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Loan Repayment Performance on Smallholder Tobacco Contract Farmers. A Case of Ward 21 Marondera District, Mashonaland East Province

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Date Published: ABSTRACT

26 May 2024 This study examined the factors affecting loan repayment performance among smallholder tobacco contract farmers in Mashonaland East Province in

Keywords: Marondera District, Ward 21. The study was a quantitative research Structured questionnaires were distributed to 222 respondents in order to gather pertinent data. The data was collected from respondents in Ward 21 Marondera District using a multistage sampling technique. A Linear regression model was used to examine factors affecting tobacco output, while a Probit model was used to examine factors influencing loan repayment performance among smallholder tobacco farmers. The majority of the respondents who participated were males and they were the ones making household financial decisions. Results from the linear regression model showed that of the 9 variables that were tested, education level, tobacco land irrigation land and farm experience were significant at a 5% level of significance. Results from the probit model showed that of the 27 variables that were tested, household size, land size, experience, other loans due, other crop enterprise, loan purpose, other sources of income and side marketing were found statistically significant at a 5% level of significance. Therefore, it is recommended that the lenders pay much attention to land size, experience and the size of households of the farmers before extending credit to them as these were found to be contributing the highest variance in loan repayment performance.

Loan Repayment Performance, Tobacco Farmers, Linear

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INTRODUCTION

The growing dependence of smallholder agriculture in Africa and other parts of the world on contract farming for various commodities is a result of their increased integration into global value chains. Aid organizations, development banks, and private businesses all fervently support contract farming as a component of a "inclusive," "pro-poor," commercial agriculture agenda. The study's four main goals were to analyze the factors influencing the loan repayment performance of smallholder tobacco farmers in Marondera District ward 21, look into the factors influencing smallholder tobacco output in Marondera District ward 21, and examine the effects of contract farming on smallholder tobacco output in Marondera District ward 21.

As a suggested remedy for "market failures" in the expansion of commercial agriculture, contract farming gained international attention (FAO, 2001). While contract firms supplied loans, extension guidance, and other inputs along with direct market access, farmers offered their labor and land (Asokan and Singh, 2003). Contract farming appeared to be the mutually beneficial neoliberal way to continue capitalist agriculture in situations where capital was scarce and markets were hard to connect to, all without using land confiscation to establish plantations and estates initiative of the private sector, contrary to the 1980s when the government had full or partial control or ownership over contract farming arrangements (FAO, 2009). In 2007, contract farming employed roughly 12% of Mozambique's rural population, and all cotton was cultivated

under contract (Swinnen and Maertens, 2007). More than half of the tea and sugar produced in Kenya in 2007 was contracted, adding to the already large number of contract growers for horticulture exports. Furthermore, in 2009, crops with effective contract farming operations in Uganda included coffee (Bolwig et al, 2009). Similarly, the Alliance One expanding program in Malawi contracted tobacco cultivation in 2007 (Swinnen and Maertens, 2007).

The three biggest producers of tobacco leaves worldwide are the USA, Brazil, and China. However, due to health concerns, legal action, and pressure from anti-tobacco organizations like the World Health Organization (WHO), production has decreased in each of these nations (Baris et al., 2000). Since 1950, contract farming has expanded rapidly throughout Latin America, especially in Peru, where barley is produced. By 2009, contract farming accounted for approximately 70% and 30%, respectively, of Brazil's production of soy and chicken.

According to UNCTAD (2009), 60% of Unilever's raw materials in 2009 came from about 100,000 small and big contracted farms in developing countries. This setup enables backward and forward links between small-scale operations and the tobacco farmers. In 2008, SAB Miller recruited 1600 farmers from India, South Africa, Uganda, Tanzania, and Zambia (UNCTAD, 2009). In addition, Grupo Bimpo, a Mexican corporation, contracted with over 3000 Latin American vendors. In 2008, the Japanese company Kitoku Shinryo signed contracts with

roughly 2000 farmers in Vietnam, Cambodia, and Thailand.

Malawi is the largest tobacco exporter in Sub-Saharan Africa, according to Minot (2011), with projected export values of US\$ 437 million in 2021. In 1993, economic reforms leading to the liberalization of tobacco exports resulted in an estimated 200,000 smallholders farming Burley tobacco for export; this led to documented increases in smallholder income and even translated into higher yields of maize because the income from tobacco farming made it easier to purchase fertilizer for maize production. Orr (2000) and Jaffee (2003), cited in Minot (2011), agree that contract farming was limited by the requirement that tobacco be sold only on the auction floor.

Minot (2011) states that in 2005, a separate section of the auction floor in Malawi was allocated for contract buyers. In 2007 and 2008 two large buyers (Limbe Leaf and Alliance One) established contracts with groups comprising ten small buyers. The members assumed collective responsibility for the loans they obtained, and the groups decreased the cost of delivering

inputs and technical help. Roughly 95% of the tobacco is bought from farmer groups at predetermined prices; the remaining 5% also includes the granting of loans for inputs. The farmer's groups receive higher yields than non-contract farmers since their production is continuously monitored, and inputs are supplied as needed.

While the global area harvested under tobacco has declined by 19.1% over the last two decades, with a significant decline from 2015 onwards, the percentage of arable land devoted to tobacco growing has recently increased in several low- and middle-income countries, explaining the steady increase in tobacco crop yield, which increased by 14.1% overall between 2000 and 2018 (WHO, 2019). Between 2005 and 2015, there was an increase in the production of tobacco worldwide. Nonetheless, over the previous 20 years, production fell by 7.6% overall (WHO, 2019). The production of tobacco has been a major contributor to the GDP of several African nations, including North Macedonia, Zimbabwe, Malawi, and Mozambique.

Table 1: Tobacco export value of GDP (2018)

Country	% export value
Malawi	8.5
Zimbabwe	3.43
Mozambique	1.77
North Macedonia	1.15

(Source: WHO, 2019)

Tobacco production in Zimbabwe has been increasing over the years. There has been a 42% increase in the number of smallholder farmers in

the period between 2016 and 2018, resulting in a 29% increase in tobacco leaf production over the same period (Chingosho et al., 2020).

