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EXTENT OF ACCEPTANCE OF GOVERNMENT PROJECTS FOR FOOD SECURITY IN KABOKWENI EHLANZENI DISTRICT, SOUTH AFRICA

Mgwenya LI[1]*, Agholor IA[2], Sithole MZ[3], Morepje MT[1], Thabane VN[1] and NS Msweli[1]

Lethu Mgwenya

*Corresponding author email: lethumgwenya1@gmail.com
ORCID: orcid.org/0000-0002-1743-5372

[1]Master of Agriculture student, School of Agricultural Sciences, University of Mpumalanga, Mbombela, 1200, South Africa

[2]Senior Lecturer, School of Agricultural Sciences, University of Mpumalanga, Mbombela, 1200, South Africa

[3]PhD candidate School of Agricultural Sciences, University of Mpumalanga, Mbombela, 1200, South Africa

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ABSTRACT

Food security is a major concern in different countries across the world, including South Africa. The study aimed to contextually analyse government projects in Kabokweni, Ehlanzeni district, South Africa to enhance their potential, and strengthen food security. A simple random sampling process was used to choose the 294 participants from a group of 1121 small-scale farmers. Data were gathered using a structured questionnaire, which was administered to respondents by the lead researcher with the aid of trained enumerators. After giving consent, the respondents were asked the questions in one-on-one interviews while the lead researcher and enumerators noted down their responses on the questionnaires. Descriptive statistics were employed to analyse the data using SPSS version 28 software. Descriptive statistics including frequency, percentage, mean, standard deviation, and tables were used for analysis in the study. The type of inferential statistics used is the linear regression model. The results showed that most of the participants were female (64.29%). Youth participation was found to be 25.17% (age group of 29 to 39 years), while elderly farmers were found to be 13.95% (62 years and older). The majority (55.44%) of the small-scale farmers in the study area were schooled up to secondary level, while 12.24% had no formal education. At least 35.7% of the participants owned farmland ranging from 6 to 9 acres, with an annual income of R23 000 earned by 55.44% of the participants. Educational level (*P-value=0.001)*, employment status (*P-value=0.181)*, farm size (*P-value=0.003)*, type of farm enterprise *(P-value=0.001),* and the level of awareness about government projects *(P-value=0.001)* were significant, and positively associated with the decision to accept government projects aimed at improving food security levels at the study area. However, the type of crops cultivated (*P-value=0.005)*, and the type of livestock (*P-value=0.001)* were also statistically significant and influenced the acceptance of government projects for food security. In conclusion, to increase participation in government projects for food security, the monitoring and distribution approach must be improved. Moreover, the study recommends that small-scale farmers should be well informed about the benefits of participating in government projects for food security in the study area.

Key words: Extent, acceptance, food security, government, projects, participation, smallholder farmers

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INTRODUCTION

Out of the 8.1 billion people in the world, almost 240 million who reside in Africa are food insecure [1]. A shortage in fat, protein, and macronutrients, which are essential for releasing needed energy and maintaining physical health, affects 40% of African children under the age of five [1, 2, 3]. Food security is defined as ensuring that everyone has adequate access to safe and nourishing food [4]. Globally, there are about 805 million people who are undernourished, referring to the lack of adequate access to nutrition (calories) rather than the quality, and/or the diversity of an individuals' diet around the world [5, 6]. Moreover, there has been an insufficient food intake globally from 18.7 to 11.3% in the period 2018–2021 [5, 7]. Drought severity has increased with global warming, degrading available arable land. Many households in rural areas that depend on this land for subsistence farming will face a lack of food security. In South Africa, one out of four still suffers from undernourishment [8]. To alleviate the problems related to food security, political commitment is a must, and food security should be on the priority list of political parties in these countries, so that they can come up with tactical solutions to address food security [9].

Food insecurity cannot be solved by only one sector or stakeholder, and there should be better coordination among different stakeholders along with an enabling environment set up by the government. Policy plans such as the Agricultural Policy Action Plan, African Union Agricultural Policy and Comprehensive African Agricultural Development policy (CAAD) may assist in alleviating hunger and poverty [10, 11]. Government policies and such can play a major role in reducing food insecurity since they can ensure adequate investment in major projects to increase food production, encourage the use of modern technology in agriculture, ensure proper coordination among different stakeholders, set up appropriate legal frameworks, and initiate major institutional reforms, amongst others [10]. Government policies must be developed based on the specificities of different countries since the causes of food insecurity may not be the same [1]. The CAAD policy was formulated to stimulate the necessary reforms in the agricultural sector, and to intricate digital models of production facilities. South Africa also faces the same problem of food insecurity as any other country in this part of the world [12]. However, South Africa has its own peculiarities and context; but continues to maintain integration, and relationship with other countries of the world [13].

