Source: Survey data (2018)

As shown on Table 3 above, the majority of the smallholder tobacco farmers (43.95%) own between 11 and 15 herds of cattle. The second largest group of farmers, (128/380) own between six and ten herds of cattle. Twelve per-cent of the farmers own between zero and five herds of cattle. This shows that few tobacco farmers do not have enough cattle to work on the fields and use alternative sources of draft power.

4.4. Descriptive statistics of categorical variables of sampled farmers in the model

The results of the categorical variables of the sampled farmers showed that 73.4% of the smallholder tobacco farmers were male headed. The higher figure of male farmers is likely because of the cultural factors which promote men to have control and ownership of land as a factor of production. Ninety-eight per-cent of the sampled households were married. The remainder consisted of de-facto and de-jure headed households. Eighty-three per-cent of the sampled farmers comprised of the fulltime tobacco farmers whilst the remainder consisted of the part-time farmers comprising of those formally employed but supplementing incomes through tobacco farming. The majority of the sampled farmers 77.9% were found in the communal areas and the

remainder in fast track resettlement areas. Ninety six per-cent of the farmers produced under dry-land conditions with the remainder having access to irrigation facilities. Ninety five per-cent of the sampled farmers revealed that they had access to extension services mostly provided by the Agritex staff and tobacco contractors. The detailed statistics of the categorical variables is as shown on Table 4 below

Table 4. Descriptive statistics of the categorical variables used in the econometric model (n=380)

Variable	Description	Frequency	%
Gender of household head	Male	297	73.4%
	Female	101	26.6%
Marital status	Married	374	98.4
	Otherwise	6	1.6
Employment status	Fulltime farmer	316	83.2
	Otherwise	64	16.8
Land tenure	Resettled	84	22.1
	Communal	296	77.9
Access to irrigation	No	363	95.5
	Yes	17	4.5
Access to extension	Yes	360	94.7
	No	20	5.3

Source: Survey data (2018)

4.5. Collinearity Statistics

Multicollinearity refers to the existence of one or more linear relationships among some or all explanatory variables of a regression model (Bager et al., 2017). The existence of multicollinearity makes it difficult to separate out the effects of the individual regressors used in the study. The variance inflation factor (VIF) was applied to show whether there was multicollinearity on the explanatory variables. As shown on Table 5 below, the VIF results were close to 1. According to Bui and Trinh (2017); Akinwande et al. (2015) VIF values close to 1 show that there is no multicollinearity among the repressors.

4.6. Logit model for the factors influencing smallholder farmer participation in contract farming institutional arrangements.

The results of the logit model (Table 5) show the coefficient (B), standard error (S.E), p-values and the odds ratios. A positive beta coefficient means that the decision to participate in contract farming is more likely to increase by the beta coefficient value for every 1-unit increase in predictor variable. A negative beta coefficient implies that the decision to produce under contract farming is less likely by the beta coefficient value for every

1-unit decrease in predictor variable. The beta coefficient close to zero means that the effect of the predictor is negligible.

Table 5. The logit regression model for factors influencing smallholder farmer participation in contract farming institutional arrangements

Variable	B Coefficient	Standard Error	*p-value*	Odds Ratio	VIF
Gender	-1.188	0.457	0.009***	0.305	1.029
Marital status	0.147	1.624	0.928	1.159	1.047
Education level	0.553	0.080	0.000***	1.721	1.113
Age	-0.059	0.026	0.023***	0.942	1.096
Employment status	-0.812	0.544	0.136	0.444	1.025
Farming experience	0.488	0.106	0.000***	1.629	1.268
Labour force size	0.708	0.214	0.001***	2.029	1.080
Land tenure	-1.657	0.559	0.003***	0.191	1.147
Land size	0.032	0.131	0.805	1.033	1.125
Access to irrigation	0.625	1.054	0.553	0.535	1.033
Cattle owned	0.296	0.065	0.000***	1.345	1.243
Access to extension	1.823	0.869	0.036***	0.161	1.048
Distance from tarred road	-0.134	0.041	0.001***	0.874	1.049
Constant	-6.076	1.963	0.002	0.002	

***=1% level of significance; **=5% significance level; *=10% significance level
Source: Survey data (2018)

The odds ratios explain predicted change in odds for a unit change in the independent variable. In this econometric model, the odds ratio was used to measure the unique effect of each of the various independent variables to farmers' decision to participate in contract farming arrangements. The results of the econometric model for this study are as shown in Table 5.

