

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2020, 10(3), 225-235.

Private Capital Formation Activities and Bank Credit Access Among Farmers in Zimbabwe

Blessing Ropafadzo Chigunhah[1]*, Ezekia Svotwa[2], Gerald Munyoro[3], Tendai J. Mabvure[4], Ignatius Govere[5]

[1]Graduate Business School, Chinhoyi University of Technology, Zimbabwe, [2]Department of Crop Science and Post-Harvest Technology, Chinhoyi University of Technology, Zimbabwe, [3]Graduate Business School, Chinhoyi University of Technology, Zimbabwe, [4]Department of Accounting and Finance, Chinhoyi University of Technology, Zimbabwe, [5]Faculty of Agriculture and Environmental Sciences, Bindura University of Science Education, Zimbabwe. *Email: blessingmhere@gmail.com

Received: 06 March 2020 **Accepted:** 10 May 2020 **DOI:** https://doi.org/10.32479/ijefi.9751

ABSTRACT

Bank credit is indispensable for commercializing and modernizing the agricultural sector in developing economies like Zimbabwe, where agriculture is the key pillar of livelihoods. This study sought to establish the relative importance of private capital formation activities as drivers of bank credit access among farmers in Zimbabwe. A structured questionnaire collected data from a sample of 372 respondents. Garrett's Ranking Technique and SPSS were used to rank the capital formation activities, whilst Friedman Tests (with Wilcoxon's Signed Rank Post-hoc tests) were used to determine the statistical significance of the rankings. Credit history, which falls under social capital was the most important driver of bank credit access among the farmers, followed by agricultural production qualifications and skills. Farm assets and business management skills were the third and fourth most important catalysts of bank credit access, whilst social networks were the least important. Hence, farmers are implored to uphold integrity in honouring their loan obligations consistently, pursue agricultural production and business management skills, and invest in productive physical assets on and off the farm. Policy should also address the land tenure issue to stimulate on-farm capital investments, and intensify knowledge enhancing agricultural extension services to improve agricultural production knowledge among farmers.

Keywords: Bank Credit, Credit Access, Investments, Human Capital Formation, Physical Capital Formation, Social Capital Formation
JEL Classifications: Q12; Q13; Q14

1. INTRODUCTION

Bank lending is the most common source of external finance for the bulk of SMEs and entrepreneurs for their start-up, cash flow and investment needs (OECD, 2015). In the agricultural sector, bank credit availability empowers farmers to acquire all the resources that they need for enhancing production, income and livelihoods (Makamure et al., 2001; Rahji, 2000). However, in Zimbabwe, the national budget is mostly inclined towards the financing of administrative costs rather than productive investments in critical sectors like agriculture (Echanove, 2017). Local commercial banks are also not sufficiently financing the agricultural sector as their average agricultural loan books have failed to reach the pre-Fast Track Land Reform (FTLRP) maximum of 91% attained in 1999 (Reserve Bank of Zimbabwe (RBZ), 2006, 2019). The key question is, why are the farmers in Zimbabwe failing to access bank credit, and has anything been done to capacitate them to fulfil what the banks want? Most policies devised by the government of Zimbabwe like the 99 Year Lease Agreement, the Collateral Registry and Command Agriculture have been directed towards addressing, and in some cases circumventing the collateral deficiency problem among farmers.

This Journal is licensed under a Creative Commons Attribution 4.0 International License

However, bank lending theory postulates that a lender does not only look at collateral when assessing agricultural loan applications, but a combination of factors that can make a potential borrower be described as creditworthy (Feschijan, 2008; Rouse, 1989; Seyoum, 2017). Jakušonoka and Barakauska (2016) propound that a client's ability to repay all liabilities and debts is understood as the borrower's creditworthiness, which thus makes him/her credible. Different models such as the 5C's of credit (Character, Capacity, Capital, Collateral and Conditions); the 5P's (Person, Payment, Principal, Purpose and Protection), the LAPP (Liquidity, Activity, Profitability and Potential), the CAMPARI (Character, Ability, Margin, Purpose, Amount, Repayment and Insurance) model and Financial Analysis and Past Experiences methods (FAPE) guide lenders in the assessment of their potential borrowers' creditworthiness (Abbadi and Karsh, 2013). These models show that the focus of policy in Zimbabwe on solving the collateral issue alone is not sufficient to eliminate financial constraints among farmers. Hence, the essence of this study is to enhance the farmers' creditworthiness by encouraging them to adopt a combination of private capital formation activities, which are perceived in this study as not only able to address the collateral problem, but several other lending requirements set by banks.

At farm level, physical capital investments may comprise of farm equipment, machinery, irrigation, land improvement and land reclamation, which enable the farmers to grow existing crops more intensively, and to also take up high value crops (Sivakumar, 2013). On the other hand, human capital includes the ability, skills and knowledge per worker (Kadir et al., 2018), which David and Lopez (2001) perceive as durable and lasting over a significant portion of the life of the possessor. The acquired skills and knowledge play an important role of determining the possessors' labor productivity, their ability to absorb new knowledge and to master new technologies (Becker, 1962; Schultz, 1961). However, Gómez-Limón et al. (2012) highlight that physical and human capital partially determine economic development because they overlook the way in which economic actors interact and organize themselves in production and in augmenting other types of capital. This brought increased attention to social capital formation. According to Gómez-Limón et al. (2012) social relationships may affect the economic sustainability of farmers through influencing their farming practices and their propensity to adopt new technologies from the information supplied through these relationships. This enables them to learn new techniques, acquire know-how, obtain training from others, and in some cases obtain official assistance to implement various practices.

Several capital formation activities have been linked to bank credit access in available empirical literature that generally sought to comprehend the determinants of credit access among farmers, especially in the smallholder farming sector. Credit history, which is perceived as a part of social capital formation in this study through building relationships with creditors like banks, was established as a determinant of credit access in various studies (Abdul-Jalil, 2015; Ijioma and Osondu, 2015; Kuye, 2015). Farm assets, a physical capital formation factor was also identified as a determinant of credit access (Korir, 2013; Njogu et al., 2018; Samuel et al., 2015). Agricultural production and business management skills and experience, which are part of human capital formation, were also established as other key determinants of credit access (Odu et al., 2010; Seyoum, 2017; Wulandari et al., 2017). Social networks, a part of social capital formation, was also recognized as an important determinant of credit access among farmers in numerous studies (Abdul-Jalil, 2015; Adams, 2015; Mayowa, 2015).