Income security is an essential in addressing food insecurity. The provision of employment may be helpful in addressing food security in South Africa. In a highly unequal society with high unemployment, government assistance through social grants may also suffice [14]. Therefore, the study seeks to contextually analyse

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government projects aimed towards food security in Kabokweni, Ehlanzeni district, South Africa to enhance their potential and strengthen food security.

MATERIALS AND METHODS

Study area

The study was conducted in Kabokweni, Ehlanzeni District, Mbombela local Municipality of the Mpumalanga Province of South Africa (figure1) under the following villages, Bhuga (officially known as Gutjwa kop), Nkohlakalo, Halfway, Nkanini and Bhayizane. The motive for choosing this study area was because of the food insecurity crisis prevalent in South African townships (underdeveloped areas designed for black people by the Apartheid government). The community has a vibrant small-holder crop farming due to it being in the tropical summer-rainfall zone of South Africa [12]. The area consists of grey sandy soils on its acid components and red loams on its more basic components.

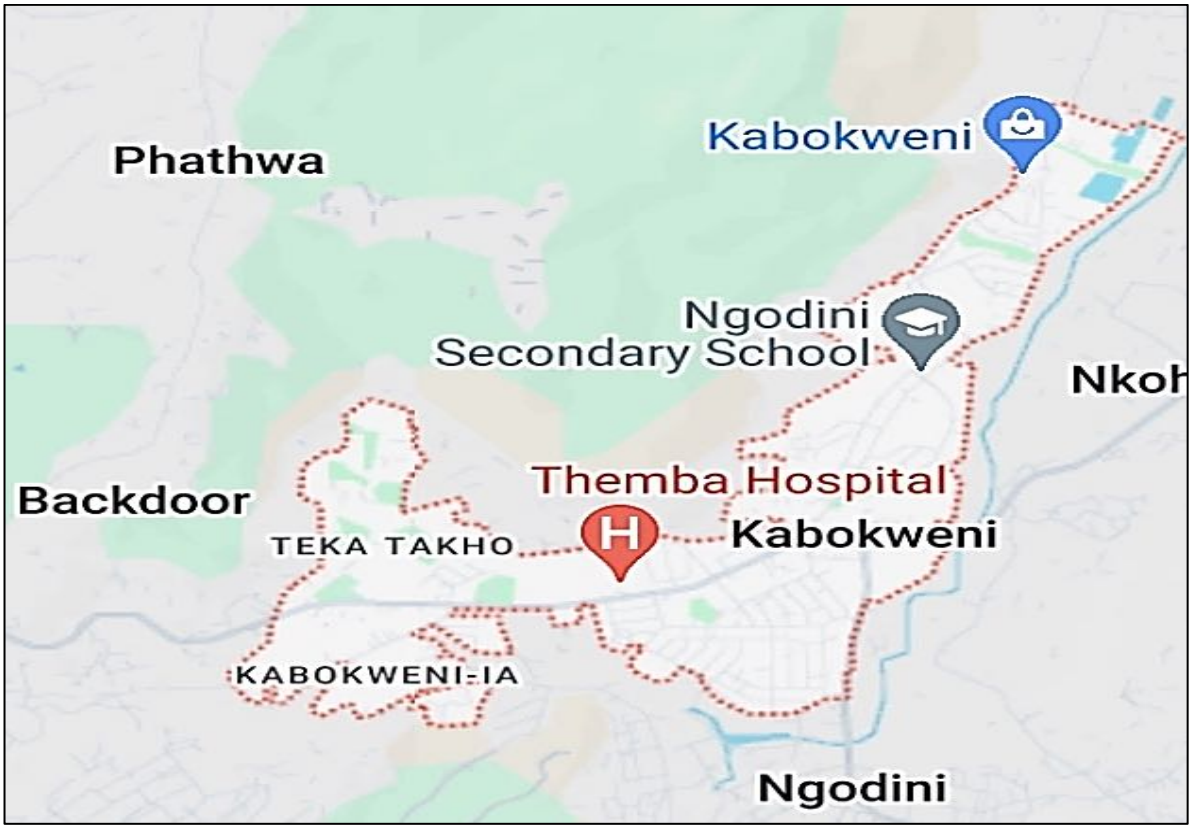

Figure 1: Map of Kabokweni, Mbombela Local Municipality

Sampling method and sample size

The study employed a quantitative research method and used a simple random sampling technique to choose the 294 participants from a population of 1121 smallholder farmers [DARDLA, 2023]. Considering 5% margin of error and 95%