For this study, the equation for the logistic model is:

$Ln(\frac{P_i}{1-P_i})$= -(1.188*gender)+(0.553*education)-(0.059*age)+(0.488*farming experience) +(0.708*labour size)-(1.657 land tenure)+(0.296*cattle owned)+(1.823*access to extension)-(0.134*distance from tarred road) (5)

The econometric model above shows the relationship between the significant independent variables and how they influenced the farmers' decision to participate in contract farming institutional arrangement. The research findings form the logit model showed that gender, level of education for the household head, age, farming experience, labour size, land tenure, number of cattle owned, access to extension and distance from the tarred road were the only explanatory variables that significantly influenced smallholder farmer

participation in tobacco contract farming arrangements (p<0.05). Other variables like marital status, employment status, land size and access to irrigation were not statistically significant.

Gender had a negative influence on the farmer's choice to participate in contract farming arrangements. The results from the econometric model suggest that the females are less likely to participate in contract farming arrangements as compared to their male counterparts. This is likely because males have access and control of the factors of production such as land and capital in form of livestock which are required for tobacco production. The results from this study concur with findings by (Opuku-Mensah, 2012) which showed that female farmers are more resource poor and may be excluded from engaging in contracts with high value agricultural produce. Lack of women participation in contract farming arrangements could also be because they suffer from socially conditioned inequalities in the access to use and control of agricultural and household resources (Adesina et al., 2000). The literacy level for the females is lower than their male counterparts (ZimStats, 2012) and most decisions are made by men. Female farmers may also find it difficult to frequently travel to distant tobacco markets due to the various household roles and responsibilities they are expected to carry out.

The results showed that education level is statistically significant in positively influencing smallholder farmer participation in contract farming arrangement. From the study, the results as shown by the odds ratio revealed that educated farmers are 72.1% more likely to participate in contract farming arrangement. This could be because education is likely to result in farmers being able to make rational decisions.

The study findings showed that age has a negative impact on farmers' decision to participate in contract farming arrangement. Young farmers were more likely to participate in contract farming than old farmers. This is likely because young farmers have lower risk aversion (Bagi, 1983). This is likely because contract farming arrangements require farmers to meet strict volume and quality standards which requires a lot of labour. Older farmers have less energy to work in tobacco fields as compared to the younger farmers. Other value chain chores like sourcing firewood, curing and grading require the younger farmers who are economically active to participate in the value chain. Other legislative requirements like grower registration and the centralised marketing system require farmers to physically go the distant action floors and this could be the other reason why older farmers are less likely to participate in contract farming arrangements.

Farming experience was statistically significant in positively influencing smallholder farmer participation in contract farming arrangements. The odds for participating in contract farming arrangements are likely to increase by 1.629 times for a unit change in the farmer's education level. This is likely because experienced farmers are likely capable of meeting the high-quality demands from tobacco contractors.

Results from the study showed a positive relationship between household labour force and farmer decision to participate in contract farming arrangements. The econometric model showed that the odds for participating in contract farming are likely to increase by 2.029 for a unit change in family labour. This is likely because tobacco is a labour intensive crop and contractors are very particular about quality issues such as grading, spraying which the farmers endowed farmers can manage. The findings from this study concur with Opuku-Mensah (2012) who revealed that farmers with access to more labour are likely to enter into contract farmong arrangements with processing firms.