Figure 1: Active Tobacco Growers 2007-2021

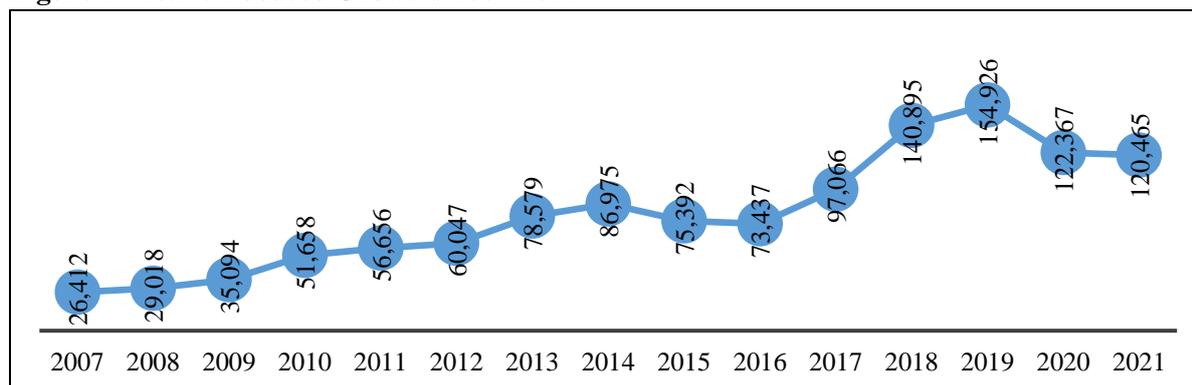
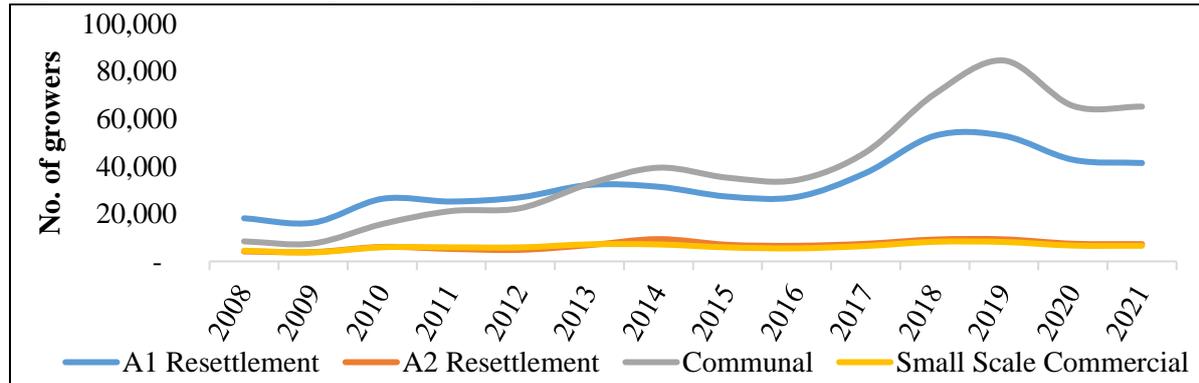


Figure 2: Active tobacco growers by grower sector 2008-2021

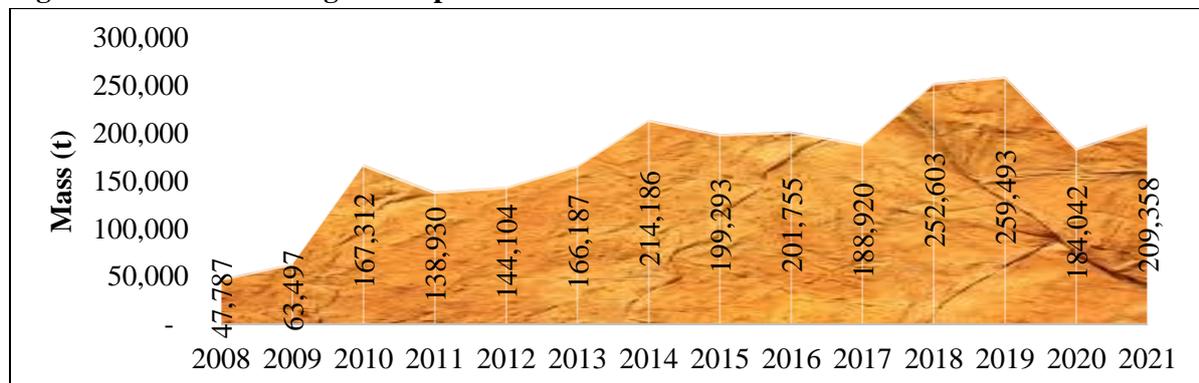


(Source: TIMB, 2021)

The prices of inputs have been increasing beyond the expectations of small-scale farmers, for example, the ZFC tobacco blend price rose by 10% between 2012 and 2022. Small-scale farmers

started producing poor quality produce due to the high cost of production and this made agricultural production deteriorate.

Figure 3: Tobacco Average Yield per hectare 2008-2021



(Source: TIMB, 2021)

The deterioration in agricultural production is hardly surprising, considering the fact that most productive farms were farmed out to receivers who lacked a mix of production resources, interest, expertise and know-how in farming, not forgetting limited financial facilities as indicated by Scoones et al. (2018). As a result, the emergent disparities in land ownership made it difficult for the farmers to secure credit from financiers as they lacked proper collateral security to secure their borrowing. Due to the massive financial gap caused, the private sector is already replacing it through a practice known as contract farming (FAO, 2017; Atkinson, 2020). As a result, more enterprises began to use contract farming to serve small-scale farmers that lacked the necessary money and input. Chinese tobacco merchants began contract farming in Zimbabwe in 2000 as

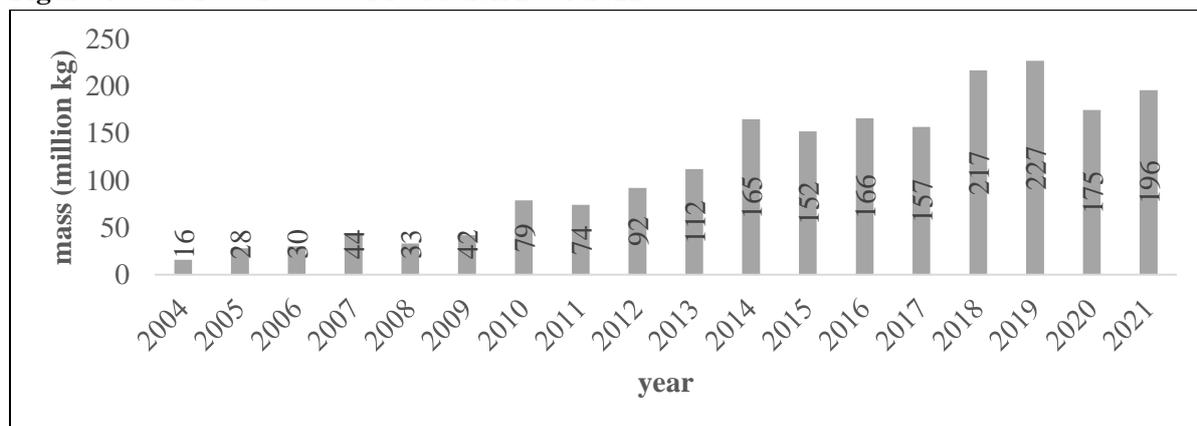
part of the government's "Look East" program, which was launched to combat the effects of capital flight caused by the West's international isolation of the country following land reform.