Available studies on the subject of capital formation in Zimbabwe have mostly focused on its impact on economic growth at national level (Nyarota et al., 2015) and determinants of private investments in all productive sectors of the economy (Bayai and Nyangara, 2013). Munyoro (2019) also studied the contribution of capital formation to agricultural entrepreneurship development in Zimbabwe's smallholder agriculture. Capital formation literature beyond Zimbabwe has also focused on its role in enhancing farm productivity (Bisaliah, 2012; Toringepi, 2016; Venkataramana and Reddy Chinnappa, 2012); agricultural growth (Ma et al., 2013); economic growth (Bathla, 2014; David and Lopez, 2001; Ding & Knight, 2011; Ibrahim, 2000); and its determinants (Ike and Umuedafe, 2013; Jiranyakul, 2014).

Numerous studies in literature have also demonstrated how bank credit can engender capital formation (Afolabi, 1998; Joliya et al., 2017; Lemma, 2015; Nwaenze et al., 2014; Omankhanlen, 2012; Ponnala, 2016). However, they have been silent on the impact that capital formation activities themselves could have on the supply of bank credit at farm level in developing economies like Zimbabwe, where private banks are reluctant to supply the long-term financial capital that is required by farmers for extensive capital formation, especially in new resettlement farms. Therefore, by demonstrating how a package of private capital formation activities by individual farmers influenced their access to bank credit finance in Zimbabwe, the study will immensely augment the existing body of knowledge. Hence, the study sought to establish the importance of individual capital formation factors as drivers of bank credit access among farmers in Zimbabwe, based on the perceptions of commercial banks in Zimbabwe, as well as farmers and agricultural extension officers in the Hurungwe District of Mashonaland West province.

2. HYPOTHESES

The study's hypotheses were therefore spelt out as follows:

H_0: Capital formation activities are not perceived as important drivers of bank credit access among farmers in Zimbabwe.

H_1: Capital formation activities are perceived as important drivers of bank credit access among farmers in Zimbabwe.

3. MATERIALS AND METHODS

The study was underpinned by the post-positivism research philosophy. Therefore, quantitative techniques were used to address the study's objectives.

3.1. Population, Sampling Procedure and Sample Size

The study's population was made up of 5 485 respondents comprised of 4 273 Model A1 farmers, 1 107 Model A2 farmers and 93 Agritex officers in Hurungwe District; and 12 registered operational commercial banks in Zimbabwe. Since it is recommended for cross sectional survey studies to use random sampling techniques to minimize selection bias (Zheng et al., 2015), stratified random sampling was used to select the respondents who participated in the study. The 12 registered and operational commercial banks in Zimbabwe were all considered as part of the sample. The total population of Model A1 farmers, Model A2 farmers and Agritex officers was subsequently used to proportionately determine their respective sample sizes based on the 360-sample size recommended by the Raosoft Sample Size Calculator at a 95% confidence level. Respondents were then randomly selected from each stratum. The sample for the study was therefore made up of 372 respondents comprised of 281 A1 farmers; 73 A2 farmers; 6 Agritex officers and 12 commercial banks' credit officers.

3.2. Data Analysis

Garrett's Ranking Technique was used to rank the respondents' perceived importance of individual capital formation factors as drivers of bank credit access among farmers in Zimbabwe. Garrett's Ranking Technique was previously used by Asante-Addo et al. (2017) in the analysis of farm households' reasons for joining or not joining micro-credit programs in Ghana. Zalkuwi et al. (2015) also applied the technique in the comparison of constraints influencing sorghum farmers in India and Nigeria. According to Dhanavandan (2016), the Garrett ranking method can be used by a researcher who seeks to know the preference of respondents among different variables. Zalkuwi et al. (2015) also highlight that Garrett's ranking technique provides the change of orders of constraints and advantages into numerical scores, whose key advantage over simple frequency distribution is that it arranges variables based on their severity or importance from the respondents' point of view. Hence, the technique's application in this study enabled the arrangement of capital formation factors (credit history; formal education; agricultural production qualifications and skills; physical farm assets and social networks) based on their perceived importance as credit access drivers among farmers in Zimbabwe. A 5-point Likert Scale was used by the respondents to rate the different capital formation factors, where 1 represented the most important rank and 5 the least important. The outcomes of their rankings were converted into percent positions using the following formula proposed by Garrett and Woodworth (1969):

$$Percent\ position = \frac{100(Rij - 0.5)}{Nj}$$

Where:

Rij = Rank given for the i^{th} variable by the j^{th} respondent

Nj = Number of variables ranked by the j^{th} respondent

Making use of Garrett's Table (Appendix 1), the percent positions assigned to each rank were converted into scores, known as the Garrett Score. Each variable's total score from the Likert Scale was subsequently obtained and multiplied by its Garret score to obtain its total Garret Score value. Lastly, the mean score value for each variable was calculated. The capital formation factor with the highest mean value was considered as the most important driver of credit access among farmers in Zimbabwe. Friedman's tests (with Wilcoxon-signed post hoc tests) in SPSS were used as a follow up to confirm the order of the rankings obtained, and to establish the statistical significance of the differences in the rankings by the respondents.

4. RESULTS

The study's findings are presented in detail in this section, starting with the credit access status of farmers in Hurungwe District.

4.1. Credit Access Status of Farmers in Hurungwe District

In the past period between 2000 and 2014, only 5 Model A1 farmers in Hurungwe District accessed bank credit from formal banking institutions compared to 24 who accessed from the Model A2 sector (Table 1). In the current period between 2015 and 2019, none of the Model A1 farmers accessed bank credit, whereas 17 farmers from Model A2 accessed it in the same period. Available studies in Zimbabwe confirm that smallholder Model A2 farmers are the most preferred borrowers by banks because they possess more collateral assets than their poorer smallholder Model A1 counterparts as shown by this study (FACASI, 2015; Masiyandima et al., 2011; Vitoria et al., 2012).

