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The Role of Training, Extension Service and Financial Instruments on the Profitability of Land Reform Farm Enterprises in KwaZulu-Natal

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ABSTRACT

The training, extension service and financial instruments are critical tools for success through which knowledge and skills for farming are transferred in land reform. A farmer's level of education, farming competencies, membership in associations, and market linkages are auxiliary services that are also vital to profitability. Using Multinomial Logistic Regression and Chi-Square tests of independence, this study sought to evaluate the dependence of profit on skills, farmer support services, and financial instruments for sustained profitability. The data were collected from 262 land reform farmers in KwaZulu-Natal, South Africa, using structured questionnaires. The data was analysed using the Multinomial Logistic Regression and Chi-square tests of independence, measuring the relationship between farmers' level of education, extension service, training, membership of organisations, payment period, off-take agreements, retention savings, credit access, market linkages and farmer competencies on farming skills for the success of enterprises through profit generation. The study found that Market Access (X_1), Market Source (X_2), Payment Period (X_4), Retention Savings (X_5), Level of Formal Education (X_6), Credit Access (X_8), Livestock Competency (X_{12}), Piggery Competency (X_{13}), Poultry Competency (X_{14}) and Training Received (X_{16}) have statistical significance in driving profit generated on farms.

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Policymakers should consider these factors when planning, implementing and developing interventions geared to enhance the profitability of enterprises in land reform.

Keywords: Extension, Land Reform, Mentorship, Skills, Training.

1. INTRODUCTION

Agriculture is the mainstay of many African countries' economies, contributing significantly to Gross Domestic Product (GDP) and export revenue (Msuya *et al*., 2017). Msuya *et al*. (2017) argue that the sector is a significant provider of employment opportunities, especially in rural areas. As a result, there is an intrinsic desire to guarantee that farmers are equipped with appropriate skills to ensure continuous production. Milhem *et al*. (2014) define the process of acquiring or transmitting the knowledge, skills and abilities necessary to carry out a certain task as training. It involves modifying attitude, knowledge, skill or behaviour through learning experience to achieve effective performance in an activity or range of activities (Milhem *et al*., 2014). The harvesting and preservation of skills in the agricultural sector always play a pivotal role in the development and growth of novice land reform farmers. The effectiveness of training is measured by its ability to yield long-term results in employee and farmer efficiency (Milhem *et al*., 2014). The successful transfer of skills from the experienced farmers to novice land reform farmers has become the focus of training programmes and initiatives.

Structurally, the agricultural sector in South Africa is dominated by smallholder farmers (Msuya *et al*., 2017). According to Terblanche (2011), the new farmers must be successful in production to reduce poverty, produce enough food for everyone, and integrate into South Africa's agricultural production system. David and Samuel (2014) argue that the general challenge for global public training and extension systems is to improve their relevance and effectiveness in contributing to the sustainability of agricultural and rural livelihoods amid increasing economic, social, and ecological risks. As a result, in addition to the normal extension advisory service provided by extension officials, the inception of the Recapitalisation and Development Programme (RADP) introduced a mentorship component (DRDLR, 2013). The mentorship component of the RADP focused on transferring practical farming skills from experienced commercial farmers to new land reform farmers. However, training established through the development component of RADP was not ordinary; it was focused on the needs of the individual farmer at the practical farm operational level.

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This study assesses the roles of training, extension services, and financial instruments in farm enterprises in land reform. The training and extension advisory service also ensures continuous production and consistent profits through skills transfer. It contributes to the body of knowledge by identifying the set of skills that land reform farmers need for the programme's success. It is imperative that the new ideas proposed in this study be disseminated to lower levels of implementation, to officials who implement new policies and are likely to understand the challenges that result from these changes, rather than to high-ranking authorities (Dearing, 2009).

2. AGRICULTURAL SKILLS TRANSFER IN SOUTH AFRICA

The outcome of any training is the skills transfer (Magidi & Mahiya, 2021). The primary types of skills transfer for land reform enterprises are extension and advisory services, organised training, mentorship, and strategic partnerships. The training takes place through formal and informal means, whereas mentorship is an ongoing "on-the-job" practical transfer of skills. Terblanche (2011) defines mentoring as "simply someone who helps someone else to learn something the learner would otherwise have learned less well, more slowly, or not at all". The main goal of mentoring is to systematically develop the skills and leadership abilities of the less experienced so that they become competent producers (Terblanche, 2011; Ellenson & Madhanpall, 2014).

Extension workers provide extension advisory services to farmers, including recipients of land through government programmes (Mabuza, 2016). Agricultural extension brings scientific agriculture to farmers, enabling them to utilise the knowledge (Altalb *et al*., 2015). However, Mabuza (2016) argues that extension personnel are not qualified to provide the expertise in financial, marketing, or human resource management that farming demands. This then raises the question of the efficiency of such training and extension advisory services if they do not meet the practical demands of their markets. As a result, the mentors are better equipped to help land reform farmers with these skills in marketing, financial management and human resource management (Rungasamy, 2011). The mentors are seasoned farmers or strategic partners. In mentorship training, the mentee has a fair amount of knowledge but requires strategic support in financial management and marketing (DRDLR, 2013). Koutsouris (2014) emphasises the need to respect mentees' prior knowledge. In addition, Ellenson and Madhanpall (2014) argue that strategic partners and mentors also play a critical role in advising the government on project budgets and other planning requirements.

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Agricultural extension improves the social and economic circumstances of its beneficiaries by providing government information and guidance through non-formal education channels (Mabuza, 2016). Extension is a smallholder farmer's primary source of information about new farming methods (Altalb *et al*., 2015; Msuya *et al*., 2017). Mabuza (2016) also concurs that "extension plays a key role by conveying important information, such as technology transfer, improved farming techniques and marketing information, to encourage farmers to adopt new technology and improved practices" to increase their production efficiency. The focus on disseminating information will curtail the spread of misinformation by leveraging trusted information sources (Dearing, 2009). Dearing (2009) and Dearing and Cox (2018) agree that uncertainty in response to an innovation typically leads to a search for information and, if the potential adopter believes the innovation to be interesting and has the potential for benefits, a search for evaluative judgments of trusted and respected others (informal opinion leaders). This is because prospective adopters also believe that innovations are relevant when people who are similar to them adopt them, even if they are not related (Dearing & Cox, 2018). Agricultural extension services provide farmers with the necessary skills in a format they can easily understand, given their literacy level (Altalb *et al*., 2015). As a result, extension officers need a strong understanding of technical knowledge and skills to manage social processes (David & Samuel, 2014). As shown in Table 1, knowledge transferred to land reform farmers is also gathered and disseminated through agricultural research centres (Altalb *et al*., 2015). Hence, training extension officers helps improve their human capital by enhancing their knowledge and abilities in general financial control and financial management (Antwi & Chagwiza, 2019).