Selling was place on auction floors prior to the introduction of contract farming in Zimbabwe's tobacco industry in 2004 (Khumalo, 2013). Tobacco producers would bring their goods to any auction floor of their choosing to sell them under this arrangement. Smallholder farmers can now take advantage of a number of advantages associated with contract farming. The benefits include access to more dependable markets, access to new promising markets, access to affordable credit facilities and inputs on more favourable terms, access to new and efficient technologies in farming and the reduction of

production and marketing risks (Dube & Mugwagwa, 2017). Edleman (2017) asserts that contract farming is seen as one potential tool in rural development efforts. Contract farming has since expanded, with 86% of tobacco produced under contract in 2018 (TIMB, 2019). Tobacco is now being produced by an increasing number of smallholder farmers in resettlement and communal areas, as well as farm workers from other sectors of agriculture. Nationally, this

increased from a low of 6,310 smallholders in 2000 to 7,583 million kg of tobacco. Tobacco contract farming has been suggested to have benefited Zimbabwe's economy since the tobacco business and government believe that producing the crop is profitable and has the potential to significantly improve farmers' welfare (Hu & Lee, 2015). Approximately 80% of Zimbabwe's smallholder tobacco producers held contracts with private corporations (TIMB, 2018).

Figure 4: Contract Tobacco Production 2004-2021



(Source: TIMB, 2021)

The tobacco contract companies in Marondera District include TIMB, Voedesel Tobacco Contract Floor, Master Farmer Ltd and Mashonaland Tobacco Company. The lack of capital in smallholder tobacco farmers, combined with the initial attractiveness of the inputs provided by tobacco companies, incentivizes most farmers to choose the contract system. They enter into a credit agreement with a private company where the company supplies the company with inputs at the start of the growing season, and the farmers pay the company back after selling their produce. In most cases, contract farmers are required to sell their produce to the contracting company. In 2018, approximately 80% of smallholder farmers in Zimbabwe had contracts with private companies. There is a significant power asymmetry between the farmers and the buyers of tobacco. Contract farmers often purchase inputs from contracting companies at higher prices than in the competitive market. This can trap tobacco farmers in a cycle of poverty and indebtedness. Their payouts are insufficient to

cover the entire cost of the loans. Despite the fact that the Zimbabwean government sets minimum pricing for leaf tobacco, growers almost always withhold the product at the beginning of the selling season because it is still so cheap. Twenty percent or more of small-scale farmers are not paying back the debts they received from contracting companies. Even if small-scale farmers receive financial support in the form of loans, some of them are not able to repay the loans (Mazwi, 2019). In 2021, loans pertaining to tobacco saw a 77% recovery. The high non-performing loan percentage of 1.41% is a result of banks' struggles to control non-performing loans (RBZ, 2022). Empirical evidence of tobacco farming on loan repayment performance in Zimbabwe is limited.

Problem Statement

Subsistence farmers dominate the agricultural sector in low-income nations like Zimbabwe.

Smallholder tobacco producers encounter financial difficulties when they first begin their operations (Lenis, 2009). They don't have enough money to produce tobacco. Thus, contracting firms support farmers by making loans available. In recent years, the contract farming system has been seen as a successful way for the private sector to become involved. It is thought that this will allow the private sector to replace the government's roles in providing small-scale farmers in developing countries with information, technology, inputs, and credit. (Singh, 2000; Kirsten and Sartorius, 2002).

However, in Zimbabwe, some farmers are failing to repay the loans. About 20% failed to repay loans in a study that was carried out in Manicaland (Chingosho, 2020). It is imperative to understand the reasons behind the failure of farmers to repay loans. Farmers with the same climatic conditions and facing the same environmental factors are having differing results. Some are succeeding in loan repayment while some are failing. It is crucial to understand the factors that influence loan repayment in small-scale tobacco farmers.

LITERATURE REVIEW

Factors Influencing Tobacco Output

Farmer's Education Level

In order to maximize the benefits of modern agro-technology and other inputs, farmers must be educated to decipher and understand their complex nature, make effective selections among them, and reallocate their resources appropriately to take advantage of the opportunities presented by new superior inputs. As a result of these and other technological advancements, farm productivity and farm output per unit of input have increased significantly. For instance, in the tobacco industry, the performance differences between established growers and newly recruited growers demonstrate the importance of knowledge; William and Colyer (1982) discovered that farmers who received training in tobacco production prior to entering the industry performed better than farmers in areas where training was not a requirement. This is because the

process of producing tobacco entails a number of intricate tasks for which specific skills must be learned. The concept of the research gap is that very few farmers receive training before to beginning their farming career, with the majority of farmers receiving training after they have already begun producing tobacco.

Input Use Efficiency

Labour and fertilizer are the most significant inputs in crop production, including tobacco. The efficient utilization of fertilizer and labor inputs has a substantial relationship with tobacco productivity (Mwakalobo 2000). To maximize output, farmers would use suitable capital-intensive input levels. Labour input must be used efficiently because it is important during the curing process, which requires 24 hours of attention.

The curing process is very critical as it affects both the quality and quantity of the crop, and therefore influences output.

Farm Size

Townsend et al. (2003) found that although small farms produce more land, their labor productivity is lower. However, larger farmers may theoretically use hired labor, non-labor variable inputs, and capital to make up for lower family labor per hectare and match or exceed small farms' land productivity. The larger farms employ fewer inputs in a timely manner (Mwakalobo, 2000). Activities on big farms are spaced out throughout time. Larger farmers find it more challenging to run their operations during the best times, which results in an inefficient use of agricultural inputs. Considering the significance of inputs in the farming system, expanding the cultivated area necessitates applying a greater amount of inadequate inputs, which lead to low yield.

Technology

Two factors contributed to the US farm productivity increase: the willingness of farmers to accept new technologies and the investment made by the public and private sectors in agricultural research (John and Frank, 2001).