Therefore, a total of thirty-five (35) (5 Model A1 and 30 Model A2) farmers who had accessed bank credit in both the current and past periods were used to rate the extent to which they thought different capital formation factors (credit history, farm assets, social networks, agricultural production qualifications, skills and knowhow, and formal education) had helped them to access bank credit on a Five-point Likert Scale. Thirty (30) farmers used in Model A2 included twenty-nine (29) farmers who used to access in the past period (sixteen (16) of whom were still accessing in the current period), and one (1) farmer who had started accessing in the current period. Hence, the figure captured both past and current users of bank credit in the sector. The study's key informants that included eight (8) commercial banks and four (4) Agritex officers also participated in the ranking of the capital formation factors as catalysts of bank credit access. Hence, a total of forty-seven (47) respondents' perceptions were taken account of in establishing the perceived importance of capital formation

Table 1: Credit access status of farmers in Hurungwe District

Farmers' credit access status	Model A1 (n=279)		Model A2 (n=53)	
	Yes	No	Yes	No
Past access to bank credit (2000-2014)	5	274	29	24
Current access to bank credit (2015-2019)	0	279	17	36

Source: Primary Data (2019)

activities in enhancing farmer access to bank credit in Zimbabwe using the Garrett Ranking technique. Hence, the figure captured both past and current users of bank credit in the sector. The use of farmers who had previously accessed bank credit in the study was deemed appropriate because they would be in a better position to objectively rank different capital formation activities that helped them to access bank credit. Therefore, in order to avoid guessing and speculation, farmers who had not accessed bank credit before were excluded in the rating of the capital formation factors. A separate paper publication (Chigunhah et al., 2020) dealt with the reasons why the bulk of the farmers in the district were not participating in formal credit markets. The study's key informants that included 8 commercial banks and 4 Agritex officers also participated in the ranking of the capital formation factors as catalysts of bank credit access among farmers, based on their actual experiences as lenders and agronomists who worked closely with the farmers. Hence, a total of forty-seven (47) respondents' perceptions were taken account of in establishing the importance of capital formation activities as drivers of bank credit access among farmers in Zimbabwe.

4.2. The Perceived Importance of Capital Formation Factors as Drivers of Bank Credit Access among Farmers in Zimbabwe

The 5-point Likert scale's rankings (1-5) were initially converted into percentiles, and then converted into their Garret Scores determined by the Garrett's ranking conversion table (Table 2; Appendix 1).

Each capital formation factor's total score for each respondent group (Model A1 farmers, Model A2 farmers, commercial bank credit officers and Agritex officers) was subsequently determined as shown below, based on the frequency of the rankings it received on the 5-Point Likert Scale (Table 3).

The weighted Garret Ranking score of each capital formation factor was subsequently calculated and ranked (Table 4).

4.2.1. Credit history

There was a marginal difference in the ranks assigned to credit history as an important driver of bank credit access among farmers by all the 4 respondent groups (Table 4). Model A1 and A2 farmers, as well as Agritex officers in Hurungwe District ranked credit history as the prime driver of credit access among farmers. Model A1 farmers believed that 24.4% of their access to bank credit was attributed to their clean history of honouring past loan obligations. Model A2 farmers assigned a relatively lower 23.9% to credit history as an important catalyst of their access to bank credit. On the other hand, Agritex officers believed that 21.1% of credit access among farmers in Hurungwe District was ascribed to good credit history. However, an unexpected result was obtained among commercial bank credit officers, who rated credit history as the second most important driver of bank credit access among farmers, with a mean Garret score of 0.224. This result showed that commercial bank credit officers believed that 22.4% of credit access among farmers in Zimbabwe was accounted for by good credit history. The explanation for this lower score was that credit history received its only least rating from a commercial bank which had indicated at the onset that it never financed farmers directly, but rather did so through value chain actors like tobacco contracting companies like Tianze Tobacco. However, all the other bank credit officers had agreed that a good credit history was an important driver of bank credit access among farmers in Zimbabwe.

Table 2: Conversion of ranks and percentiles into Garret Scores

Likert scale rank	Percentile position	Garrett's score
1	10	75
2	30	60
3	50	50
4	70	40
5	90	25

Source: Garret Ranking Table (Appendix 1; Garrett and Woodworth (1969))

All the 5 Model A1 farmers who had previously accessed bank credit strongly agreed that their clean record of honouring past loan obligations, not only with banks, but also with other creditors helped them to access bank credit from formal banking institutions in Zimbabwe. Similarly, all the Model A2 farmers who had previously and were still accessing bank credit also strongly agreed that their good credit history helped them to access bank credit. Seyoum (2017) confirms that banking institutions monitor a potential borrower's regularity of payments to all its key partners. The majority of the Model A2 farmers who were under contract farming with different tobacco contractors also revealed that their good record of repaying their loans obligations with their contractors helped them to acquire guarantee letters from them to use as security for accessing additional asset financing and other farm improvement loans from formal banking institutions in Zimbabwe. Moreover, seven out of the eight commercial banks that participated in the study also perceived credit history as an important driver of credit access, as well as all the four Agritex officers who also participated in the study.

Credit history was confirmed by Abdul-Jalil (2015) to be an important determinant of credit access among farmers in Karaga District in the Northern Region of Ghana. In the study, farmer creditworthiness, which was defined as the ability to repay loans, had a positive and highly significant influence on the amount of credit a farmer could access from formal sources. Ijioma and Osondu (2015)'s study in the Anambra State of Nigeria also established that past loans repaid by farmers had a positive and significant effect on their access to bank credit. According to the study, the ability to repay loans qualified the farmers to obtain more loans from lending institutions. The same study also revealed that if farmers promptly repaid their borrowed funds without defaulting, the lenders would become willing to release more funds to them. Overall, 98% of the study's respondents perceived credit history as an important driver of bank credit access among farmers in Zimbabwe. Consequently, credit history was ranked as the most important driver of bank credit access among farmers relative to other capital formation factors, with an aggregate Garrett mean score of 0.23. Hence, credit history was recognized as an important driver of bank credit access among farmers in Zimbabwe in this study.

Table 3: Determination of each capital formation factor's total garret ranking score

Ranking by respondents	A1 Farmers (n=5)	A2 Farmers (n=30)	Commercial Banks (n=8)	Agritex Officers (n=4)	Garrett's score	Total score (Frequency*Garret's score)			
						A1 Farmers (n=5)	A2 Farmers (n=30)	Commercial Banks (n=8)	Agritex Officers (n=4)
Credit history									
1	5	30	4	4	75	375	2250	300	300
2	0	0	3	0	60	0	0	180	0
3	0	0	0	0	50	0	0	0	0
4	0	0	1	0	40	0	0	40	0
5	0	0	0	0	25	0	0	0	0
Total						375	2250	520	300
Agricultural production qualifications and skills (APQS)									
1	4	20	5	3	75	300	1500	375	225
2	1	8	2	1	60	60	480	120	60
3	0	0	1	0	50	0	0	50	0
4	0	1	0	0	40	0	40	0	0
5	0	1	0	0	25	0	25	0	0
Total Score						360	2045	545	285
Business management qualifications, skills and knowhow (BMQS)									
1	0	5	4	4	75	0	375	300	300
2	5	17	2	0	60	300	1020	120	0
3	0	5	1	0	50	0	250	50	0
4	0	2	1	0	40	0	80	40	0
5	0	1	0	0	25	0	25	0	0
Total score						300	1750	510	300
Social networks									
1	0	5	0	1	75	0	375	0	75
2	0	3	0	1	60	0	180	0	60
3	0	1	0	2	50	0	50	0	100
4	2	4	5	0	40	80	160	200	0
5	3	17	3	0	25	75	425	75	0
Total score						155	1190	275	235
Farm assets									
1	3	28	1	4	75	225	2100	75	300
2	2	0	6	0	60	120	0	360	0
3	0	0	0	0	50	0	0	0	0
4	0	0	1	0	40	0	40	40	0
5	0	1	0	0	25	0	25	0	0
Total score						345	2165	475	300