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confidence interval, Slovin's formula was applied to determine the sample size and calculated as follows:

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

$$\mathbf{n=}\frac{1121}{1+1121(0.05)^2}$$

n=294 participants

The formula is $\mathbf{n=}\frac{N}{1+Ne^2}$

Where, n = the sample size
N= 1121, that is the finite population
e = the margin of error (0.05)
1 = unit or a constant

Data collection

The study employed a quantitative research method. Data was gathered using a structured questionnaire, which was administered to small-holder farmers by the lead researcher with the aid of trained enumerators. After a farmer agreed to take part in the survey, the questionnaire was administered, and responses were appropriately recorded. The structured questions were short and straight forward to avoid exploiting participants' time. Three trained enumerators assisted in the data collection process. Respondents were informed of the objectives of the study, and ethical issues such as justice, autonomy and beneficence were considered throughout the collection of data.

Data analysis

Statistical Package for Social Sciences (SPSS) software version 28.0 was used to analyse the data. Descriptive statistics were used to obtain the mean, frequency, and standard deviation. Also, graphs, percentages, and tables were utilized to summarize and illustrate the data as presented in the results and discussion section of this paper. Moreover, a linear regression model was used to determine the relationship between independent (X) and dependent variables (Y) which are explained further in the model of the study below.

The model of the study

Linear regression model, as indicated below is used to predict the value of a variable based on the value of another variable. In this case, the linear regression model was used to determine the impact that socio-economic variables of respondents have on the willingness to participate in government projects for food security. Linear regression model was used because it allowed for the estimation of the probability of events, in relation to a set of independent variables that are hypothesized to affect an outcome [8]. The predictor variables may be discrete or continuous [13, 14].

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Therefore, Y represents the dichotomous variable, which will be equal to 1 if smallholder farmers have chosen to participate in projects owned by the government, and 0 if they have not. To ascertain the relationship between the independent variables, and participation in government owned projects for food security, the model is illustrated below:

$Y = \beta o + \beta_1 X_1 + \beta_2 X_2 \ldots + \beta_{15} X_{15} + \mu$

Where:
Y = participation in government projects (small-scale farmers participate in government projects = 1, O = otherwise)

X_1-X_{15} = Independent variables as illustrated below and in Table 1:
X_1 = Gender,
X_2 = Age,
X_3 = Marital status,
X_4 = Level of education,
X_5 = Household size,
X_6 = Employment status,
X_7= Farming experience,
X_8= Farm size,
X_9= Farm income,
X_{10}= Type of farm enterprise,
X_{11}= Visit from agricultural practitioner,
X_{12}= Type of crops,
X_{13}= Type of livestock,
X_{14}= Level of awareness on government's food security projects,
X_{15}= Level of assistance received from extension practitioner,
Constant = β_0
Standardized partial regression co-efficient = $\beta_1 - \beta_{15}$
Error term = μ

RESULTS AND DISCUSSION

Socio-demographic traits of small-holder farmers in the study area

In the study area, the majority (71.1%) of respondents' falls within the range of 29-61 years old (table 1). The result implies that most of the farmers who participated in the study are of working age. This finding is supported by Battersby [4], in her study on farmers' perceptions and integrity which found that youths are showing interest in farming. According to Adler [6], age significantly influences participation in government owned projects for food security. Results from the study further indicated that 64.9% of females, who participated in the survey, showed more

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interest in government projects as compared to 35.7% of males. Previous study found that female farmers play a crucial role in food production for food security, but they often face challenges of limited access to resources [15].

The level of education of small-scale farmers in Table 1 shows that a greater part (55.4%) of the respondents had secondary level education, implying that farmers in the study area are literate. Literate farmers are better positioned to adopt new technologies, and farming practices, understand market trends, and access information [16]. This literacy can enhance the effectiveness of food security programs by facilitating the dissemination and uptake of agricultural innovations and best practices. In the household category, about 8.8% of respondents had a household with more than ten members, while about 51.7% had a household size with members ranging from 1-4 meaning they have adequate members to constitute farm labour for a small-scale farm. Adequate labour ensures that farms can maintain productivity levels and manage labour-intensive activities such as planting, weeding, and harvesting [17]. Food security programs need to consider labour availability and promote practices that optimize labour use, such as mechanization, and labour-saving technologies.