Farmers can boost productivity in the near term by using new technology, such as enhanced seed types, enhanced farm implements, and enhanced storage facilities.

Access to Capital

A reliable supply of fire wood and enough barns are critical components of tobacco farming. Barns must be of a suitable size and quality for tobacco curing in order to efficiently utilize the heat generated (William and Colyer, 2022). A delayed harvest or storage of the tobacco while waiting for the barn to be cleared out can result from inadequate barn capacity. Low output is caused by losses resulting from both late harvesting and delayed curing of the harvested tobacco leaves. Up to 15% of the harvested leaves could be lost (TORITA, 2001).

Production Contract

According to McBride and Key (2003), production contracts can increase output by enhancing the quality of managerial inputs, accelerating the distribution of technological information to producers, or facilitating growers' access to capital, allowing for the adoption of more innovative technologies. Contracts, on the other hand, have the potential to impair on-farm productivity by reducing incentives for growers to labor effectively or invest completely in specific productive assets.

Effects of Contract Farming on Tobacco Output

Contract farming is a factor that affects tobacco output for smallholder farmers. Farmers who participate in contract farming are more likely to produce more output than those who do not participate in contract farming. Contract farming includes extension services and tobacco training that the contracting firms provide to the smallholder farmers. The extension services and tobacco trainings help smallholder tobacco farmers in producing quality produce and high tobacco output. Contract farming helps smallholder tobacco farmers with inputs and technology that will help them in producing high-quality tobacco output.

Factors Affecting Loan Repayment Performance on Small Holder Tobacco Farmers

A variety of factors influence loan repayment performance, some of which are thought to have a negative impact on payback while others have a beneficial effect. Age influences loan repayment performance because, with time, family or household heads gain knowledge and experience in farming operations, as well as credit and financial literacy. However, elderly farmers may be more wealthy than younger farmers. As a result, tobacco farmers' loan repayment performance is directly proportional to their age. Education also influences loan repayment success (Mwakalobo, 2000).

It assists farmers in understanding the finest managerial methods used in tobacco production and provides a greater appreciation for technological advancements and new innovations introduced into the agricultural industry. Tobacco growers who can read and write improve their capacity to gather, process, and apply knowledge. For example, literate farmers may seek price information more than illiterate farmers, allowing them to sell their produce at appropriate prices. Furthermore, education may help farmers understand the necessity of formal loans, perhaps reducing willful defaults. Regardless, education is projected to reduce tobacco growers' loan default rates.

Strategies that Help Improve Loan Repayment

Performance on loan repayment is essential for small-scale tobacco growers. Farmers must put ideas into effect to enhance their loan repayment performance in order to deliver a positive loan repayment performance. According to Kirsten, Karaan, and Dorward's (2009) theory, increasing productivity through the use of agricultural technologies, cropping calendar-based farming practices, and effective resource management leads to better debt payback.

Empirical Evidence on Loan Repayment

Numerous research on loan repayment performance were conducted from various angles, and conclusions were based on those findings. The logit model was utilized by Nitin et al. (2002) in the United States of America to correlate several characteristics with loan default. According to the study, at 5 and 1 percent error levels, respectively, education and entrepreneurs' firms situated in the same zip code as the lending agency had a significant impact on loan payback. However, the binary model was also employed in this study, and smallholder rural farmers were not taken into account. In Oladeeb's (2008) study, socioeconomic variables affecting small-scale farmers' loan payback in Oyo State, Nigeria's Ogbomoso agricultural zone were investigated.

Theoretical Framework

Contract farming is founded on the theoretical principles of Transaction Cost Economics, a branch of New Institutional Economics. According to the theory, transaction costs are inescapable whenever economic agents conduct transactions. These costs include developing a market or client, negotiating and executing a contract, monitoring contract compliance, switching expenses in the event of premature contract termination, and all other cost opportunities (Bijman, 2008). This theory loosens the major neoclassical economics assumptions of perfect information, a complete set of markets (credit, labor, input, and output markets), zero transaction costs, full rationality, and homogeneous goods and sizes. However, the notion that self-seeking behavior aims to optimize an objective function with restrictions remains valid (Kherallah & Kirsten, 2002). The core concept is that the problems that economic actors face as a result of inadequate knowledge in market transactions and institutions have a significant impact on their organization and operation (Kirsten, Karaan, and Dorward, 2009). Human behavior, characterized by bounded rationality and opportunism, determines transaction costs (Bijman, 2008). Contract farming is one way to lower these transaction costs. The most significant

hurdle to acquiring empirical data on the benefits and drawbacks of contract farming is conceptual and measurement challenges related to transaction costs (Kirsten, Karaan, and Dorward, 2009).

Conceptual Framework

There are many variables that could affect loan repayment performance. This study's focus is on the relationship that could exist between loan repayment performance and factors that affect loan repayment performance in tobacco contract farming as shown in *Figure 5* below.

Figure 5: The study's conceptual framework



RESEARCH METHODOLOGY

The study used a quantitative research design. This is because the information gathered was in the form of numbers and precise measurements. The data was gathered from tobacco producers who were chosen through purposive sampling. Survey questions were utilized to collect data from respondents, while secondary data was obtained from publications, books, and journals. Data obtained was analysed using econometric models the linear regression model and the Probit model. Positivism was employed in this study because the study relies on facts and quantitative data.

This study included both primary and secondary data. The study used a two-stage sampling technique. The first stage required selecting the Marondera District due to its supremacy in tobacco production. Because of its involvement in tobacco production, Ward 21 was selected at random from the rest of Marondera District. Slovin's approach was utilized to establish the appropriate sample size for the inquiry. The Slovin calculations indicated a sample size of 222 smallholder farmers.

$$n = N / (1 + N(e^2))$$

$$n = 500 / (1 + 500(0.05^2)) = 222$$

Where: *n*=sample size, *N*=population size, *e*=margin on error (5%)

The data were analyzed using several statistical methods, such as probit regression and multiple regression. The analysis was conducted using tools such as SPSS V21 and MS EXCEL 2013. According to Hu and Lee (2015), the Slovin formula is the best appropriate for determining sample size in a mixed methodological approach. To supplement the data acquired from researcher-administered questionnaires, the researcher used observation techniques.

RESULTS AND DISCUSSION

Summary Respondents' Characteristics

The following section shows the presentation of the distribution of characteristics of tobacco farmers in Marondera District Ward 21.