Given the importance of training and extension, it is imperative to simultaneously develop and improve extension officers' knowledge. Mkuki and Msuya (2020) argue that agricultural extension officers perceive their role as critical to the effective delivery of advisory services. However, these extension officers are also overloaded with non-extension work, which makes their performance unsatisfactory in many cases (Mkuki & Msuya, 2020). High morale and a positive perception of their role among extension officers help them, as employees, grow within the organisation and gain confidence in their field. Moving up the corporate ladder is a factor that suggests returns to firm experience (Fix, 2018). Such in-service training further increases the morale and confidence of the extension officers in executing their duties (Muchesa, 2013). This study evaluates the dependence of generated profit on financial instruments, government-provided farmer support services through officials, and farmer skills and competencies for sustained profitability.

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3. RESEARCH METHODOLOGY

In this section, the main process and steps for achieving the study's objective are detailed. Section 3.1 discusses the conceptual framework for the study, and Section 3.2 discusses the variables and methods for collecting and analysing data.

3.1. Conceptual Framework

The training and extension work for land reform farmers is guided by the practical on-field requirements they encounter. In other words, the extension is "demand-driven" more than "supply-driven". For this reason, the evolving nature of farming demands constant training and extension advisory support to keep up with ongoing changes in farming and technology. The framework for extension service emanates from the four extension models presented in TABLE 1, namely, Linear, Advisory, Participatory and Learning models (Abdu-Raheem & Worth, 2011). In KwaZulu-Natal, the primary models followed are advisory, participatory, and learning models.

TABLE 1: Extension Models in South Africa

Models	Core principles	Implications
Linear	• Top-down approach; • Based on extension expertise; • The farmer is the recipient.	• Farmers cannot solve their problems. • Adoption of technology is not questioned by farmers. • Farmers are less interested.
Advisory	• Farmers solve their problems. • Extension required on the farmer's request. • Based on the farmer's expertise.	• Extension is the last option. • Extension has less influence. • Farmers solve their own problems.
Participatory	• All stakeholders participate. • Encourage mutual respect. • Joint problem-solving.	• Everyone feels important. • Expertise from both participants.
Learning	• Based on learning from each other. • Based on continuous reflection from both parties. • Collective decisions are taken and based on both parties' expertise.	• Create sustainable relations. • Encourage learning and research. • Some participants might be illiterate.

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Source: Abdu-Raheem & Worth (2011)

Since extension is about information and knowledge sharing through agricultural research centres, the government and private institutions pursue the method highlighted in FIGURE 1.

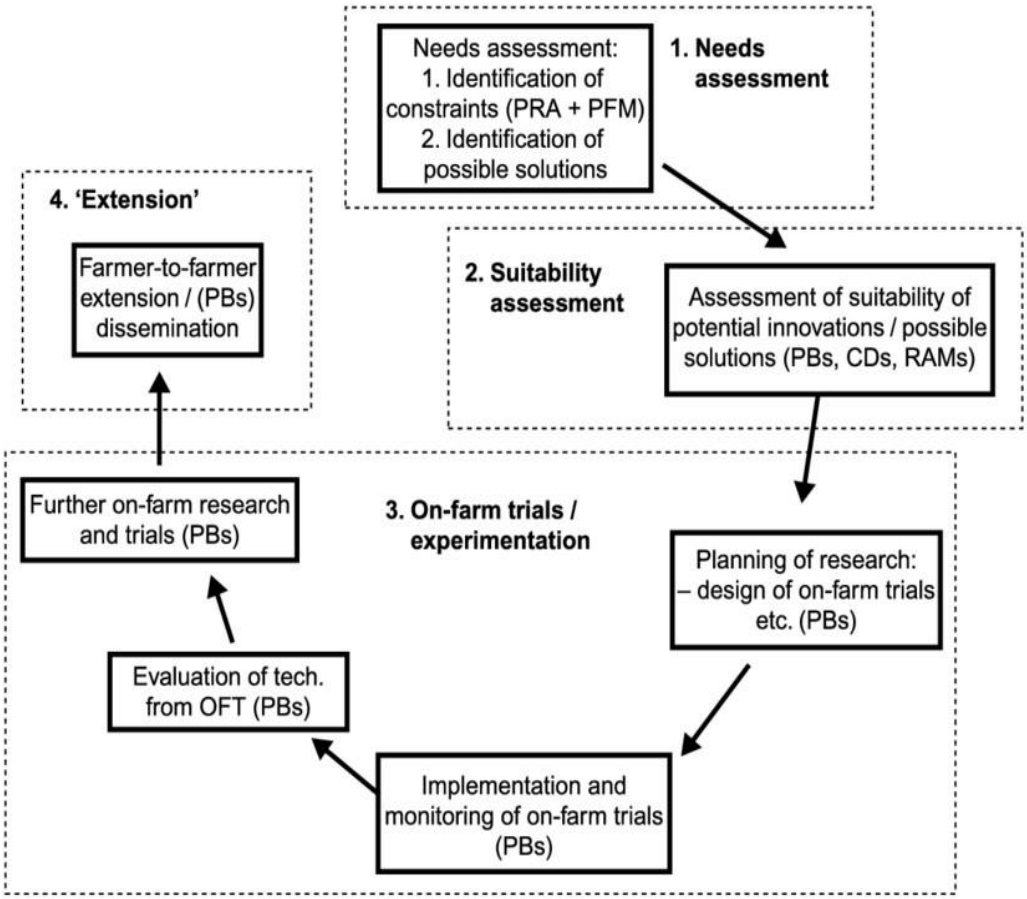

FIGURE 1: Process for Extension (Source: Galpin *et al*., 2000)

The common basis that can be deduced from FIGURE 1 and TABLE 1 is the emphasis on "on-farm trials" as the primary source of solutions. This is true of the effect of mentorship as well, since the mentor shares with the mentee experience gained over the years in farming.

3.2. Variables, Data Collection and Analysis

In this study, Multinomial Logistic Regression Analysis and Chi-Square tests of independence were conducted to assess the dependence and effects of sixteen (16) variables on Profit (i.e., X1—X16) in TABLE 2. For the variables X_1—X_{16}, the information was collected using the structured

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questionnaire, captured in a Microsoft Excel (spreadsheet) based on the description options in Table 2, and then imported into the Statistical Package for the Social Sciences (SPSS) software.

The Multinomial Logistic Regression Analysis is generally used when the dependent variable is an unordered variable (Crowson, 2019). The chi-square test of independence is very effective for measuring the relationship between two categorical variables (Imhansoloeva, 2020; DATAtab Team, 2023). When performing chi-square tests of independence, the Pearson chi-square, asymptotic significance, Fisher's Exact Test, Phi, and Cramer's V values are generated and utilised in the analysis in accordance with the assumptions of the chi-square test.