About 33% of small-scale farmers in the study area had farming experience of up to 5 years, while only 8.8% had less farming experience making them less familiar with government projects for food security. The results on farming experience imply that experienced farmers are likely to have better knowledge of local agro-ecological conditions and effective farming techniques [18]. According to the data presented in Table 1, about 35.7% of respondents had a farm size of 6–9 acres, while 6.5% had a farm size of more than 14 acres. Previous study also found that size of farmland has an influence on increased production output [19]. Livestock rearing (table 1), indicated that 57.1% of participants in the survey were involved in crop production, while 22.8% practiced mixed farming involving the rearing of livestock, and cultivation of crops. These farmers contribute to local food availability but face challenges like vulnerability to climate change, and market volatility, requiring support for climate-resilient practices and efficient resource use [20, 21].

Distribution of access to government projects for food security

Table 2 illustrates the distribution of access to government projects for food security in the study area. The government initiatives to which the participants had access are shown in the table below (table 2). The government projects include social grant and unemployment, special projects for food security, skills and support development, and the support for emerging farmer's projects. These projects improve people's adequate access to safe and nutritious food at both household and community level. A total of 83.7% of the participants had access to the unemployment, and social grants project. About 6.5% of the participants had access

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to the Support for Emerging Farmers Project, leaving 7.5% of the participants with access to the Special Project for Food Security. Finally, 1.6% of the participants had access to other projects like the PESI voucher initiative for small-scale farmers, while about 1.0% of the participants had access to the Skills Support and Development Project. These results corroborate those of Chakoma and Shackleton [2], whose study on the obstacles to government project acceptance in agricultural extension revealed that smallholder farmers' participation in government projects for food security has positively impacted food security. The implication of the farmers' distribution to the different projects on food and nutrition security was demonstrated on table 2 below, to indicate the most accessible project of them all based on the responses of the participants in the study area.

Challenges faced by participants in the use of government projects for food security

Table 3, below, shows the challenges faced by smallholder farmers when participating in government projects for food security. The mean distribution score was used to identify challenges, as indicated by the participants. As shown on table 3, the main challenges encountered by surveyed participants in the study were political instability (M = 4.60), and insufficient funds (M = 4.26), while other challenges were insufficient distribution channels (M = 4.29), and monitoring (M = 4.37). This result agrees with Abdullah [22], who postulated that the obstacles to the acceptance and participation in government owned projects is inadequate knowledge and language barrier. Similar findings by Cousins [23], on land redistribution found that knowledge and language problems were the major obstacles affecting farmers participating in government projects. In addition, a study by Adler [7] on the utilization of government projects in agriculture stated that the high cost of the projects is the main barrier hindering farmers' participation. Mamba [24] noted in a study in farmers' background that some novel elements in cutting-edge government projects for food security might not be necessary because they raise the overall cost of the project. The absence of marketplaces and access to extension services are among the other difficulties mentioned by the participants. According to Corrocher [25], most farmers in South Africa's rural areas lack proper access to markets, which prevents them from participating in government projects for food security. Previous study indicates that over 50% of rural farmers have problems getting access to farm infrastructures making it difficult for increased production [26]. Abbadia [27] argues that farmers find it challenging to learn about government schemes for food security, let alone applying to be part of the beneficiaries of the government owned projects.

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The empirical findings of the study

Linear regression model was employed in this study to show the relationship between the chosen predictor variables, and participation in government owned projects put in place for food security. The linear regression model (Table 4) used in the survey indicates that *Pseudo R-Square* of 0.896 and 0.904 for the first and second steps of analysis were obtained, respectively. By implication of the obtained *Pseudo R-Square*, the model has acceptable illustrative power and a good fit for the study. Logistic regression model provides a measure of how well experimental outcomes are reproduced by the model, based on the percentage of total variation of outcomes explained by the model [14].