Source: Primary data (2019)

Table 4: Weighted garret ranking scores for individual capital formation factors

Capital formation factor	Weighted score				Rank				Overall	
	A1 Farmers	A2 Farmers	Credit officers	Agritex officers	A1 farmers	A2 farmers	Credit officers	Agritex officers	Mean score	Rank
Credit history	0.244	0.239	0.224	0.211	1	1	2	1	0.230	1
APQS	0.235	0.218	0.234	0.201	2	3	1	4	0.222	2
BMQS	0.195	0.186	0.219	0.211	4	4	3	1	0.203	4
Social networks	0.101	0.127	0.118	0.165	5	5	5	5	0.128	5
Farm assets	0.225	0.230	0.204	0.211	3	2	4	1	0.218	3

Source: Primary data (2019)

4.2.2. Agricultural production qualifications, skills and experience

Agricultural production qualifications and skills were perceived by commercial bank credit officers as the most important driver of bank credit access among farmers relative to other capital formation factors. Garrett ranking results (0.234 Garrett mean score) show that the bank credit officers believed that approximately 23.4% of bank credit access among farmers could be attributed to the farmers' possession of qualifications and skills in agricultural production (Table 4). Model A1 farmers also ranked agricultural production qualifications and skills as the second most important driver of their access to bank credit from formal banking institutions, and assigned them with the highest Garrett mean rank of 0.235 relative to other respondents. Similarly, Model A2 farmers ranked them as the second most important driver of bank credit access compared to other capital formation factors. Even though the Model A2 farmers' ranking for agricultural production qualifications and skills occupied the third rank relative to the other respondents' rankings, they accounted for approximately 21.8% of their access to bank credit, which was not too far off from the higher rankings assigned by bank credit officers and Model A1 farmers. Despite not being far off from the rankings assigned

by the other respondents, Agritex officers perceived agricultural production qualifications and skills among farmers as the second least important driver of bank credit access among farmers in Hurungwe District relative to other capital formation factors. Their ranking results showed that 20.1% of credit access among the farmers could be explained by their possession of agricultural production skills. However, in spite of occupying the second least important rank relative to other factors and the least rank relative to other respondents, a closer look at the Agritex officers' responses on the 5-point Likert Scale showed that all the officers had actually agreed (3 strongly agreed, 1 agreed) that agricultural production qualifications and skills were important catalysts of bank credit access among farmers. The Agritex officers expounded that farmers who were qualified and skilled in agricultural production had higher productivity and loan repayment potential, which was highly favoured by banks.

Seyoum (2017)'s study of Ethiopian private banks similarly established that the spread of skill and experience among the management team (for example in production) and experience in the area they are seeking funding for were important catalysts of bank credit access. Odu et al. (2010)'s study in the Niger State of Nigeria equally discovered that access to formal credit was increased significantly by the farmer's experience and skills in rice farming because it provided a guarantee that the project would most likely succeed. Chandio et al. (2017)'s study in the Sindh rural province of Pakistan also discovered that farming experience had a positive effect on the farmers' access to bank credit. Saqib et al. (2018) also observed that experienced farmers had better relationships with other farmers, money lenders and traders, which helped to enhance their access to credit in the flood-prone areas of Pakistan. All in all, 94% of the respondent perceived agricultural production qualifications and skills as important drivers of bank credit access among farmers in Zimbabwe. As a result, they were ranked as the second most important driver of bank credit access among farmers in Zimbabwe, with an overall Garrett mean score of 0.222. In light of these findings, the study also recognized agricultural production qualifications and skills as important drivers of bank credit access among farmers in Zimbabwe.

4.2.3. Farm assets

The respondents' rankings of farm assets as an important driver of bank credit access among farmers were also marginally different. Model A2 farmers assigned the highest weight of 0.230 to farm assets as catalysts of their access to bank credit compared to other respondents, despite ranking them second relative to other capital formation factors (Table 4). This shows that Model A2 farmers believed that 23% of their access to bank credit could be attributed to their possession of farm assets. Model A1 farmers also perceived that approximately 22.5% of their access to formal bank credit could be explained by their farm asset endowments, and ranked them third relative to other capital formation factors. Several studies confirm that most Model A2 farmers possess larger asset endowments that make them the most preferable customers to banks in Zimbabwe (Masiyandima et al., 2011; Vitoria et al., 2012). These findings actually revealed that Model A1 farmers depended more on their farming skills than their asset endowments to access bank credit compared to their Model A2 counterparts who were more reliant on their physical asset endowments. This observation raises concerns over the potentially unfair and counter-productive exclusion of skilled poor farmers from lending programs due to their inability to produce collateral assets to secure borrowing. Agritex officers in Hurungwe District also perceived farm assets as the most important driver of bank credit access among farmers, and assigned them with a 0.211 Garrett mean score, which occupied the first rank relative to other capital formation factors.

The study obtained another unexpected result from bank credit officers, who assigned the least Garrett mean score of 0.204 to farm assets as an important driver of credit access among farmers. The study had expected commercial banks to assign the highest rank to farm assets based available literature, which postulates that local banks place weight and emphasis on the availability of collateral assets when lending to farmers in Zimbabwe (Masiyandima et al., 2011; Nyamutowa and Masunda, 2013; Vitoria et al., 2012). The lower rating of farm assets by commercial banks may be ascribed to the fact that most farmers do not have freehold titles to their land, which presents land tenure risk issues to the banks as confirmed by various studies (Ministry of Agriculture, 2013; Richardson, 2005). Diagne (1999)'s study in Malawi similarly discovered that the composition of a household's assets was more important as a determinant of access to formal credit than the total value of assets or landholding size. This may also serve to explain why farm assets were ranked by the commercial bank credit officers as the second least important determinant of credit access among farmers in Zimbabwe relative to other capital formation factors. Nonetheless, the farm assets' rating by the commercial banks was not too far off from the other ratings by farmers and Agritex officers, which still shows that they were an important driver of bank credit access among farmers in Zimbabwe.