Variable (Profit_YN) is a binary outcome variable (Yes=Profitable, No=Not profitable) indicating whether the farmer made a profit or not, from the profit generated (profitable indicating profit, and not profitable indicating loss). Libago (2017) employed the variable "profit attained" as the dependent variable to study the effect of the predictors. The variable is based on calculations from data supplied by the farmers on yields, sales and costs. This analysis involves continuous, categorical and ordinal data. Hence, the tests of independence were ideal for assessing the relationship between the dependent variable and the outcomes of financial instruments and farmer support services.

The data were tested using Cronbach's Alpha for internal reliability and the Hosmer-Lemeshow test for model fit. The reliability test for the variables studied in this model had a Cronbach's alpha of 0,525 and a P-value of 0,442 for the Hosmer-Lemeshow test, which are considered high and appropriate for the model fit.

The primary aim of this study is to assess whether the dependent variable, Profit_YN, is influenced by the predictor variables in TABLE 2. The null hypothesis of the chi-square test is that there is no dependence between the dependent variable Profit_YN and the independent variables in TABLE 2 (i.e., X_1 –X_{16}). The variables, Market Access (X_1), Market Source (X_2), Retention Savings (X_5) and Credit Access (X_8) comprise financial instruments that affect farmer's investment in new projects to generate profit.

TABLE 2: Variables for Training and Extension Efficiency

Variable	Name	Description
Y_i	Profit_YN	Profit (Pr)=Gross Income -Total Costs [Pr+ ve = Profitable (1) /Pr -ve = Not profitable (0)]

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X_1	Market Access	Binary variables (1=yes, or 0=no).
X_2	Market Source	1. No market 2. Informal market 3. Took over from the previous landowner 4. Established a new market
X_3	Off-take Agreement	Binary variables (1=yes, or 0=no).
X_4	Payment Period	1. 1 day 2. 7 days 3. 14 days 4. 31 days 5. More than 31 days
X_5	Retention Savings	Binary variables (1=yes, or 0=no).
X_6	Level of Formal Education	1. Never been to school 2. Grade R to grade 5 3. Grade 6 to Grade 9 4. Grade 10 to Grade 11 5. Matric / National Senior Certificate 6. National Diploma 7. Bachelor's degree 8. Post-graduate degree
X_7	Membership of Organisations	Binary variables (1=yes, or 0=no)
X_8	Credit Access	Binary variables (1=yes, or 0=no).
X_9	Communication Competency	Where; 0 = No skill at all; 1 = some skill; 2 = moderate skill; 3 = good skill; 4 = Excellent skill
X_{10}	Numerical Competency	Where; 0 = No skill at all; 1 = some skill; 2 = moderate skill; 3 = good skill; 4 = Excellent skill
X_{11}	Crop Competency	Where; 0 = No skill at all; 1 = some skill; 2 = moderate skill; 3 = good skill; 4 = Excellent skill
X_{12}	Livestock Competency (Cattle, Sheep & Goats)	Where; 0 = No skill at all; 1 = some skill; 2 = moderate skill; 3 = good skill; 4 = Excellent skill

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X_{13}	Piggery Competency	Where; 0 = No skill at all; 1 = some skill; 2 = moderate skill; 3 = good skill; 4 = Excellent skill
X_{14}	Poultry Competency	Where; 0 = No skill at all; 1 = some skill; 2 = moderate skill; 3 = good skill; 4 = Excellent skill
X_{15}	Advisory Frequency	Continuous variable, number of days of extension advisory
X_{16}	Training Received	Continuous variable, number of days of training received

3.2.1. Study Area

The study focused on the 10 districts of KwaZulu-Natal. The districts are Amajuba, Harry Gwala, iLembe, King Cetshwayo, uGu, uMkhanyakude, uMgungundlovu, uMzinyathi, uThukela and Zululand. The study area was considered to be the whole province because the land reform programme is implemented across all districts, and its spread is not uniform. Any reduction would have reduced the sample size, thereby preventing proper statistical analysis of the data provided. A smaller sample size would have led to validity challenges (Lakshmi & Mohideen, 2013; Sekaran, 2016). As a result, inferences about the entire population would not be made, since the number of assisted land reform enterprises per district varies significantly.

3.2.2. Population

This study considered all land reform farmers in KZN who benefitted from redistribution, tenure reform, and restitution programmes, received acquisition and post-acquisition support from government, and were using land for agricultural purposes. The number of farmers meeting the set criteria was 389.

3.2.3. Sampling of Farmers

The sampling method for this study was purposive sampling. The reason for selecting this sampling method is that the population of land reform beneficiaries in KwaZulu-Natal is held by the Department of Agriculture, Land Reform and Rural Development (DALRRD), and information is not available to the public. Also, this makes the study population well known to the researcher, as the available data on farms transferred to land reform beneficiaries were provided to the researcher on request by DALRRD in KwaZulu-Natal. The farmers were selected to ensure representation from various programmes, i.e., PLAS, LRAD, RLCC, and Other programmes. The other programmes represent farms acquired through joint funding from the state and either a bank

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loan to the farmer or the farmer's contribution from his or her own capital. The population of 389 is too small to allow for more sampling options, particularly when analysing the data using statistical tests. Leedy and Ormrod (2005) and Patel and Patel (2019) agree that, in purposive sampling, people or other units are selected for a specific purpose, and that the researcher must justify the appropriateness of the chosen sampling method.

The study sample comprised 262 land reform farmers across 10 districts in the province of KwaZulu-Natal. The sample taken was representative of the total population (67,4%), hence inferences can be made about the total population.

3.2.4. Data Collection Instruments

The data were collected at two levels: primary and secondary. The initial list of farmers, including farmer information, was requested from DALRRD. The farmers who met the qualifying criteria were then selected to form the study population, which totalled 389. The structured questionnaire was divided into five sections: social and demographic, training and experience, marketing and production performance, resources (jobs, machinery, and assets), and financial performance information. The variables were formulated within each category and operationalised to ensure measurability and consistency. As it is challenging to simultaneously optimise internal and external validity, efficacy data from traditional controlled trials are often complemented by evidence from practical trials or observational studies that assess the performance of an intervention under conditions more closely resembling the routine practice of the sampled populations (Kennedy-Martin *et al*., 2015). Hence, the structured questionnaire was piloted to identify shortcomings in the information contained in the form. After piloting and addressing the questionnaire's shortcomings, data were collected from farmers using the revised structured questionnaire. To mitigate bias in self-reported data, the farmers provided information on numbers, production records, and all quantifiable data, referring to existing farm records. In cases where information is provided and cannot be reconciled with the records due to unavailability, industry norms were used as a reference to ensure the information is consistent with them. In addition, information received from the DALRRD, including farmer information on farm acquisition, sizes, and other historical information, was verified. All information from the structured questionnaire was captured in Microsoft Excel and later transferred to SPSS and the DATAtab Online Statistics Calculator for analysis.