Results (Table 4) indicate that the variable level of education, with a *P-value* of 0.001, is significant, and positively associated with participation in government projects, with β = 0.125. This finding suggests that an increase in the level of education of respondents will result in an increase in the rate of participation in government projects, provided that all other variables remain constant. In another study by Smith [28] on delivering food security without increasing pressure on land, it was found that people with higher education approach problems and make better decisions. In addition, Asche [29], in their study on food security and international trade, found that participating in various government initiatives can be challenging for those with low literacy levels. The variable employment status was significant with a *P-value* of 0.181, and positively correlated with the participation in government projects (ß = 0.104), as shown in Table 4. According to these statistics, the probability of adopting government owned projects increases by 0.104 times for every unit increase in access to employment, provided that all variables remain constant.

The result of this study contradicts earlier findings by Sayer [30] who in their study on tropical landscapes and livelihoods, stated that younger individuals were more self-employable than older people. Similar findings made by Naidoo [31] also found that young people are frequently at work during the day, where they are exposed to a lot of government programmes. Farm size was significant with a *P-value* of 0.003, and positively related to the choice to participate in government projects with ß= 0.149. This result suggests that for every unit increase in farm size, there is a 0.149 increase in the log-odds of participation in government projects, provided that all antecedent variables remain constant. This result agrees with Cooper [3] in their study on mining food security, which found that farmers who have large farm sizes have a greater capacity to use government projects for food security. The variable type of farm enterprise was significant with a *P-value* of 0.001 and showed a positive correlation with participation in government projects (ß = 0.197). This finding suggests that an increase in diversification of farm enterprise increases the

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participation in government owned projects provided that all antecedents' variables remain constant.

This finding agrees with Bouis [32] who in their study on improving nutrition through bio-fortification, stated that farmers practicing mixed farming had more access to government projects. Additionally, participating in various government projects can increase the farmer's production, and access to markets [33]. The variable extension was significant with a *P-value* of 0.161, and negatively correlated to participating in government projects with a coefficient of *ß* = -0.106. This finding implies that a unit increase in the frequency of contact with extension advisors would result in a decrease of 0.106 times in the probability of participation in government projects, provided that all other variables are kept constant. Therefore, extension specialists must also establish new channels for information sharing that would entice and inspire farmers to participate in government projects [34].

The variable type of crops was significant with a p-value of 0.005, and negatively correlated with the acceptance of government projects for food security. This finding illustrates that a unit increase in the frequency of changes to crops type cultivated by a farmer would result in 0.191 times increases in participating in government projects. The variable type of livestock was also significant with a P-value of 0.001, and negatively correlated with participation in government projects for food security (*ß* = -0.128). This result shows that an increase in the frequency of changes in the choice of crop types to be cultivated will influence participation in government projects. The variable level of awareness about government projects aimed at enhancing food security was significant with a P-value of 0.001, and positively correlated with participation in government projects for food security (*ß* = 2.844), as shown in table 6. Ultimately, this finding indicates that the probability of participating in government increases by 2.844 times for every unit increase in awareness, provided that all other variables are held constant. This result is corroborated by the study of Asche [29] on the awareness of the positive impacts on the level of participation in government projects.

CONCLUSION AND RECOMMENDATIONS FOR DEVELOPMENT

Findings of the study, most respondents fall within the range of 29-61 years old. The result implies that most of the farmers who participated in the study are of working age. Results from the study further indicated that 64.9% of females, who participated in the survey, showed more interest in government projects as compared to 35.7% of males. Furthermore, most of the participants have average farm sizes ranging from 1-14 acres and a reasonable income R4000-R23000 per annum. The result also showed that most of the participants do not have other forms of employment, and the majority (57.14%) were practicing crop production. The government projects that were most accessible to the participants were the social grant and

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unemployment, the special project for food security, and support for emerging farmers. Furthermore, individual factors such as age, and level of education, and social and institutional factors such as farmer support also affect the way in which the projects are used by the participants. These factors were found to have negative and positive levels of significance in influencing participation in government projects. Therefore, in conclusion, it is safe to say that the acceptance of participating in government projects for food security in the study area is largely influenced by level of education, employment status, farm size in acres, type of farm enterprise, visits from agricultural practitioners, type of crops, type of livestock, and level of awareness about government projects aimed at enhancing food security. The effective application of the projects provides farmers with greater access to information and markets, which helps improve their decision-making, thus improving their income and rural livelihoods.