The bank credit officers and Agritex officers indicated that the availability of productive farm assets enhanced the farmers' production capacity and income, which positively affected their ability to repay the loans advanced to them. Several studies also identified farm assets as important determinants of credit access among farmers (Korir, 2013; Mayowa, 2015; Njogu et al., 2018; Samuel et al., 2015). Mayowa (2015)'s study of farmers in South Africa's peri-urban areas established that fixed assets like buildings, fences and irrigation facilities fulfilled the collateral role as the farmers had no ownership of the land but held Permission to Occupy certificates (PTO), which were not recognized as acceptable collateral by the Land Bank. Njogu et al. (2018)'s study in Kenya also revealed that 23.65% of credit access among farmers was attributed to the value of their collateral assets, whilst an additional 13.27% was ascribed to the total assets they employed in the production process. Overall, 94% of the respondents perceived farm assets as important catalysts of bank credit access among farmers in Zimbabwe. Hence, farm assets were ranked as the third most important driver of bank credit access among farmers in Zimbabwe, with an overall Garret mean score of 0.218. Accordingly, this study recognized farm assets as an important driver of bank credit access among farmers in Zimbabwe.

4.2.4. Business management qualifications, skills and experience

Commercial bank credit officers assigned the highest Garrett mean score of 0.219 to business management qualifications and skills as catalyst of bank credit access among farmers compared to the other respondent groups (Table 4). Even if they were ranked third by the commercial bank credit officers relative to other capital formation factors, approximately 22% of the farmers' access to bank credit in Zimbabwe could be explained by the farmers' possession of qualifications and skills in business management. Agritex officers also perceived business management qualifications and skills as the most important driver of bank credit access among farmers in Hurungwe District relative to other capital formation factors. As a result, they were assigned another high Garret mean score of 0.201, which meant that they attributed almost 20% of bank credit access among farmers to their possession of these business management qualifications and skills. However, both Model A1 and Model A2 farmers were the only respondents who assigned weights below 20% to business management skills and qualifications as a driver of bank credit access (Garrett mean scores of 0.195 and 0.186 respectively). Both farmer groups had also ranked business management qualifications and skills as the second least important catalysts of their access to bank credit relative to other capital formation factors. According to the commercial banks and Agritex officers in the study, a farmer who possessed business management skills or who had a management team that possessed these skills was more likely to run a profitable farming enterprise. Moreover, the commercial banks highlighted that a farm with personnel that is endowed with business management skills was preferable because it was able to provide essential information for making a lending decision like business plans and historical financial statements. In other words, such a farm could prove convincingly that the project seeking funding was viable, legal and fell within the bank's risk appetite, which helped to reduce information asymmetry and moral hazard problems that usually expose lenders to risk.

In support of these findings, Sebatta et al. (2014) discovered that farmers who possessed business financial management skills and able to produce documents like business plans and budgets had better access to bank credit than their counterparts who lacked such skills in Zambia. Mukasa et al. (2017) also observed that farms that employed qualified workers in Ethiopia had better access to bank credit. Good business management practices also helped farmers in Kenya to gain access to bank credit (Njogu et al., 2018). All in all, 79% of the study's respondents agreed that business management qualifications and skills were an important driver of bank credit access among farmers. Hence, business management qualifications and skills were ranked as the fourth most important drivers of bank credit access among farmers in Zimbabwe, with a Garrett mean score of 0.203. This study also recognized business management qualifications and skills as an important driver of bank credit access among farmers in Zimbabwe.

4.2.5. Social networks

Social networks were ranked as the least important driver of bank credit access among farmers in Zimbabwe by all of the study's respondent groups. Despite this, social networks received the highest rank from Agritex officers, who assigned it with a mean Garrett score of 0.165. Model A2 farmers also believed that only 12.7% of their access to bank credit could be attributed to the social networks they had built, or rather who they knew (Table 4). The Model A1 farmers also felt that only 10.1% of their access to bank credit could be explained by the social networks that they possessed. These results may signal the presence of bias, nepotism and possibly corruption in loan granting processes by banks in Zimbabwe. However, the commercial banks' low rank of 0.118 for social networks as a driver of bank credit access among farmers shows that they vehemently deny that they are helpful. Despite the ranking results shown, the majority (79%) of the respondents disputed that social networks were an important driver of credit access among farmers in Zimbabwe. Several studies contradict these findings as they established that social networks positively influenced bank credit access among farmers (Abdul-Jalil, 2015; Kofarmata et al., 2016; Saqib et al., 2018). As a result, social networks emerged as the least ranked driver of bank credit access among farmers in Zimbabwe, with the least Garrett mean score of 0.128. Hence, social networks were not perceived as important drivers of bank credit access among farmers in Zimbabwe in this study.

Overall, a total of four out of five capital formation activities were perceived by the majority of the respondents as important drivers of bank credit access among farmers in Zimbabwe. However, in order to be able to determine the statistical significance of the rankings obtained and to generalize the findings, the Friedman test was conducted. Determining the statistical significance of the rankings helped the study to reject or fail to reject the null hypothesis that capital formation factors were perceived as important drivers of bank credit access among farmers in Zimbabwe. Post hoc tests were also performed using the Wilcoxon signed rank tests to determine the statistical significance of different combinations of the capital formation factors. The Bonferroni adjustment was applied on the results obtained from the Wilcoxon tests to determine the statistical significance of the paired variables.

4.2.6. Friedman test (with Wilcoxon signed rank post hoc tests)

The mean ranking of the capital formation activities by the Friedman test corresponded with and confirmed the Garret Rankings obtained by this study (Appendix 2). There was a statistically significant difference in the perceived importance of capital formation activities as drivers of bank credit access among farmers [X^2 (4) = 101.555, p = 0.000]. Post hoc analysis with Wilcoxon signed-rank tests were carried out with a Bonferroni correction applied, which resulted in a significance level set at $p<0.005$ (0.05/10). The median inter-quartile ranges (IQR) of the variables were: agricultural production qualifications and skills = 5 (5 to 5); business management qualifications and skills = 4 (4 to 5); farm assets = 5 (4 to 5); credit history = 5 (5 to 5); social networks = 2 (1 to 3). There were statistically significant differences between 8 out of the 10 paired variables, which accounted for the overall significance of the rankings (Appendix 2). However, there were no significant differences ($p>0.005$) between credit history and farm assets and farm assets and agricultural production qualifications and skills. Hence, the

study rejected the null hypothesis (H02) that capital formation factors are not perceived as important drivers of bank credit access among farmers in Zimbabwe in favor of the alternative hypothesis. The following generalizations were also made for the study:

- Capital formation factors that included credit history; agricultural production qualifications and skills; business management qualifications and skills were important drivers of bank credit access among farmers in Zimbabwe.
- Social networks were not important drivers of bank credit access among farmers in Zimbabwe.