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4. VALIDITY OF THE STUDY RESULTS

Kennedy-Martin *et al*. (2015) argue that for trial results to be clinically useful, they must also be applicable to a definable, identical population in a specific, similar setting. Vanlauwe *et al*. (2019) argue that, in Africa, research stations were often located on fertile soils in environments considered optimal for breeding new varieties of important export crops. Hence, the recognition that smallholder farming occurred on less fertile soils across a range of agro-ecologies prompted on-farm research trials on important staple crops (Kool *et al*., 2020). While establishing external validity may be difficult with a localised on-farm trial (Peters *et al*., 2018), this study design allows for a variety of farm and farmer types, as the research was conducted province-wide. The variables in this study are not location-specific; hence, general conclusions can be drawn. For example, market access influences profit, and production competencies influence productivity and profit, regardless of where the farmer is. This makes the results' generalisability reliable, as they can be replicated elsewhere with similar variables.

The current push for "impact at scale" in development-oriented research seems well aligned with the goal of expanding the broader relevance of on-farm trials, thereby increasing on-farm experimentation (Galpin *et al*., 2000; Kool *et al*., 2020). Again, this makes the outcomes of this study relevant since they capture the actual information and performance relevant to existing farming enterprises. While the results of this study are specific to KwaZulu-Natal, similar approaches, outcomes, and recommendations can be applied in other regions of the country or in countries where similar variables (relationships) are investigated. Scaling an intervention to a specific size and population may change certain variables and intervention effects, depending on the needs of that area, because the scaled program is typically implemented by resource-constrained governments (Peters *et al*., 2018). In return, this may reduce the projected effective impact of the intervention. Hence, this wide-scale study enables generalizability, as the government and intervening stakeholders can scale up resources before the actual intervention to their projected remedial action. Notably, there is no single intervention strategy that can provide solutions without imposing limitations (Peters *et al*., 2018). However, as soon as these findings are used to inform policy elsewhere or on a larger scale, external validity becomes a pivotal element (Peters *et al*., 2018).

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5. RESULTS AND DISCUSSIONS

5.1. Demographic Details of the Sample

The sample comprised of 61,8% males and 38,2% female farmers (N=262). From the total farmers, 87,4% were Africans, 10,7% Indians, and 1,9% were Coloured. Regarding marital status, 58,4% were married, 27,1% were single, 10,3% were divorced, and 4,2% were widowed. The mean age of respondents was 46,77 years (SD=9.91 years). There were 164 farmers producing crops, 117 in livestock production, 9 in piggery, and 5 in poultry production. This total exceeds the 262 total farmers sampled due to some farmers producing more than one commodity. The smallest farm size was 10 hectares (crops), and the largest was 2,247 hectares (livestock and timber). The youngest farmer was 24, and the oldest was 72. The average farm size was 351,93 hectares (SD = 246.729 hectares). Though the prevalence of crops and piggery commodities is minimal (9 and 5, respectively), resources can still be allocated to encourage farmers to diversify their commodities to minimise the risks associated with producing a single commodity. This will help farmers increase their income and profits.

TABLE 3: Farms by Programme and District [N=262]

Acquisition of Farms by Programme										
District	**PLAS**		**LRAD**		**RLCC**		**Other**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Amajuba	10	3.8%	0	0%	6	2.3%	3	1.1%	19	7.3%
Harry Gwala	11	4.2%	2	0.8%	3	1.1%	2	0.8%	18	6.9%
iLembe	13	5%	5	1.9%	3	1.1%	2	0.8%	23	8.8%
King Cetshwayo	26	9.9%	5	1.9%	4	1.5%	4	1.5%	39	14.9%
uGu	15	5.7%	1	0.4%	5	1.9%	5	1.9%	26	9.9%
uMkhanyakude	11	4.2%	2	0.8%	2	0.8%	0	0%	15	5.7%
uMgungundlovu	27	10.3%	2	0.8%	9	3.4%	5	1.9%	43	16.4%
uMzinyathi	13	5%	0	0%	9	3.4%	6	2.3%	28	10.7%
uThukela	11	4.2%	3	1.1%	3	1.1%	2	0.8%	19	7.3%
Zululand	18	6.9%	1	0.4%	8	3.1%	5	1.9%	32	12.2%

Total	**155**	**59.2%**	**21**	**8%**	**52**	**19.8%**	**34**	**13%**	**262**	**100%**

NB:

PLAS: Proactive Land Acquisition Strategy.

LRAD: Land Redistribution for Agricultural Development.

RLCC: Regional Land Claims Commission.

Other: Refers to farms acquired through joint funding from the state and either a bank loan to the farmer or the farmer's contribution from his or her own capital.

The sample in TABLE 3 shows that farms were fairly evenly distributed across the district, with the most farms (16,5%) in uMgungundlovu and the fewest (5,4%) in uMkhanyakude. In terms of TABLE 3, the highest farmer category is farms acquired through PLAS (59,2%), followed by RLCC (19,8%), then other programmes such as farms acquired through joint funding with banks (13%), and lastly, farms acquired through the LRAD programmes (8%).

TABLE 4: Descriptive Details of Respondents' Access to Services

Variable	Grant Support	Extension Advisory	Training from the Government	Market Access	Organisation Membership
Yes	112	214	89	257	114
No	150	48	173	5	148
% Yes	42,70%	81,70%	34,00%	98,10%	43,50%
% No	57,30%	18,30%	66,00%	1,90%	56,50%
N Total	**262**	**262**	**262**	**262**	**262**

Table 4 summarises the services received. Extension advisory and access to markets were high (82% and 98%, respectively). The lack of grant support and Membership of the organisation were average with 56,3% and 56,5%, respectively. Government training was low (34%).

5.2. Results for Multinomial Logistic Regression Analysis

TABLE 5: Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	**Chi-Square**	**df**	**Sig.**

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Intercept Only	298,364			
Final	161,706	136,659	36	<0,001

A Multinomial Logistic Regression Analysis was employed to examine the influence of predictor variables (i.e., X1— X_{16}) on profit generated (Y_i) and to predict the percentage of profitable cases. Multinomial Logistic Regression Analysis depicts that the overall model was statistically significant with Chi-square = 136,659; P < 0,001 as displayed in TABLE 5.

TABLE 6: Model Summary Information

Pseudo R-Square	
Cox and Snell	0,406
Nagelkerke	0,592
McFadden	0,449

This model explained 59.2% of the variance in correctly predicting Profitable cases [Nagelkerke $R^2 = 0.592$].

TABLE 7: Model Goodness of Fit

Goodness-of-Fit			
	Chi-Square	**df**	**Sig.**
Pearson	465,103	159	<0,001
Deviance	158,122	159	0,505

In TABLE 7, the two results do not concur (Pearson P < 0.001). The model deviance indicates that the model performs well at predicting the generated profit cases, as P > 0.05. The University of Chicago (2025) states that in this type of test, a large P-value (P > 0.05) indicates good correspondence between the observed and predicted outcomes.