Table 2: Summary characteristics of smallholder tobacco farmers

Characteristics	Percentage (%)	
Sex of household	Male	78.3
	Female	21.7
Educational level	Form 2	27.6
	Form 4	63.4
	Form 6	9

(Source: survey results, 2023)

As shown by *Table 2*, it is apparent that of the total number of respondents in the study area, 78.3% were male and 21.7% were female indicating that the highest number of respondents were males. This implies that more males are more into loan activities than women because most people still believe that anything to do with money should be done by men while women should only focus on household chores. The results also imply that women have low financial literacy. Kherallah, Kirsten & Dorward (2009) *postulate that a in most researches 50% of males participate as compared to female*. The table also revealed that the highest

number of respondents have attained Form 4 (63.4%), whereas 9% and 27.6 attained Form 6 and 2 respectively. This implies that more than half of the respondents have attained enough education to be able to understand tobacco production.

Based on the data shown in *Table 3*, the p-value of the KMO test is 0.742, which is greater than 0.5. This indicates that the association between the elements is statistically significant. Bartlett's sphericity test (*p* <.05) indicates that the correlation matrix is not the identity matrix. The results suggested that the matrix was not an

identity matrix, and hence the factor analysis conducted as relationships between variables could be existed.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.742
Bartlett's Test of Sphericity Approx. Chi-Square	174.03
Df	16
Sig	0.000

Table 4: Reliability Test

Construct	Descriptive Statistics				Cronbach Alpha	Result	Communalities
	Mean	SD	S _k	K _u			
Contract farming	4.17	1.02	1.23	1.54	.962	Reliable	.872
Education level	4.01	1.23	1.04	1.76	.897	Reliable	.902
Extension services	4.34	1.76	.84	1.82	.876	Reliable	.780
Irrigation availability	4.19	1.08	1.34	1.74	.917	Reliable	.905
Tobacco land	4.25	1.26	.98	1.97	.874	Reliable	.806
Farm experience	4.19	1.10	.93	1.34	.903	Reliable	.843
Land size	4.06	1.27	1.54	1.72	.924	Reliable	.789
Number of barns	4.32	1.05	.96	1	.854	Reliable	.946
Fertilizer application	4.12	1.18		1.23	.901	Reliable	.856

Note: The average results from the 9 constructs with N = 221 are shown.

Cronbach's alpha test was used to determine internal consistency. Overall, Cronbach's alpha values vary from .856 to .962, indicating that all observed items are reliable and consistent. Cronbach's alpha was .897 for education level, .876, .917, .874, 903, and .924 for contract farming.

extension services, irrigation availability, tobacco land, farm experience and land size respectively, number of barns had .854 whilst fertilizer application had .901. These values were above the threshold of .7 (Hair et al., 2019), indicating that all the constructs are internally consistent and reliable to be used as measurement.

Table 5: Summary of the results of the ANOVA test

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	132.380	14	14.709	284.073	.000 ^b
Residual	10.925	211	.052		
Total	143.305	225			

a. Dependent Variable: output/h

b. Predictors: (Constant), fertilizer, contract farming, farm exp, irri avail, edu, tobacco land, exts, nob, land size, tobacco training, household size, number of cattle, other crop enterprise

An examination of *Table 6* makes it clear that the 13 independent variables in the standard model are significantly predictive of the dependent variable output/ha according to the ANOVA.

Regression coefficients of, education, tobacco land, irrigation availability, extension services,

contract farming, fertilizer application, number of cattle, other crop enterprise, tobacco training, household size, other sources of income, and farm experience in the model displayed are statistically significant at 5% since all the p-values are less than 0.05. The other variables are not statistically significant at 5%.

Table 6: Regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.609	.132		4.621	.000
Edu	.174	.082	.097	2.113	.036*
land size	.004	.022	.013	.165	.869
tobacco land	-.137	.022	.411	6.341	.000*
irri avail	.922	.097	.534	9.520	.000*
Nob	.068	.049	.097	1.399	.163
farm exp	.307	.092	-.159	-3.322	.002*
Exts	.050	.093	.031	.544	.034*
contract farming	.010	.132	.002	.072	.030*
Fertilizer	.031	.101	.019	1.307	.001*
Tobacco training	.012	.032	.012	1.244	.035*
Household size	.450	.062	.443	4.210	.001*
Number of cattle	.003	.085	.023	5.120	.000*
Othercropenterpr	.030	0.91	.865	3.211	.003*
Other sources of income	.164	.081	.096	1.998	.035*

Dependent variable: Output/h

Factors Influencing Smallholder Tobacco Output

Table 6 indicates that 12 variables are statistically significant at 5% level of significance out of the 14 variables that were tested.

Education Level

Education level is a variable found significant at 5% significance level in this study. According to the econometric model, education level has a positive influence on tobacco output. In this case, a unit increase in educational level will increase tobacco output by 0.174, ceteris paribus. More educated farmers are likely to have better access to information about best practices for growing tobacco. Lenis (2009) argues that education level has a greater positive effect on the productivity of tobacco farmers. Educated farmers are motivated to increase their output since they have the knowledge and skills to do so. The results imply that the majority of tobacco farmers had the basic education needed to catch up with new tobacco farming technologies offered by extension officers.

Tobacco Land

Tobacco land is also another variable found significant at 5% level in this study. According to

the econometric model tobacco land has a negative influence on tobacco output in the study area. In this case, a unit increase in tobacco land will result in a -0.137 decrease in tobacco output, ceteris paribus. Tobacco land and output sometimes do not have a linear relationship, and this is because doubling the amount of land does not necessarily double the output. Lenis (2009) concurs that output and land may not necessarily have a linear relationship since there are many other factors influencing the level of output. The results imply that most farmers had more hectares of tobacco land but did not produce more output probably due to inadequate inputs.

Irrigation Availability

Irrigation availability is another variable found significant at 5% significant level in this study. According to the econometric model irrigation availability has a positive influence on tobacco output in the study area. In this case, a unit increase in irrigation availability will result in an increase of tobacco output by 0.922, ceteris paribus. Irrigation helps to improve the quality of tobacco crops. Irrigation allows farmers to control the amount of water their crops receive, which is critical for tobacco growth. The results imply that farmers who had irrigation equipment had produced more tobacco output.

