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Small Holder Farmers' Perception on Agriculture Mechanization a Case Study in Rwakishaakizi Village-Nyakayojo Division Mbarara District

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ABSTRACT

The study focused on how the small holder farmers perceive the idea of mechanizing agriculture in Rwakishaakizi- Nyakayojo division, Mbarara District. The study was done through making thorough understanding of the perception of local farmers' as agriculture mechanization on a global, continental, regional, country and local perspective. The chapter covered the background of the study, statement of the problem, objectives of the study, research questions, scope of the study and conceptual frame work. Mechanization referred to the process of injecting power and machinery between man and materials in a production system. Mechanization as it related to agriculture requires the study, manufacture, utilization, maintenance and repair of all tools, implements, machines, equipment and structures which will enable the farmer to raise the productivity of human labor economically explained that agricultural mechanization includes the application of tools, implements and powered machinery and equipment to achieve agricultural production, comprising crop and livestock production as well as aquaculture and apiculture.

Keywords: Environmental, Agriculture sector, Technology, mechanization

INTRODUCTION

Mechanization covered all levels of farming and processing technologies, from simple and basic hand tools to more sophisticated and motorized equipment. It eases and reduces hard labor, relieves labor shortages, improves productivity and timeliness of agricultural operations, increases resource-use efficiency, enhances market access and contributes to mitigating climate-related hazards. Sustainable mechanization considers technological, economic, social, environmental and cultural aspects when

contributing to the sustainable development of the food and agriculture sector. Showed at the turn of the century the level, of mechanization in Africa was still dominated by hand-tool technology. It was especially prevalent in land preparation and crop husbandry activities in all four sub regions. Central Africa had 85% of its land entirely under this technology, followed by West 70%, Southern 54% and Eastern Africa 50 %. The lower figures for Southern and Eastern Africa are due to the data from two countries. In South Africa, large-scale farms dominate the agricultural sector and tractors are the main technology, while in Ethiopia, draft animal technology has been in use for several periods.

Furthermore, stated that with the exception of South Africa and Ethiopia, agricultural mechanization was introduced in most countries in Africa during the colonial period, starting in the 1890s when much of the region came under colonial rule and after the colonial rule, Agricultural mechanization was regarded as high priority by the governments of the new independent states of Africa especially mechanization of the smallholder sector. The experience during the post-War years of implementation of various mechanization projects on the continent inspired confidence within the Africans to fully engage in agricultural mechanization for increased production since increased accessibility and effectiveness of agricultural mechanization can contribute to Africa's agricultural and economic transformation [1].

Uganda being endowed with fertile soils and favorable climate, the major factors that influence agriculture, the country continued to produce at a law scale. Studies showed that 99.4% smallholder farmers in Uganda use traditional, rudimentary and obsolete technologies and methodologies for post-harvest operations. These were contributing factors to low farm output. To change this, the Government came up with agriculture mechanization as a strategy of restructuring the sector.

Efforts were put in place, which has seen farmers change their ways of farming, mechanization has become one of the key pillars of agricultural transformation and modernization. The efforts directed into the occupation of cost-effective farm tools and the Government has tried to integrate majority Ugandans who represented over 70% of the country's labor force. In Uganda, agricultural production is mainly dominated by smallholder farmers who rely solely on hoes (95.8%) and engaged in food and cash crops, horticulture, fishing and livestock farming (NDP III -2020). Farmers that are categorized as subsistence are estimated to deliver between 75–80% of the total agricultural output and marketed agricultural produce. Smallholder enterprises, commercial farmers and estate operators are about 15%, 3% and 0.5% of farmers respectively (NDPII 2015/2016-2020). The production of food in developing countries is generally very labor intensive particularly in smallholder agriculture. The manual work carried out by farmers and their families was very laborious and time consuming and this was a major constraint thus reducing agricultural production. Also, the day to day drudgery of farming was a major contributory factor in the migration of people, particularly young people, from the rural areas to the prospect of a better life in towns and cities. Therefore, agriculture production can be substantially increased through the use of mechanical technologies which are both labor saving and directly increase yields and production. In Uganda, there is limited adoption of improved crop varieties, and input use remains generally very low. For instance, only 6% of farmers in Uganda were

using improved seeds in 2006, while a much lower proportion used inorganic fertilizers. This calls for more attention on smallholder farmers as one thinks about mechanization.