The strategies used by the government to cushion the impact of food insecurity in rural communities have been the generous allocation of unemployment and social grants amongst others. Overall, for Kabokweni to maintain and improve food security in a sustainable way the integrated food strategy must be central to planning and ensuring there is sustainable innovation in farming. The strategic plan for the Ministry of Agriculture claims that South Africa's scarcity of land limits its potential to increase food production. Aside, agricultural land is being developed into property for homes and companies. To increase food production in Kabokweni, more land should be set aside by the government for growing crops and breeding cattle. Adequate information and assistance must be extended to farmers to assist them to acquire land for farming purposes. The government might arrange for advertisements in the local press and newspapers to increase public awareness of the nation's concern over food security, and to encourage residents to reduce food waste. This could help reduce the amount of food imported from other countries. There is a paradox in South Africa where many people waste food while others are living in poverty. Inspiring South Africans to create and donate extra food to the food bank will help reduce the country's undernourishment.

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Conflict of interest

The authors declare no conflict of interests.

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Table 1: The distribution of farmers' socio-demographic traits

Characteristics	Categories	n=294 (%)
Age (Years)	18-28	15.0
	29-39	25.2
	40-50	23.5
	51-61	22.4
	>62	13.9
Gender	Female	64.29
	Male	35.71
Level of education	No School	12.24
	ABET	1.36
	Primary level	15.99
	Secondary level	55.44
	Tertiary level	14.97
Marital status	Single	55.4
	Married	37.1
	Divorced	1.4
	Separated	0.7
	Widow	4.8
	Widower	0.6
Household members	1-4	51.7
	5-8	38.4
	9-12	8.8
	>13	1.1
Farm size(acres)	<1	0.7
	2-5	22.8
	6-9	35.7
	10-13	34.4
	>14	6.4
Level of income(rands)	<R4000	2.0
	R5000-R10000	6.8
	R11000-16000	8.5
	R17000-22000	27.2
	>R23000	55.5
Type of farm enterprise	Livestock	19.39
	Crops	57.14
	Livestock and crops	22.79
	Other	0.68
Farm experience (years)	<5	33.67
	6-11	26.19
	12-17	17.35
	18-23	13.95
	>24	8.84

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Table 2: Distribution of access to government projects for food security

Access to government projects for food security			
	Access	**Frequency**	**Percentage**
Special project for food security	Yes	22	7.5
Skills support and development project	Yes	2	0.7
Support for emerging farmers	Yes	19	6.5
Social grant and unemployment	Yes	246	83.7
Other	Yes	5	1.6

Table 3: Challenges faced by participants in the use of government owned projects for food security

Challenges	**Not a challenge %**	**Minor challenge %**	**Moderate challenge %**	**Serious challenge %**	**Very serious challenge %**	**Mean**
Insufficient funding	0.7%	6.8%	13.6%	23.8%	55.1%	4.26
Monitoring of government projects for food security	1.4%	2.4%	7.5%	35.0%	53.7%	4.37
Insufficient distribution and supply chain management	1.7%	4.4%	11.6%	27.9%	54.4%	4.29
Political instability	1.0%	2.1%	5.4%	15.5%	76%	4.60

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Table 4: Determinants of participation in government projects for food security in the study area

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95,0% Confidence Interval for B	
	B	Std.Error	Beta			Lower bound	Upper bound
Gender	.057	.079	.047	.730	.466	-.097	.212
Age	.038	.044	.058	.861	.390	-.048	.124
Marital status	.041	.045	.038	.908	.365	-.048	.130
Level of education	.125	.038	.225	3.282	.001**	.050	.200
Household members	.068	.060	.056	1.132	.258	-.050	.185
Employment status	.104	.078	.071	1.340	.181*	-.049	.257
Farming experience	-.011	.039	-.014	-.286	.775	-.087	.065
Farm size in acres	.149	0.49	.238	3.019	.003**	.052	.246
Farm income	.034	.043	.072	.805	.422	-.050	.119
Type of farm enterprise	.197	.057	.203	3.432	,001**	.084	.310
Visits from agricultural practitioner	-.106	.075	-.173	-1.406	.161*	-.254	.042
Type of crops	-.191	.067	-.273	-2.837	.005**	-.324	-.059
Type of livestock	-.128	.032	-.246	-3.949	.001**	-.192	-.064
Level of awareness about government projects	2.844	.708	1.359	4.018	.001**	1.451	4.238
Level of assistance from extension	-.045	.091	-.047	-.498	.619	-.225	.134

Model	*R*	*R Square*[b]	*Adjusted R Square*	*Std. Error of the Estimate*
Step 1	0.947[a]	0.896	0.891	0.690
Step 2	0.951[c]	0.904	0.898	0.668

*Significant level of 0.01**; 0.05* and 0.1*, respectively*

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