TABLE 8: Model Classification Table

Observed	**Predicted**		
	No profit	**Made Profit**	**Percent Correct**
No profit	38	32	54,30%
Made Profit	10	182	94,80%

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Overall Percentage	18,30%	81,70%	**84,00%**

According to the classification in TABLE 8, 38 cases were correctly predicted as No Profit, and 10 cases were incorrectly predicted as *No Profit*. Also, 182 cases were correctly predicted as *made a profit* and 32 cases were incorrectly predicted as made *No Profit*. Therefore, 54,30% of the total -*no-profit cases were correctly identified,* and 94,80% of the actual *made-profit* cases were correctly identified. The overall model achieved 84% accuracy in its predictions.

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TABLE 9A: Parameter Estimates for Multinomial Logistic Regression Analysis

	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Intercept	-3,671	4,035	0,828	1	0,363			
Payment_days	0,036	0,033	1,162	1	0,281	1,036	0,971	1,106
Retention_ZAR	0	0	4,869	1	**0,027**	1	1	1
Edu_years	0,007	0,127	0,003	1	0,955	1,007	0,786	1,291
Advisory_days	0,053	0,059	0,803	1	0,37	1,055	0,939	1,184
Training_days	-0,013	0,024	0,305	1	0,581	0,987	0,942	1,034
[Mkt_Access=0]	4,568	1,645	7,714	1	**0,005**	96,368	3,836	2420,71
[Mkt_Access=1]	0b	.	.	0	.	.	.	.
[Market_source=0]	7,867	3,473	5,132	1	**0,023**	2608,531	2,888	2356483,662
[Market_source=1]	0,116	2,965	0,002	1	0,969	1,123	0,003	375,05
[Market_source=2]	1,635	3,01	0,295	1	0,587	5,128	0,014	1871,805
[Market_source=3]	0b	.	.	0	.	.	.	.
[Off_take_Agmt=0]	0,166	0,612	0,074	1	0,786	1,181	0,356	3,917
[Off_take_Agmt=1]	0b	.	.	0	.	.	.	.
[Membership_Org=0]	0,209	0,504	0,172	1	0,678	1,233	0,459	3,31
[Membership_Org=1]	0b	.	.	0	.	.	.	.
[Credit_access=0]	**-4,727**	1,471	10,334	1	**0,001**	0,009	0	0,158

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[Credit_access=1]	0b	.	.	0	.	.	.	.
[Comp_Communication=0]	20,119	0	.	1	.	546244114,9	546244114,9	546244114,9
[Comp_Communication=1]	-0,203	1,713	0,014	1	0,906	0,817	0,028	23,436
[Comp_Communication=2]	-1,122	0,71	2,497	1	0,114	0,326	0,081	1,31
[Comp_Communication=3]	-1,486	0,781	3,614	1	0,057	0,226	0,049	1,047
[Comp_Communication=4]	0b	.	.	0	.	.	.	.

Source: Extracted through Multinomial Logistic Regression Analysis

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TABLE 9B: Parameter Estimates for Multinomial Logistic Regression Analysis

	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Intercept	-3,671	4,035	0,828	1	0,363			
[Comp_Numerical=0]	-15,834	6123,217	0	1	0,998	1,33E-07	0	.c
[Comp_Numerical=1]	-1,214	1,664	0,532	1	0,466	0,297	0,011	7,75
[Comp_Numerical=2]	-0,732	0,949	0,595	1	0,44	0,481	0,075	3,088
[Comp_Numerical=3]	0,194	0,632	0,095	1	0,758	1,215	0,352	4,189
[Comp_Numerical=4]	0b	.	.	0	.	.	.	.
[Comp_Crop=0]	-12,7	0	.	1	.	3,05E-06	3,05E-06	3,05E-06
[Comp_Crop=1]	1,674	1,479	1,282	1	0,257	5,336	0,294	96,774
[Comp_Crop=2]	0,363	0,859	0,179	1	0,672	1,438	0,267	7,743
[Comp_Crop=3]	0,118	0,816	0,021	1	0,885	1,126	0,228	5,569
[Comp_Crop=4]	0b	.	.	0	.	.	.	.
[Comp_Livestock=0]	-14,436	2759,311	0	1	0,996	5,38E-07	0	.c
[Comp_Livestock=1]	0,482	1,368	0,124	1	0,725	1,619	0,111	23,648
[Comp_Livestock=2]	-0,278	0,876	0,101	1	0,751	0,757	0,136	4,215
[Comp_Livestock=3]	**1,666**	0,635	6,877	1	**0,009**	5,292	1,523	18,381
[Comp_Livestock=4]	0b	.	.	0	.	.	.	.
[Comp_Piggery=0]	**-2,188**	0,873	6,277	1	**0,012**	0,112	0,02	0,621

[Comp_Piggery=1]	-0,931	0,806	1,332	1	0,248	0,394	0,081	1,915
[Comp_Piggery=2]	-0,513	0,709	0,522	1	0,47	0,599	0,149	2,406
[Comp_Piggery=3]	-0,764	1,057	0,523	1	0,47	0,466	0,059	3,697
[Comp_Piggery=4]	0b	.	.	0	.	.	.	.
[Comp_Poultry=0]	-0,354	0,709	0,25	1	0,617	0,702	0,175	2,814
[Comp_Poultry=1]	-0,085	0,881	0,009	1	0,923	0,918	0,163	5,158
[Comp_Poultry=2]	**1,596**	0,762	4,382	1	**0,036**	4,932	1,107	21,976
[Comp_Poultry=3]	0,042	0,929	0,002	1	0,964	1,043	0,169	6,445
[Comp_Poultry=4]	0b	.	.	0	.	.	.	.

Source: Extracted through Multinomial Logistic Regression Analysis

5.3. Results for Tests of Independence from Predictor Variables

TABLE 10A: Profit Dependence on Predictor Variables (X_1—X_8)

Profit_YN (Y_i)	**X_1=Market Access**	**X_2= Market Source**	**X_3=Offtake Agreement**	**X_4=Payment Period**	**X_5=Retention Savings**	**X_6= Level of Formal Education**	**X_7=Membership of Organisation**	**X_8=Credit Access**
Pearson Chi-square	7,391	2,642	4,202	24,160	0,939	14,981	3,308	16,650
Likelihood Ratio /Spearman Correlation	6,319	3,321	4,212	25,844	0,332	15,809	3,359	23,160