Farm Experience

Farm experience is another variable found significant at 5% level in this study and according to the econometric model, it has a positive influence on tobacco output. In this case, a unit increase in farm experience will result in an increase of tobacco output by 0.307, *ceteris paribus*. Experienced farmers develop better farming techniques and have a better understanding of the local climate conditions, which allows them to make better decisions about when and how to plant their crops. The result indicates that the number of years spent by tobacco farmers in tobacco production had a significant effect on increasing tobacco output. This is probably due to the familiarity that a farmer gained through practising tobacco production

Contract Farming

Contract farming is another variable found significant at 5% significance level. In this case, a unit increase in contract farming will result in an increase in tobacco output by 0.10, *ceteris paribus*. Contract farming allows farmers to access better-quality inputs such as seeds and fertilizer. The results imply that farmers who practised contract farming had adequate tobacco inputs hence they increased tobacco output.

Other Sources of Income

Other sources of income are another variable found significant at 5% significance level. A unit increase in other sources of income will increase tobacco output by 0.164, *ceteris paribus*. Farmers with other sources of income have more resources to invest in their farming operations which can lead to increased production. This implies that farmers who had other sources of income used some of the income from other sources to venture into tobacco production therefore increasing tobacco output.

Other Crop Enterprise

Other crop enterprise is another variable found significant at 5% significance level. A unit increase in other crop enterprises will result in an

increase in tobacco output by 0.30, *ceteris paribus*. Diversification led to increased income which can be used to invest in better farming practices. This implies that farmers who had other crop enterprises used some of the income generated there to cover up for tobacco production thereby increasing tobacco output.

Tobacco Training

Tobacco training is another variable found significant at 5% significance level. A unit increase in tobacco training will increase tobacco output by 0.012, *ceteris paribus*. Farmers who receive tobacco training are more likely to adopt new technologies such as improved varieties of tobacco and may have access to credit which can also lead to increased tobacco output. The results imply that farmers received adequate training and were able to follow instructions from extension workers in growing tobacco.

Household Size

Household size is another variable found significant at 5% level of significance. A unit increase in household size will result in an increase in tobacco output by 0.450, *ceteris paribus*. Larger households may have more labour available to work on the farm which will then lead to increased tobacco output. This implies that more farmers had more household dependents that helped them in the production of tobacco as labourers and this increased tobacco output.

Number of Cattle

The number of cattle is another variable found significant at 5% level of significance. A unit increase in the number of cattle will result in an increase in tobacco output by 0.003, *ceteris paribus*. Cattle provide manure for fertilizer in tobacco production. Draft power for ploughing also came from cattle and this led to increased tobacco yields. The results imply that farmers who had more cattle were able to use cattle in tobacco production as draft power and by having more cattle they were able to follow the tobacco growing calendar and in turn produce high tobacco output.

Fertilizer Application

Fertilizer application has a positive relationship with tobacco output. A unit increase in fertilizer application results in increase in tobacco output by 0.031, ceteris paribus. This is because using the

right amount of fertilizer can increase yields and prevent nutrient deficiencies in the soil. The more fertilizer a farmer uses, the higher the tobacco output. The results imply that as amount of fertilizer used increases the yield of tobacco.

Table 7: Omnibus test

Likelihood Ratio Chi-Square	df	Sig.
252.612	19	.000

Table 8: Probit model estimates of the determinants of loan repayment performance

Variables	Coefficient	Robust Std.error	p-value
Cons	-1.797	2.05973	
Gender	1.310	0.65001	0.807
Age	-1.035	0.49176	0.444
Education	3.345	0.65180	0.000*
Household size	-0.270	0.76245	0.009*
Land size	0.153	0.838211	0.031*
Tobacco land	0.077	0.80025	0.021*
Output per ha	1.066	0.66244	0.021*
Irrigation availability	1.208	0.49245	0.007*
Number of barns	1.233	0.68222	0.001*
Experience	1.035	0.45252	0.012*
Loan source	1.789	0.80250	0.452
Loan tenure	1.087	0.04196	0.022*
Interest	-1.005	0.74149	0.376
Other loans due	-0.265	0.09284	0.016*
Loan purpose	0.226	0.97129	0.000*
Consumption loan	-1.343	0.95128	0.372
Loan supervision	-1.481	0.94298	0.473
Loan at the right time	1.408	0.65226	0.006*
Other crop enterprise	0.223	0.66118	0.000*
Another source of income	0.112	0.80142	0.005*
Extension services	-1.509	0.68132	0.002*
Tobacco training	1.223	0.09824	0.449
Loan approval visits	-0.234	0.65115	0.452
Insurance availability	1.22	0.08328	0.286
Side marketing	-0.543	0.083915	0.000*
Contract farming	0.010	0.40168	0.497
Fertilizer application	1.444	0.67256	0.041*

*Significant at 5%

Source: survey 2023

Table 9: Marginal effects after probit

Variables	dy/dx	Std.error
Gender	0.00018	0.00100
Age	-9.90e-35	0.00004
Education	0.76480	0.00454
Household size	-0.01000	0.01321
Land size	0.01530	0.03214
Tobacco land	0.07770	0.00011
Output per ha	0.06630	0.00122
Irrigation availability	0.01208	0.00123
Number of barns	0.01233	0.00111
Experience	0.02350	0.00131
Loan source	1.78900	0.00153
Loan tenure	0.01087	0.00043
Interest	-0.00150	0.00024
Other loans due	-0.01465	0.00142
Loan purpose	0.01160	0.00129
Consumption loan	-0.00134	0.00128
Loan supervision	-0.08481	0.00298
Loan at the right time	0.04230	0.00226
Other crop enterprise	0.02230	0.00048
Other source of income	0.00120	0.01272
Extension services	0.00523	0.01121
Tobacco training	0.01223	0.00121
Loan approval visits	-0.00234	0.00031
Insurance availability	0.00375	0.00145
Side marketing	-0.05435	0.04120
Contract farming	0.00124	0.00132
Fertilizer application	0.01440	0.00123

Factors Affecting Loan Repayment Performance of Smallholder Tobacco

Table 8 shows that of the 27 variables that were examined, 17 are statistically significant at the 5% level of significance. Among the 27 variables examined, the following were found to be statistically significant at the 5% level of significance: tobacco land, output, fertilizer application, timely loans, other sources of income, extension services, loan tenure, irrigation availability, number of tobacco barns, household size, land size, experience, other loans due, other crop enterprise, loan purpose, and other sources of income.

Education

As expected, the variable education has a positive sign, and the table indicates that it is statistically highly significant at 5%. The outcome suggests that the borrower's ability to successfully repay the loan will rise as they attain higher educational

levels. The marginal effect shows that, other things being equal, a borrower's probability of successfully repaying a loan will improve by 0.764 if they are in higher forms of educational level. Education makes it easier for farmers to handle their money, making them less likely to default on their loans. This outcome is comparable to those in the Oromia Region (Jemal, 2003; Abraham, 2002). The findings suggest that most tobacco farmers have the foundational knowledge required to keep up with the latest tobacco farming innovations provided by extension agents.