The study showed a negative relationship between communal land tenure system and participation in contract farming arrangements. The odds ratio on tenure system shows that smallholder farmers in communal areas are less likely to participate in contract farming arrangements. This could be because communal areas in Mt Darwin have poor soils. Historically, the communal areas receive low rainfall and deforestation levels are high. This is likely to make it difficult for the smallholder farmers to harvest high tobacco volumes. This could explain why communal farmers are less likely to participate in contract farming arrangements because contract farming would expose them to perennial debts which they could struggle to re-pay. This would result in farmers trapped in cycles of poverty.

There is a positive relationship between cattle ownership and farmer's choice to participate in contract farming arrangements. This could be because cattle provide draft power required for ploughing, cultivating, carrying firewood and other economic contributions such as providing manure to improve soil fertility. Activities like ploughing, cultivating and carrying firewood are done according to the tobacco cropping calendar which contracted farmers need to adhere to. In this study, the results show that the odds for participating in contract farming arrangements are likely to increase by 1.345 times for unit change in livestock ownership.

The research showed that access to extension services was statistically significant in positively influencing smallholder farmer participation in contract farming arrangements. Contract farming was introduced in 2004 (Chimbwanda and Chikukwa, 2013) and farmers rely on extension agents for information on new agricultural practices (Adesina et al., 2000). This is likely because access to extension services result in improved access to information. The farmers use the information they receive from the extension service providers to make rational decisions such as whether to participate in contract farming or not.

The results show that there is a significant negative relationship between distance from the major tarred roads and farmers decision to participate in contract farming arrangements. The odds ratio on the logit model shows that farmers distant from the tarred roads are less likely to participate in contract farming arrangements. This might be because farmers that are far away from major tarred roads are likely unable to receive adequate information on good practices and advantages of contract farming arrangements. This information gap is likely to negatively affect the farmers' ability to make informed rational decisions. However, this finding was contrary to findings by Opuku-Mensah (2012) who revealed farms further away from contracting firms were more likely to enter into contract farming.

5. Summary

The main objective of this chapter was to identify the factors that influence smallholder farmers' decision to participate in contract farming arrangements. The binary logistic model was used to analyse the data. The farmer's decision to participate in contract farming arrangement was the dependent variable whilst gender, marital status, educational level, age, employment status, farming experience, labour force size, land tenure, land size, access to irrigation, number of cattle owned, access to extension and distance from the tarred road were the explanatory variables. Gender, educational level, age, farming experience, labour force size, land

tenure, cattle owned, access to extension and distance from the tarred road were significantly *(p<0.05)* influencing the farmer's choice to participate in contract farming arrangement. Other factors such as marital status, employment status, land size and access to irrigation were not statistically significant in influencing the farmers' choice to participate in contract farming arrangements. Educated farmers are 75.3% more likely to participate in contract farming arrangement than less educated farmers. The results also indicated that male headed households were more likely to participate in contract farming than female headed households. It was noted that farmers distant from tarred roads were less likely to participate in contract farming. Farmers with access to extension services were more likely to participate in contract farming arrangements than those without access to extension services. This was likely because the dissemination of information on tobacco contract farming is crucial in changing farmers' perceptions towards contract farming arrangements. The findings from this study suggest that policy recommendations meant to increase participation of smallholder farmers in tobacco contract farming arrangements may not be effective unless there are improvement in farmer access to education, better roads and extension services.

6. Limitation of the study and scope for further studies

This study focused entirely on smallholder tobacco farmers located in Mount Darwin District of Mashonaland Central Province of Zimbabwe. Large scale farmers (A2 farmers) and other small holder farmers from other provinces were not included in this study. Future research may complement the findings of this research by including large scale farmers (A2) and farmers from other tobacco producing areas in the country and see whether there are going to be differences in the research findings. The data for this research was collected in one season only (from April-July 2018) when the tobacco marketing season was at its peak. Future researchers' studies may consider collecting data in more than one agricultural season and assess whether there are any variations.

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