Linear-by-Linear Association /Interval by interval Association	7,363	0,162	4,186	6,822	0,936	0,121	3,295	16,587
df	1	1	1	1	1	5	1	1
N of Valid Cases	262	262	262	262	262	262	262	262
Assumptions	2 cells (50,0%)< 5	0 cells (0,0%) <5	0 cells (0,0%) <5	0 cells (0,0%) < 5	0 cells (0,0%)<5	3 cells (25,0%)<5	0 cells (0,0%)<5	0 cells (0,0%)<5
Phi-Value	**0,168**	0,304	0,127	0,304	0,060	0,239	0,112	0,252
Cramer's V	0,168	0,304	0,127	**0,304**	0,060	**0,239**	0,112	**0,252**
Fisher's Exact Test	**0,019**		0,500	0,027	0,394		0,091	0,010
Asymptotic Significance (2-sided) Pearson Chi-square	0,007	0,650	0,610	**<0,001**	0,121	0,010	0,069	**<0,001**
Asymptotic Significance (2-sided) Likelihood Ratio	0,012	0,590	0,610	<0,001	0,200	**0,007**	0,067	<0,001
Asymptotic Significance (2-sided) Linear-by-Linear Association/Ordinal by Ordinal	0,007	0,202	0,410	0,590	0,060	0,728	0,069	0,002
Approximate Significance: Phi	0,007	<0,001	0,500	<0,001	0,332	0,010	0,069	<0,001

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Approximate Significance: Cramer's V	0,007	<0,001	0,280	<0,001	0,332	0,010	0,069	<0,001

Source: Extracted through Chi-Square Tests

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TABLE 10B: Profit Dependence on Predictor Variables (X_9—X_{16})

Profit_YN (Y_i)	**X_9=Communication Competency**	**X_{10}=Numerical Competency**	**X_{11}=Crop Competency**	**X_{12}=Livestock Competency**	**X_{13}=Piggery Competency**	**X_{14}=Poultry Competency**	**X_{15}=Advisory frequency**	**X_{16}=Training received**
Pearson Chi-square	4,596	5,661	2,319	12,285	23,370	2,122	3,669	5,259
Likelihood Ratio /Spearman Correlation	5,054	6,636	2,674	15,158	25,822	2,198	4,144	5,5
Linear-by-Linear Association /Interval by interval Association	1,020	4,698	0,268	3,994	9,466	0,047	0,052	5,239
df	4	4	4	4	4	4	5	1
N of Valid Cases	262	262	164	117	9	5	262	262
Assumptions	0 cells (0,0%)<5	3 cells (30,0%)<5	3 cells (30,0%)<5	2 cells (20,0%)<5	0 cells (0,0%)<5	0 cells (0,0%)<5	3 cells (25,0%)<5	0 cells (0,0%) < 5
Phi-Value	0,132	0,147	0,094	0,217	0,299	0,090	0,118	**0,142**
Cramer's V	0,132	0,147	0,094	**0,217**	**0,299**	0,090	0,118	0,142
Fisher's Exact Test								0,027
Asymptotic Significance (2-sided) Pearson Chi-square	0,331	0,226	0,677	0,015	**<0,001**	0,713	0,598	**0,022**

Asymptotic Significance (2-sided) Likelihood Ratio	0,282	0,156	0,614	**0,004**	<0,001	0,699	0,529	0,019
Asymptotic Significance (2-sided) Linear-by-Linear Association/Ordinal by Ordinal	0,313	0,030	0,604	0,046	0,002	0,829	0,82	0,022
Approximate Significance: Phi	0,331	0,226	0,677	0,015	<0,001	0,713	0,598	0,022
Approximate Significance: Cramer's V	0,331	0,226	0,677	0,015	<0,001	0,713	0,598	0,022

Source: Extracted through Chi-Square Tests

The Pearson chi-square, asymptotic significance, Fisher's Exact Test, Phi- and Cramer's V values are marked in bold in TABLE 10a and TABLE 10b to indicate the statistically significant variables.

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5.4. Discussion of Results

The results of the study show that the variables Market Access (X_1), Market Source (X_2), Payment Period (X_4), Retention Savings (X_5), Level of Formal Education (X_6), Credit Access (X_8), Livestock Competency (X_{12}), Piggery Competency (X_{13}), Poultry Competency (X_{14}) and Training Received (X_{16}) have a statistically significant relationship with profit generated by the farmer. The chi-square test of independence for market access and profit indicates a statistically significant relationship between the two [P=0.007; r=0.168]. This is further confirmed by the Multinomial Logistic Regression Analysis, which shows a statistically significant P-value [P = 0.005; b = 4.568] for the modelled category. This finding is in line with the conclusion of Libago (2017), which found that market access and distance to the market significantly affect the profits farmers attain. Also, Gunasekera *et al*. (2017) indicated that connecting farmers to agricultural markets can boost output and reduce postharvest losses, thereby increasing profits. However, Adams *et al*. (2021) argue that enhancing farmers' access to markets does not always result in increased output or reduced losses and increased profits; rather, it is necessary to minimise risks, uncertainties, and expenses while optimising market benefits. Access to markets also offers several benefits to the producers. One important factor driving the farmer's choice of market is the price per unit of produce they receive (Adams *et al*., 2021). The certainty that consumers receive the products in the desired form ensures profit. Furthermore, this occurs because several market outlets, such as commission agents and cooperatives, offer financing and transportation services.

The Multinomial Logistic Regression Analysis shows that having a market source is associated with a statistically significant difference in profit [P = 0.023]. Mabuza (2016) state that there are serious problems with the transfer of management and technical skills to beneficiaries and the establishment of market linkages. As Libago (2017) argues that the type and source of market affect s' profitability, Dimitri and Gardner (2019) also contend that the success of selected markets depends on consumers' acceptance and interest in purchasing such products. For example, farmers in the informal market collectively agree on a set of prices for a particular quantity of produce to ensure that their profits are guaranteed (Libago, 2017). The other challenge facing local producers and markets is that volumes are usually too large for direct markets and too small for conventional local and national markets (Dimitri and Gardner, 2019). The profit in informal markets is generally lower than in commercial markets. However, some

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farmers still prefer the informal markets because there are no marketing costs, as buyers come and buy directly from the sellers (Libago, 2017). Hence, any intervention must be high in reach but low in cost to most persuasively demonstrate its worth (Dearing *et al*., 2006). Lastly, diversification of markets through processing and direct marketing of agricultural products is one of the strategies available to farmers to maintain a competitive position (Alvarez *et al*., 2018).

The chi-square test of independence for payment period and profit indicates a statistically significant relationship between the number of days after products are supplied to the market and profit [$P < 0.001$; $r = 0.304$]. This finding is consistent with the results of de Zegher *et al*. (2018), who found that farmers suffer from delays in payment from processors and buyers of their products. Furthermore, they found that eliminating payment delays increases farmers' productivity and profitability. As de Zegher *et al*. (2018) state, shortening the payment delay increases the equilibrium productivity and consumption of every farmer. In a study of the effects of cash flow management on Small and Medium Enterprises (SMEs), García-Teruel and Martínez-Solano (2007) also found a significant negative relationship between profitability and the lengthened number of days' accounts payable by purchasers after the product is delivered. The reasons for such delays could include longer inventory holding periods, a longer cash conversion cycle, and delays in the collection period of receivables (Linh & Mohanlingam, 2018).