Household Size

One of the elements that has a negative value and a considerable impact on smallholder tobacco growers' loan repayment performance is household size. The number of dependents under the business owner was used in the study to determine the size of the household. According to

the marginal effect, there may be a 0.01 drop in loan repayment performance for every additional member of the household, *ceteris paribus*. There is a 0.01 reduction in the householder's odds of repaying the debt for every additional family member. Consequently, it is evident from the probit model's preceding conclusions that the greater the number of dependents, the lower the likelihood of repayment of the loan. In this study, it is apparent that tobacco smallholder farmers have a high chance of poor loan repayment performance due to the fact that most of the farmers in the study area are from the apostolic religious group, popularly known as the *Mapostori ekwamarange*. Because of their religious beliefs, this tribe is known for polygamy and having a large number of offspring. These findings were supported by Awunyo-Vitor's (2013) research, which revealed a negative correlation between household and loan repayment chances. In contrast, Afolabi (2010) demonstrated a favorable correlation between respondents' repayment performance and household size. He noted in his study that the significant labor and technical advice contributions made by household members to agricultural production, which results in higher output per enterprise, are the primary causes of the favorable association between household size and loan payback performance.

Land Size and Tobacco Land

Among the variables that the econometric model showed to be important were land size and tobacco land. Given the farmer's increased possibilities of receiving a fixed factor input, the marginal effect in this instance indicates that an increase in hectares has a possibility of boosting the loan repayment performance. According to the econometric model results, the likelihood of repaying a loan increases by a more than proportionate amount by 0.015 and 0.077, respectively, for every 1 hectare increase in land size and tobacco land, leaving all other factors constant. According to Ogbukwa et al. (2012), there is a positive correlation because farmers are more inclined to market their farming operations as their farm grows in size of improvements in

farm technologies and the farming management systems. This will eventually increase both technical and productive efficiency on the farm resulting in improved profitability of an enterprise, thereby increasing the ability of the farmer to repay the loan. Abreham (2002), also cited a positive relationship between land size and repayment performance in the study "*Loan repayment and its determinants in small scale enterprises financing*".

Farm Experience

Farming experience, defined as the number of years one is actively involved in tobacco production, was also found to be relevant in the research, with a 5% significance level. The marginal effects show that, everything else being equal, a year's worth of experience increases the likelihood that the loan will be repaid by 0.023. This means that the likelihood of a farmer repaying the loan rises as they gain experience in tobacco growing. This is due to the fact that a farmer with greater business knowledge uses efficient farm and credit management techniques that raise agricultural production. The findings corroborate those of Oladeebo & Oladeebo, (2008) and Wongnaa & Awunyo-Vitor (2013), who similarly found a favorable correlation for the loan. This is most likely a result of the farmer's experience with tobacco production, which will ultimately result in successful debt repayment.

Other Loans Due

Another variable that was determined to be statistically significant at the 5% significance level was other loans due. This variable was written as a dummy variable, where 1 denoted the availability of other loans that were past due and 0 indicated the opposite. Given that the variable in this instance has a negative coefficient, farmers who also have other debts may be more likely to experience loan default. This is because farmers who have other debts to pay have a greater likelihood of using money from any business to cover other outstanding loans. According to the marginal effect, if a farmer has other loans that are

due the probability of repaying a loan will decrease by 0.014, *ceteris paribus*. The results imply that farmers who had other loans due paid the other loans due whilst neglecting the tobacco loans which were still new.

Other Crop Enterprise

Other crop enterprise is another variable found to be statistically significant at 5% level of significance. The results indicate that crop enterprise has a positive influence on loan repayment performance. In this case, if a farmer has other crop enterprises, his/her probability to successfully repay a loan will increase by 0.022, *ceteris paribus*. This is because other crop enterprise generates more income that can be used to repay loans. The results imply that farmers who had other crop enterprises used some of the income generated there to cover up for tobacco production thereby increasing tobacco output. By increasing tobacco output, income also increases, and this results in positive loan repayment.

Loan Purpose

Loan purpose is another variable found to be statistically significant at 5% level of significance. Results show that loan purpose has a positive influence on loan repayment performance. In this case, the loan purpose of the farmer will increase his/her probability of successfully repaying the loan by 0.011, *ceteris paribus*. This is because productive loans can generate income that can be used to repay the loan. This implies that a lot of farmers had applied productive loans for tobacco production rather than consumption loans and they made use of the production loans to maximize production and as an end result there was increased output thereby resulting in increased income.

Other Sources of Income

Other source of income is another variable found to be statistically significant at 5% level of significance. Results show that other source of income has a positive influence on loan repayment performance. In this case, a farmer who has other sources of income increases his/her

probability of successfully repaying a loan by 0.0012 as indicated by the marginal effect, *ceteris paribus*. The more the farmer has other sources of income the more the funds are available for the fulfilment of loan obligations. Having multiple sources of income provides a financial cushion in case of an emergency. For example, if the tobacco crop fails, the farmer can rely on other income sources to continue making loan repayments. The results imply that farmers who had other sources of income used some of the income from other sources to venture into tobacco production therefore increasing tobacco output which then results in increased income.

Side Marketing

Side marketing is another variable found to be statistically significant at 5% level of significance. Results show that side marketing has a negative influence on loan repayment performance. The marginal effect shows that for farmers who do side marketing, holding all other things constant, the probability of paying his/her loan decreases by 0.054. Side marketing can lead to a lack of focus on the quality of the tobacco crop which decreases income and makes it difficult to repay loans. Ultimately, farmers who engage in side marketing may be more likely to default on their loans. This implies that farmers who did side marketing did not meet the agreement with their contracting firms thereby ending up selling their tobacco at lower prices to other firms.

Output

Output is another variable found to be statistically significant at 5% level of significance. Results show that there is a positive relationship between output and loan repayment performance. In this case, the marginal effect indicates that if one unit of output (ha) is added, the probability of repaying a loan will increase by 0.066, *ceteris paribus*. This implies that farmers who had more tobacco output had more income that helped them repay their loans.

Irrigation Availability

Irrigation availability is another variable found to be statistically significant at 5% level of significance. Results show that irrigation availability has a positive impact on loan repayment performance. The marginal effect indicates that for a farmer with irrigation facilities, ceteris paribus, his/her probability to repay his/her loan will increase by 0.012. Irrigation increases crop yields which can lead to higher income. When farmers have access to irrigation, they are more likely to be able to meet their loan repayment obligations. The results imply that farmers who had irrigation equipment produced more tobacco output, resulting in increased income.