5. CONCLUSION AND RECOMMENDATIONS

The study sought to establish the relative importance of different capital formation activities as drivers of bank credit access among farmers in Zimbabwe. Capital formation activities were perceived as important drivers of bank credit access among farmers in Zimbabwe. Credit history was the most important driver of bank credit access among the farmers, whilst social networks were the least important. Human and physical capital formation activities linked to investments in farm productive assets and personal development skills in agricultural production and business management by farmers were also important drivers of their access to bank credit in Zimbabwe. In light of these findings, the government is implored to ensure that irrigation infrastructural development is prioritized to ensure that farmers have access to irrigation facilities like dams, which farmers cannot afford to finance on their own. Access to irrigation infrastructure could help the farmers to enhance their productivity, income and loan repayment ability, which is attractive to lenders. Farmers are also encouraged to pursue cheaper irrigation alternatives on their own like drip irrigation and boreholes to ensure that they are protected from weather risks and attract lenders. The government should also avail some productive assets at communal level for farmers to use like tractors, planters, combine harvesters and centre pivots, which are expensive to buy for poorer farmers. Access to these productive farm assets by the farmers may also help them to improve farm productivity and income. Farmers are also challenged to diversify into value addition activities off the farm in order to diversify their income portfolios and to fulfil collateral requirements by banks for titled immovable property. Government policy should also intensify agricultural extension services in farming areas to enhance the farmers' knowledge and skills in agricultural production, which have been proven in this study as important catalysts of bank credit access. Personal development initiatives by the farmers themselves to acquire agricultural production and business management skills should also be prioritized in order to enhance their access to bank credit.

REFERENCES

Abbadi, S.M., Karsh, S.M.A. (2013), Methods of evaluating credit risk used by commercial bank. International Research Journal of Finance and Economics, 111, 146-159.

Abdul-Jalil, M.A. (2015), Determinants of Access to Credit and Its Impact on Household Food Security in Karaga District of the Norther Region of Ghana. Available from: http://www.dspace.knust.edu.gh/bitstream/123456789/8049/1/ma-Az Abdul-Jalil.pdf.

Adams, D. (2015), Determinants of Microcredit Access and Farmers' Investment in Small Scale Peri-urban Agriculture: A Case Study of Dzorwulu Vegetable Farmers. Available from: http://www.ugspace.ug.edu.gh.

Afolabi, L. (1998), Monetary Economics. England: Perry Barr Limited.

Asante-Addo, C., Mockshell, J., Zeller, M., Siddig, K., Egyir, I.S. (2017), Agricultural credit provision: What really determines farmers' participation and credit rationing? Agricultural Finance Review, 77(2), 239-256.

Bathla, S. (2014), Public and private capital formation and agricultural growth in India: State level analysis of inter-linkages during pre- and post-reform periods. Agricultural Economics Research Review, 27(1), 19-30.

Bayai, I., Nyangara, D. (2013), An analysis of determinants of private investment in Zimbabwe for the period 2009-2011. International Journal of Economics and Management Sciences, 2(6), 11-42.

Becker, G.S. (1962), Investment in human capital : A theoretical analysis author. Journal of Political Economy, 70(5), 9-49.

Bisaliah, S. (2012), Investment in Agriculture: Cross Country Evidences, Experiences and Business Models. Available from: http://www.fao.org/fileadmin/templates/tci/pdf/OtherReports/CrossCountryEvidence_investment_in_agriculture.pdf.

Chandio, A.A., Jiang, Y., Wei, F., Rehman, A., Liu, D. (2017), Famers' access to credit: Does collateral matter or cash flow matter? Evidence from Sindh, Pakistan. Cogent Economics and Finance, 5(1), 1369383.

Chigunhah, B.R., Svotwa, E., Munyoro, G., Govere, I. (2020), The determinants of credit demand among farmers in Hurungwe district of Mashonaland West province in Zimbabwe. Journal of Economics and International Finance, 12, 74-83.

David, P.A., Lopez, J.G.G. (2001), Knowledge, Capabilities and Human Capital Formation in Economic Growth. New Zealand: Treasury Working Paper Series 01/13, In The New Zealand Treasury.

Dhanavandan, S. (2016), Application of garret ranking techniques: Practical approach. International Journal of Library and Information Studies, 6(3), 135-140.

Diagne, A. (1999), Determinants of Household Access to and Participation in Formal and Informal Credit Markets in Malawi. Available from: http://www.ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/125743/filename/125774.pdf.

Ding, S., Knight, J. (2011), Why Has China Grown so Fast? The Role of Structural Change. Available from: http://www.ghbook.ir/index.php?name=فرهنگ ر سا نهها ینو ین&option=com_dbook&task=readonline&book_id=13650&page=73&chkhashk=ED9C9491B4&Itemid=218&lang=fa&tmpl=component.

Echanove, J. (2017), Food Security, Nutrition, Climate Change Resilience, Gender and the Small-scale Farmers. Available from: https://www.fanrpan.org/sites/default/files/publications/Zimbabwepolicyanalysisfinal.pdf.

FACASI. (2015), Financial Products for Farmers and Service Report. Available from: http://facasi.act-africa.org/file/20160125_financial_products_for_farmers_and_service_providers_report_zimbabwe.pdf.

Feschijan, D. (2008), Analysis of the creditworhiness of bank loan applicants. Economics and Organization, 5(3), 273-280.

Garrett, H., Woodworth, R. (1969), Statistics in Psychology and Education. Bombay: Valkis, Feffer and Simons. p329.

Gómez-Limón, J.A., Vera-Toscano, E., Garrido-Fernández, F.E. (2012), Farmers' Contribution to Agricultural Social Capital: Evidence from Southern Spain. Available from: http://www.iesa.csic.es.