The problematic delay in payments occurs when processors are capital-constrained and pay only after products are sold to their markets (García-Teruel & Martínez-Solano, 2007; de Zegher *et al*., 2018). These delays negatively affect farmers' ability to pay farm workers, purchase food, and cover other expenses (de Zegher *et al*., 2018). Negotiation with marketers or buyers can shorten the payment period, thereby reducing financial strain on farm finances and enabling farmers to cover operational costs (García-Teruel & Martínez-Solano, 2007).

The outcome of the Multinomial Logistic Regression Analysis shows that having retention savings as a farmer enhances the ability to increase profit generated [$P = 0.027$]. Since the 1980s, retained earnings have become an increasingly important source of equity capital for farms (Royer & McKee, 2021). Endris and Kassegn (2023) state that enterprises financed through retained earnings and personal savings increase profitability, whereas debt capital significantly reduces profitability. Good financial behaviours, such as budgeting, savings, record-keeping, and retirement planning, contribute to profitability (Endris & Kassegn, 2023).

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Having one's own capital enables farmers to use their own funds for future development projects, which indirectly increases their credibility for external financing opportunities if needed (Nduati & Wepukhulu, 2020; Enjolras *et al*., 2021; Bir *et al*., 2022). While such investment may delay dividend distribution, it remains a preferred option because it does not incur any debt (Nduati & Wepukhulu, 2020).

The coefficient for the variable credit access on profit is statistically significant, with b = -4.727 and P = 0.001, indicating that without access to credit, the farmer's profit is lower. This is confirmed by the positive chi-square test of independence for access to credit on profit, which indicates a statistically significant relationship [$P < 0.001$; $r = 0.252$]. This finding aligns with those of Ndambi (2008), Oyedele *et al*. (2009), and Endris and Kassegn (2023), who found that access to credit improves profitability and reduces constraints for farmers.

Smallholder farmers' limited access to credit negatively impacts farm profitability, as it may force them to continue farming with outdated technology, as improved inputs and machinery are too expensive (Mdoda & Obi, 2019). Hence, providing credit to farmers promotes the adoption of improved farming technologies among those who lack tools, machinery, and implements (Ndambi, 2008; Bidogeza *et al*., 2009). Credit assists farmers who cannot raise enough required capital for operations (Oyedele *et al*., 2009). Some farmers opt to use their off-farm income to cover farm needs because they face constraints in accessing credit (Bidogeza *et al*., 2009). Accessing capital for new projects through retained earnings is the cheapest way for the business to raise capital without incurring debt. Similar studies by Adeyonu and Odozi (2022) and Wei *et al*. (2020) showed a positive association of access to credit and profit. However, Ndambi (2008) contends that providing credit to small-scale farmers is inherently complex due to a lack of sufficient credibility. As a result, while farmers may qualify for the credit, the lack of historical loan records may lead them to receive high, uneconomic lending rates or to be denied a loan altogether. This then disadvantages potential commercial farmers, as they are unable to provide the credit history and collateral required by financial institutions. While using internal funding options is prudent to avoid debt, it can build a good credit record for the farmer, making them preferred by funders with attractive interest rates and giving them the opportunity to expand their business further. In summary, these three financial aspects, i.e., Payment Period, Retention Savings and Access to Credit, play a pivotal role in increasing farm liquidity to afford new development projects that enable more profitability while greatly improving the farmer's credibility to external funders.

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The chi-square test of independence for level of formal education and profit indicates a statistically significant relationship between the two [P=0.010; r=0.239]. This study reveals that farmers' formal educational level has a favourable effect on profit as it influences their understanding of farm management and farm productivity. Tan (2014) also confirms that education is the source and main driver of economic development. However, Fix (2018) argues that education has a weak effect on income. The findings of this study are consistent with those of Adegbite *et al*. (2023) and Rahman and Haider (2023), who found that educated farmers exhibit a strong propensity to adopt farming practices that generate substantial income. According to Fix (2018), the premise is that people can acquire human capital, or skills, that will increase their productivity. Adegbite *et al*. (2023) further confirm that farmers' income is positively and significantly associated with years of education. Furthermore, Rahman and Haider (2023) and Begum *et al*. (2013) found a significant correlation between years of education and the ability to improve net returns in production.

A farmer's educational level determines their propensity to adopt or reject new technologies (Libago, 2017; Rahman & Haider, 2023). This makes it a worthwhile investment, as it improves individual productivity and is key to the country's economic growth (Tan, 2014). At the technical level, education and training can guarantee access to knowledge, and it is anticipated that this will enhance the ability to comprehend the technical aspects of production, thereby impacting technical efficiency and precision in farming (Begum *et al*., 2013). Begum *et al*. (2013) assert that farmers with more formal education will be more productive because they are better equipped to efficiently choose, allocate, and use the right amounts of inputs, and to utilise readily available and acceptable methods to accomplish a variety of productive goals, including income maximisation. This is in line with Kumbhakar (1994), who argues that more than 50% of the farms in land reform have inefficient use of inputs such as fertiliser, manure, and labour due to a lack of skills and the ability to apply resources at appropriate rates correctly. As Jablonski *et al*. (2022) note, access to land is a top challenge for new farmers pursuing new operations, which suggests that policymakers and stakeholders should not ignore the level of formal education when selecting farmers for the allocation of farming land. In the long term, ensuring a generational mix with skilled farmers will eventually translate into the "farmer-to-farmer" skills-transfer model, where skilled farmers can assist less-skilled farmers, as outlined by Terblanche (2011). Well-educated farmers can readily access higher productivity and adopt the latest input technologies to enhance farm revenue (Aminu & Hermanns, 2021;

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Adegbite *et al*., 2023). Rahman and Haider (2023) conclude that the fundamental prerequisite for comprehending written texts and agricultural management techniques is education. Hence, Tan (2014) argues that the positive correlation between education and earnings necessitates promoting education and training.

The chi-square test of independence for training received on profit indicates a statistically significant relationship between training and profit, [P=0.022; r=0.142]. This finding is consistent with that of Rahman and Haider (2023), who found that farmers who underwent training showed a significant increase in their farm management knowledge, thereby improving their ability to run profitable farms, compared with their peers who did not receive training. Libago (2017) also found that when training is provided to farmers, profitability increased by 16,4% as farmers gained more knowledge and insights into production. This also concurs with the finding by Chauke *et al*. (2013), stating that, without training, farmers remained risk-averse and depended only on their own assets as opposed to receiving training, which exposes them to new forms of technology in farming and enables them to access financial services such as credit to invest in new profitable projects. The findings of this study are also in line with those of Antwi and Chagwiza (2019), who found that the number of trainings attended by the farmer, along with the average net farm income of the project, positively and significantly affected the farmer's ability to save from their proceeds. Training influences profit indirectly by affecting technical abilities, productivity, and growth, thereby increasing profitability (Serin *et al*., 2009; Begum *et al*., 2013). Lastly, Rohani *et al*. (2020) suggest that formal education is more prevalent among the younger generation, while non-formal education, for example, on-farm training, is more suitable for farmers who currently do not pursue formal education due to limitations, such as age.