Number Of Barns

The number of barns is another variable found to be statistically significant at 5% level of significance. Results show that the number of tobacco barns has a positive impact on loan repayment performance. The marginal effect indicates that having more barns, holding all other things constant will result in a probability of paying the loan by 0.0123. More barns allow for a larger volume of tobacco to be processed and sold. The results imply that farmers who had more barns were able to process more tobacco and generate more income.

Loan At Right Time

Receiving a loan at the right time is another variable found to be statistically significant at 5% level of significance. Results show that receiving a loan at the right time has a positive impact on loan repayment performance. The marginal effect indicates that receiving a loan at the right time will result in a probability of paying the loan by 0.042, ceteris paribus. Farmers who receive loans at the right time use the loan to purchase inputs and equipment at the optimal time. This means that they can get the most out of their investment and increase their chances of making a profit.

Extension Services

Extension services is another variable found to be statistically significant at 5% level of significance.

Results show that extension services have a positive impact on loan repayment performance. The marginal effect indicates that extension services will result in a probability of paying the loan by 0.005, ceteris paribus. Extension services help farmers with information and support that can help them improve their farming practices. This, in turn, can lead to higher yields and increased income which makes it easier for them to repay their loans. The positive relationship between extension services and loan repayment performance implies that there was availability of skilled extension officers and there was excellent linkage between tobacco farmers and extension officers and hence sufficient provision of extension services.

Fertilizer Application

Fertilizer application is another variable found to be statistically significant at 5% level of significance. Results show that fertilizer application has a positive impact on loan repayment performance. The marginal effect indicates that a unit increase in fertilizer application will result in a probability of paying the loan by 0.014, ceteris paribus. Fertilizer helps to improve crop yields which can lead to higher income. When farmers are able to generate more income they are then likely to be able to repay their loans. The result indicates that as the amount of fertilizer used increases the yield of tobacco increases thereby increasing income.

Loan Tenure

Loan tenure is another variable found to be statistically significant at 5% level of significance. Results show that loan tenure has a positive impact on loan repayment performance. The marginal effect indicates that the longer the loan tenure will result in a probability of paying the loan by 0.010, ceteris paribus. A longer loan tenure allows farmers to spread out their payments on time and avoid defaulting on their loans. The results imply that longer tenure gives farmers more time to generate income from the tobacco crop which can further improve their ability to make repayments.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

Ward 21 in Marondera District, Mashonaland East Province, Zimbabwe, was the study's location. A total of 222 sample borrowers were chosen using Slovin's algorithm for sampling procedures. The data gathered from the sample respondents was analyzed using the linear regression model and probit regression. The following explanatory variables made up the model used to predict loan repayment performance: age, gender, educational attainment, availability of irrigation, experience, loan source, tenure, other loans due, purpose, consumption loan, loan supervision, loan at the right time, other crop enterprise, tobacco training, interest rate, number of tobacco barns, output per hectare, tobacco land, land size, household size, side marketing, and number of tobacco barns.

The factors that had a significant influence on loan repayment performance at 5% level of significance are household size, land size, experience, other loans due, other crop enterprise, loan purpose, other sources of income, side marketing, tobacco land, output, fertilizer application, loan at right time, other sources of income, extension services, loan tenure, irrigation availability and number of tobacco barns.

In addition, the bulky of the respondents who borrowed in the study were males whilst females constituted a small fraction. The model that was used to analyse factors affecting smallholder tobacco output has the following explanatory variables, education, land size, tobacco land, irrigation availability, number of barns, farm experience, extension services, contract farming, number of cattle and fertilizer application. The factors that had a significance on tobacco output at 5% level of significance are education, tobacco land, irrigation availability, extension services, contract farming, fertilizer application, number of cattle, other crop enterprise, tobacco training,

household size, other sources of income, and farm experience.

Conclusion

From the results, some of the farmers did not have other sources of income while they had other loans due which gave them too much exposure on the repayment prospects to meet their obligations. Results from the probit model revealed that loan repayment is significantly determined by household size, land size, experience, other loans due, other crop enterprise, loan purpose, other sources of income and side marketing. The number of dependants in the household influences loan repayment in that, households with large numbers may perform low because they might use the loan for consumption purposes. Borrowers with other sources of income perform well because they might use the money from other sources of income to pay their loans. In order to improve loan repayment performance for smallholder tobacco farmers there is a need to perform tobacco farming activities based on the cropping calendar. This is when seedlings are transferred to the field on 1 September. If the tobacco is planted on time there are high chance that tobacco output will be of high quality, hence more profit will be produced thereby making the smallholder farmer able to repay loans. Since this study found out that most farmers are not doing tobacco production based on correct planting dates, there is a need for the use of a tobacco cropping calendar from planting to selling.

Having other sources of income which are non-farm is also a strategy that can be used to improve loan repayment performance as income from other activities can be used in repaying tobacco production loans. From the study, it was found out that most of the farmers rely mostly on farming rather than having a variety of sources of income which include non-farm activities. The non-farm activities that the smallholder tobacco farmers of Marondera Ward 21 may venture into can be carpentry and baking because they have access to raw materials such wheat and timber.

The use of agricultural technologies such as irrigation is also another strategy that can be used to repay loans by smallholder tobacco farmers. Irrigation improves crop production if the rains are not adequate hence the tobacco crops will receive adequate water. This will then lead to high tobacco production; therefore, more income is generated leading to repaying the loan. Managing resources properly, that is, land, labour and capital, boosts production and in turn generates more income that will be used to repay loans, so the smallholder tobacco farmers of Marondera Ward 21 must be able to manage resources properly in order to boost their production. They can accomplish this by using a lot of extension services and tobacco training. They must also be able to keep records of the production throughout the tobacco season.

Recommendations

The following are the recommendations from the study: The characterization of farmers specifies that more males are participating in agriculture credit than females. This can be concluded by the fact that more males decided on financial use than females. This discrepancy clearly shows that there are some forms of gender equity and inequality that need to be addressed in the agriculture sector so as to enhance equal opportunities in agricultural credit facilities. Therefore, there is a need for women's empowerment and to educate them in terms of financial literacy and inclusion so that there are more women participating in agriculture credit lending programs. The lenders should also pay much attention to the size of the households of the farmers before extending credit to them as these were found to be contributing the highest variance in loan repayment performance.

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