Ibrahim, M.H. (2000), Public and Private Capital Formation and Economic

Growth in Malaysia, 1961-1995. IIUM Journal of Economics and Management, 8(1), 21-40.
Ijioma, J.C., Osondu, C.K. (2015), Agricultural credit sources and determinants of credit acquisition by farmers in idemili local government area of Anambra state. Journal of Agricultural Science and Technology B, 5, 34-43.
Ike, P.C., Umuedafe, D.E. (2013), Determinants of savings and capital formation among rural farmers in isoko north local government area of Delta state, Nigeria. Asian Economic and Financial Review, 3(10), 1289-1297.
Jakušonoka, I., Barakauska, L. (2016), Development and usage of scoring systems in giving mortgages by commercial banks of Latvia. Science and Studies of Accounting and Finance, Problems and Perspectives, 10(1), 55-64.
Jiranyakul, K. (2014), Capital Formation in Thailand: Its Importance and Determinants, MPRA Paper No. 58442. Germany: University Library of Munich.
Joliya, P., Kamalvanshi, V., Kushwaha, S., Lpi, S. (2017), Determinants of capital formation in agriculture: Hadoti region of Rajasthan, India. International Journal of Current Microbiology and Applied Sciences, 6(7), 4239-4245.
Kadir, S.A., Wardhani, R.S., Novalia, N., Maulana, A., Sriwijaya, U., Ekonomi, F., Sriwijaya, U., Ekonomi, F. (2018), The impact of physical and human capital on the economic growth of agricultural sector in South Sumatera. International Journal of Economics and Financial Issues, 8(4), 322-326.
Kofarmata, Y.I., Applanaidu, S.D., Hassan, S. (2016), Examination of the determinants of credit constraints in the rural agricultural credit market of Nigeria. Research Journal of Applied Sciences, 11(5), 235-239.
Korir, G.K. (2013), Factors Affecting Access to Credit by the Small Business Producer Groups in Trans-Nzoia County University of Nairobi. Available from: http://www.erepository.uonbi.ac.ke/bitstream/handle/11295/94673/KorirGideon Kosgei_FactorsaffectingaccesstocreditbytheSmallbusinessproducergroupsin Transnzoia.pdf?sequence=1&is Allowed=y.
Kuye, O.O. (2015), Determinants of loan default and repayment rates by cassava farmers in South-South Nigeria: A case study of bank of agriculture and first bank of Nigeria. European Journal of Agriculture and Forestry Research, 3(4), 48-57.
Lemma, M. (2015), Role of Banks' Deposit Mobilization and Credit Financing on Capital Formation in Ethiopia. Addis Ababa. Available from: http://www.localhost:80/xmlui/handle/123456789/4641.
Ma, H., Huang, J., Oxley, L. (2013), Capital formation and agricultural growth in China. Asian Economic Papers, 12(1), 166-190.
Makamure, J., Jowa, J., Muzuva, H. (2001), Liiberalisation of Agricultural Markets. Available from: http://www.saprin.org/zimbabwe/research/zim_agriculture.pdf.
Masiyandima, N., Chigumira, G., Bara, A. (2011), Sustainable Financing Options for Agriculture in Zimbabwe, ZEPARU Working Paper Series (ZWPS 02/10). Poland: Zespół Wojewódzkich Przychodni Specjalistycznych.
Mayowa, B.T. (2015), Determinants of Agricultural Credit Acquisition From the Land Bank of South Africa: A Case Study of Smallholder Farmers in Peri-urban Areas of Mopani District, Limpopo Province, South Africa. Available from: http://www.ulspace.ul.ac.za/bitstream/handle/10386/1730/braide_tm_2015.pdf?sequence=1&isAllowed=y.
Ministry of Agriculture. (2013), Zimbabwe Agriculture Investment Plan: A Comprehensive Framework for the Development of Zimbabwe's Agriculture Sector. New Delhi: Ministry of Agriculture. p1-131.
Mukasa, A.N., Simpasa, A.M., Salami, A.O. (2017), Credit constraints and farm productivity: Micro-level evidence from smallholder farmers in Ethiopia, Working Paper 247 Tunis. Tunisia: African Development Bank.
Munyoro, G. (2019), The significance of capital formation on agricultural entrepreneurship development in Zimbabwe: A case study of A1 farmers in Mashonaland West Province. Adrri Journal of Arts and Social Sciences, 16(6), 1-59.
Njogu, G.K., Olweny, T., Njeru, A. (2018), Relationship between farm production capacity and agricultural credit access from commercial banks. International Academic Journal of Economics and Finance, 3(1), 159-174.
Nwaenze, C., Michael, O., Nwabekee, C.E. (2014), Financial intermediation and economic growth in Nigeria (1992-2011). The Macrotheme Review, 3(6), 124-142.
Nyamutowa, C., Masunda, S. (2013), An analysis of credit risk management practices in commercial banking institutions in Zimbabwe. International Journal of Economic Research, 4, 31-46.
Nyarota, S., Kavila, W., Mupunga, N., Ngundu, T. (2015), An Empirical Assessment of Binding Constraints to Zimbabwe's Growth Dynamics. Available from: http://www.rbz.co.zw/assets/an-empirical-assessment-of-binding-constrains-to-zimbabwe-s-growth-dynamics.pdf.
Odu, O., Okoruwa, V., Adenegan, K., Olajide, A. (2010), Determinants of rice farmer' s access to credit in Niger state, Nigeria. Journal of Rural Economics and Development, 20(1), 8-20.
OECD. (2015), New Approaches to SME and Etrepreneurship Financing: Broadening the Range of Instruments. Paris, France: OECD.
Omankhanlen, A. (2012), The role of banks in capital formation and economic growth: The case of Nigeria. Economy Transdisciplinarity Cognition, 5(103), 103-112.
Ponnala, V. (2016), Impact of banks depposit mobilization and credit financing on capital formation. International Research Journal of Marketing and Economics, 3(6), 67-87.
Rahji, M.A.Y. (2000), An analysis of the determinants of agriculture credit approval/loan size by commercial banks in South Western Nigeria. Journal of Nigerian Development Studies, 1(1), 6-26.
Reserve Bank of Zimbabwe. (2006), Sustainable Financing of Agriculture. Available from: http://www.rbz.co.zw/assets/supplement2.pdf.
Reserve Bank of Zimbabwe. (2019), Quarterly Economic Review. Harare, Zimbabwe: Reserve Bank of Zimbabwe.
Richardson, C.J. (2005), The loss of property rights and the collapse of Zimbabwe. Cato Journal, 25(3), 541-565. Available from: https://www.sarpn.org/documents/d0001190/P1320-property_rights_Zimbabwe_Richardson2.pdf.
Rouse, C. (1989), Bankers Lending Techniques. London: Chartered Institute of Bankers.
Samuel, E., Isah, M.A., Patil, B.L. (2015), The determinants of access to agricultural credit for small and marginal farmers' in Dharwad district, Karnataka, India. Research Journal of Agriculture and Forestry Sciences, 3(5), 1-5. Available from: http://www.isca.me.
Saqib, S.E., Kuwornu, J.K.M., Panezia, S., Ali, U. (2018), Factors determining subsistence farmers' access to agricultural credit in flood-prone areas of Pakistan. Kasetsart Journal of Social Sciences, 39(2), 262-268.
Schultz, T.W. (1961), Investment in human capital. American Economic Association, 51(5), 1035-1039.
Sebatta, C., Wamulume, M., Mwansakilwa, C. (2014), Determinants of smallholder farmers' access to agricultural finance in Zambia. Journal of Agricultural Science, 6(11), 1-10.
Seyoum, G. (2017a), The Application of CAMPARI Model in Lending Decisions in the Case of Ethiopian Private Banks. Canada: St Mary's University.
Seyoum, G. (2017b), The Application of CAMPARI Model in Lending Decisions in the Case of Ethiopian Private Banks. Available from: http://www.repository.smuc.edu.et/bitstream/123456789/3163/1/