The Multinomial Logistic Regression Analysis indicates a statistically significant relationship between profit and livestock farming competency, with the farmer having a good skill in cattle, sheep, and goat farming [P = 0.009; b = 1.666]. This is confirmed by the chi-square test of independence for livestock competency and profit, indicating a statistically significant relationship between livestock competency (cattle, sheep, and goats) and profit [P=0.015; r=0.217]. This finding aligns with Saleh *et al*. (2021), who found that cattle husbandry requires the farmer to possess technical and managerial competence for business growth. Also, this finding aligns with Rohani *et al*. (2020), who found that farmers' managerial competencies, including beef cattle business planning and evaluation, lead to good business performance.

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The outcome of the Multinomial Logistic Regression Analysis shows that no skill in piggery farming results in the reduction of profit generated by the farmer [P = 0.012; b = - 2.188]. The chi-square test of independence for piggery production competency on profit indicates a statistically significant relationship between competency in piggery production and profit [P<0.001, r=0.299]. Aminu and Akhigbe-Ahonkhai (2017) state that specialisation and pig production are acquired over time through experience in farming. Hence, with time, efficiency and improved productivity results are experienced (Aminu & Akhigbe-Ahonkhai, 2017). Aminu and Akhigbe-Ahonkhai (2017) emphasise that competence in piggery is linked to educational attainment.

The outcome of the Multinomial Logistic Regression shows that moderate skill in poultry farming results in increased profit generated by the farmer [P = 0.036; b = 1.596]. Kehinde (2021) argues that poultry, specifically egg production, is highly profitable if only the farmer can control feed costs. For this reason, Kehinde (2021) emphasises that the agricultural programmes should focus on training farmers on poultry feed preparation, which would reduce the costs of feeding, which is the highest component of costs in poultry. This is further confirmed by the study by Aminu and Hermanns (2021), who found that literate poultry farmers with some level of formal education operate profitable farming operations, as poultry feed preparation and mixing is a meticulous and delicate process. However, it should be noted that the prevalence of piggery and poultry production activities was relatively low (9 and 5, respectively)—translating to 3,4% and 1,9% of the total sample.

6. CONCLUSIONS

This study concludes that training, extension services, and financial instruments influenced the profitability of land reform farms. The variables Market Access (X_1), Market Source (X_2), Payment Period (X_4), Retention Savings (X_5), Level of Formal Education (X_6), Credit Access (X_8), Livestock Competency (X_{12}), Piggery Competency (X_{13}), Poultry Competency (X_{14}) and Training Received (X_{16}) are key variables that influenced profits in land reform enterprises. The presence of Market Access (X_1), Market Source (X_2), shortened Payment Period (X_4), positive Retention Savings (X_5), Level of Formal Education (X_6), Livestock Competency (X_{12}), Poultry Competency (X_{14}) and Training Received (X_{16}) have a positive influence. In contrast, a lack of Access to Credit (X8) and Piggery Competency (X13) negatively affect profitability. The payment period, market access, market source, retention savings, and access to credit are

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pivotal financial instruments that farmers need to consider to secure the capital required to improve farming operations and adopt new technologies.

The level of formal education is significantly different from the farmer's ability to apply correct input measurements and forecast returns in farming. This feature improves operational efficiency, reduces production costs, and increases profitability. Lastly, the study also established that both formal and informal training cannot be underestimated or substituted for, as they each cater to different classes of farmers based on educational level, age, and analytical ability. This information adds value to the literature on land reform, as the programme is continually being improved to ensure better results. This knowledge also helps policy-makers shift policy towards areas of significance for improving the programme and farmers' circumstances.

7. IMPLICATIONS FOR POLICY

Having considered the significant variables of this study, a recommendation is made for government and stakeholders to design training programmes that specifically empower farmers' understanding of financial aspects, which include keeping their own retention savings, negotiating shorter payment periods for goods, improving market access, consolidating the market source and building a good credit record with their creditors to enable future investment opportunities on farms.

8. RECOMMENDATIONS FOR THE STUDY

From the results of this study, the following recommendations are made:

- It is recommended that focused training targeting farmers who are not making a profit be designed to ensure continuous improvement in closing the knowledge and information gap among farmers.
- It is recommended that deliberate targeting of skilled farmers when allocating land for farming be strengthened to improve the skills base of land reform farmers.
- This study further recommends that future studies investigate the viability of different commodities and diversification levels that can generate positive economies of scale for farmers, thereby increasing farm profitability.

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9. LIMITATIONS OF THE STUDY

Some members of land reform enterprises who wished to participate in the study on farms owned by Trusts and Communal Property Associations (CPAs) withdrew due to fear of victimisation. Also, farms where beneficiaries have passed on and the government is in the process of allocating a new beneficiary could not be assessed. This is because there is no official person who can provide reliable information about the activities.

Again, farmer availability challenges were observed: a farmer was busy with farm operations, but preferred that the questionnaire be left so they could fill it out later and submit. Some of these questionnaires were never returned, which disadvantaged the researcher in eliciting important information that could improve the analysis. However, this cohort was very small and did not affect the analysis or the study's inferences. On farms that are not operated coherently by entities or enterprise members in conflict, the information received was sometimes uncoordinated, and when verified, it showed no correlation with the expected norm. In such cases, the information was verified with respondents to ensure it aligned with industry norms. The incoherence would mainly emanate from the farming operation not being run optimally. Hence, these were included in the analysis to give a full picture of the status of land reform farms. Due to the geographic spread of the farms across areas such as Zululand, Amajuba, and uMzinyathi districts, data collection on some farms would be more convenient given the proximity of farmers in the same area. In cases where only one farm is located at an outlier site and the farmer does not have an email address or cannot be reached by phone, data were not collected due to the area's spatial dispersion. However, this condition would have no bearing on the findings and inferences made, since a good representation of the total population was achieved at 67%. To address the limitations of the study, future research should consider employing mixed-methods approaches to ensure that a diverse farmer population is reached and that information is collected. This could include digital methods, such as an online questionnaire that respondents can fill out at their convenience using modern technology, such as portable devices like cell phones and tablets. This will ensure that even remote areas are reached and that respondents will not feel threatened or victimised by their peers because of the commotion caused by the in-and-out movement of data collectors, which draws attention. Electronic reminders, such as short messages to respondents who have not yet participated in the study, should also be considered to improve questionnaire return rates. These strategies will improve future studies and maximise impact for the betterment of farming communities.

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