Genene Seyoum.pdf.
Shephard, W.G. (1979), Market Power and Economic Welfare. United States: Random House.
Sivakumar, M. (2013), Gross Capital Formation and GDP Growth in Indian Agriculture Sector. Tamil Nadu, India: Munich Personal RePEc Archive, 46946. p14.
Taraki, S.A.D., Arslan, M.M.D. (2019), Capital Formation and Economic Development. United States: MIT Press. p772-780.
Toringepi, G. (2016), The Contribution of Smallholder Agriculture Production to Food Security in Rural Zimbabwe: A Case Study of Masvingo Province. Available from: http://www.fao.org/publications.
Venkataramana, M.N., Reddy Chinnappa, B.V. (2012), Pattern of farm level capital formation and its impact on the farm production efficiency: An economic analysis in two contrasting regions of Karnataka State, India. Foz do Iguacu, Brazil: International Association of Agricultural Economists (IAAE) Triennial Conference. p18-24.
Vitoria, B., Mudimu, G., Moyo, T. (2012), Status of Agricultural and Rural Finance in Zimbabwe. FinMark Trust. Available from: http://www.finmark.org.za/wp-content/uploads/2016/01/Rep_Status-of-RAFin_Zim.pdf.
Wulandari, E., Meuwissen, M.P.M., Karmana, M.H., Lansink, A.G.J. (2017), Access to finance from different finance provider types: Farmer knowledge of the requirements. PLoS One, 12(9), e0179285.
Zalkuwi, J., Singh, R., Bhattarai, M., Rao, O.P.S. (2015), Analysis of constraints influencing sorghum farmers using garrett' s ranking technique ; a comparative study of India and Nigeria. International Journal of Scientific Research and Management, 3(3), 2435-2440.
Zheng, F., Gao, P., He, M., Li, M., Tan, J., Chen, D., Zhou, Z., Yu, Z., Zhang, L. (2015), Association between mobile phone use and self-reported well-being in children: A questionnaire-based cross-sectional study in Chongqing, China. BMJ Open, 5(5), 1-10.

APPENDIX

Appendix 1

Percent	Score	Percent	Score	Percent	Score
0.09	99	22.32	65	83.31	31
0.20	98	23.88	64	84.56	30
0.32	97	25.48	63	85.75	29
0.45	96	27.15	62	86.89	28
0.61	95	28.86	61	87.96	27
0.78	94	30.61	60	88.97	26
0.97	93	32.42	59	89.94	25
1.18	92	34.25	58	90.83	24
1.42	91	36.15	57	91.67	23
1.68	90	38.06	56	92.45	22
1.96	89	40.01	55	93.19	21
2.28	88	41.97	54	93.86	20
2.69	87	43.97	53	94.49	19
3.01	86	45.97	52	95.08	18
3.43	85	47.98	51	95.62	17
3.89	84	50.00	50	96.11	16
4.38	83	52.02	49	96.57	15
4.92	82	54.03	48	96.99	14
5.51	81	56.03	47	97.37	13
6.14	80	58.03	46	97.72	12
6.81	79	59.99	45	98.04	11
7.55	78	61.94	44	98.32	10
8.33	77	63.85	43	98.58	9
9.17	76	65.75	42	98.82	8
10.06	75	67.48	41	99.03	7
11.03	74	69.39	40	99.22	6
12.04	73	71.14	39	99.39	5
13.11	72	72.85	38	99.55	4
14.25	71	74.52	37	99.68	3
15.44	70	76.12	36	99.80	2
16.69	69	77.68	35	99.91	1
18.01	68	79.19	34	100.00	0
19.39	67	80.61	33		
20.93	66	81.99	32		

Appendix 2: Friedman tests (with Wilcoxon signed rank post hoc tests) for capital formation factors as drivers of credit access among farmers in Zimbabwe

Descriptive statistics				
	N	Percentiles		
		25th	50th (Median)	75th
Agricultural production qualifications and skills	47	5.0000	5.0000	5.0000
Business management qualifications and skills	47	4.0000	4.0000	5.0000
Farm assets	47	4.0000	5.0000	5.0000
Credit history	47	5.0000	5.0000	5.0000
Social networks	47	1.0000	2.0000	3.0000

Friedman test	
Ranks	
	Mean rank
Farm assets	3.46
Business management qualifications and skills	2.50
Agricultural production qualifications and skills	3.61
Credit history	3.95
Social networks	1.49

Test Statistics[a]	
N	47
Chi-Square	101.555
df	4
Asymp. Sig.	.000

Test statistics[a]				
	Business management qualifications and skills-Agricultural production qualifications and skills	Farm assets – Agricultural production qualifications and skills	Credit history – Agricultural production qualifications and skills	Social networks – Agricultural production qualifications and skills
Z	−3.885[b]	−1.512[c]	−3.125[c]	−4.549[b]
Asymp. Sig. (2-tailed)	0.000	0.131	0.002	0.000

a. Wilcoxon signed ranks test
b. Based on positive ranks.
C.Based on negative ranks.

Test Statistics[a]			
	Farm assets – Business management qualifications and skills	Credit history – Business management qualifications and skills	Social networks – Business management qualifications and skills
Z	−4.722[b]	−5.026[b]	−4.142[c]
Asymp. Sig. (2-tailed)	0.000	0.000	0.000

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.

Test Statistics[a]	
	Social networks – Credit history
Z	-4.965[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.