The government had provided equipment to farmers to ensure enhancement in mechanization of agriculture and by region, 19% Central, 27% East, 0% North and 54% West.

Despite the efforts made, many challenges still hinder agricultural mechanization. The majority of farmers have minimal access to information on the availability of affordable equipment, which can enable them improve on their outputs. This was mainly because mechanization focused on production (land opening) without addressing the complete value chain to markets, which is a disincentive to mechanized farming. For instance, studies showed that 99.4% smallholder farmers use traditional, rudimentary and outdated technologies irrespective of the efforts being done [2].

Scarcity information existed on how people perceive mechanization notably drivers of mechanization. In addition, the role of women in mechanization has been neglected. Therefore, the researcher seeks to know how the small holder farmers perceive the idea of mechanizing agriculture.

Study objectives

To investigate the status of agricultural mechanization among small holder farmers in Rwakishaakizi village-Nyakayojo Division Mbarara District.

Specific Objectives

To document the existing mechanization systems in Rwakishaakizi village-Nyakayojo Division Mbarara District. To assess the influence of women on agricultural mechanization in Rwakishaakizi village –Nyakayojo Division Mbarara district. To find out the challenges being faced by the smallholder farmers involved in agricultural mechanization in Rwakishaakizi village Nyakayojo Division Mbarara district. To assess how best smallholder farmers can be helped to standardize mechanization in Rwakishaakizi village –Nyakayojo Division Mbarara district.

Significance of the study

The findings of this study helped to inform the farmers in Rwakishaakizi village about the existing mechanization systems and how they can be used effectively for better and increased production since some farmers are ignorant about the availability of some of these systems.

The findings of this research were an addition to the existing data that can be used by other academicians in making their own research or pursuing different tasks while using the available data.

The collected data were also conveyed into useful information to be used by extension workers in transforming agriculture to mechanization on a sustainable ground. Ultimately, my research contributed to economic and social development of our globalized society, forming the foundations of government policies that will significantly avert the problems associated with agriculture mechanization by small scale farmers.

Scope of the study

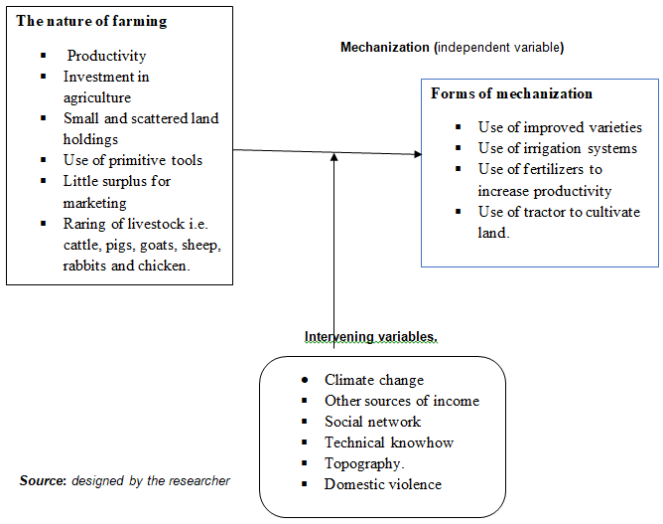
Content scope: This research concentrated on examining the existing mechanization, the problems that are as a result of agricultural mechanization that farmers in Rwakishaakizi are facing and appropriate solutions to problems of agriculture mechanization on smallholder farmers Rwakishaakizi village-Nyakayojo Division Mbarara District.

Time scope: The research study was conducted for one year in totality because it is the only time the researcher has, to carry out his research as it is scheduled by the University.

Conceptual frame work.

The conceptual frame work of this research topic consisted of two Variables. That is; farming and mechanization. Where farming was an independent variable and mechanization was a dependent variable. However, there were other factors that can directly or indirectly contribute to the mechanization of agriculture. They were termed as intervening variables and some include; technology in agriculture, employment, income, climate change, availability of mechanization services, land size, topography of land and technical knowhow of farming.

Farming (dependent variable**).**



This chapter reviewed the literature written in relation to the study topic. This literature was extracted from different sources that include agricultural journals, agricultural reports, newspapers, textbooks and other related sources such as internet websites. It explained available literatures on the variables involved in the study and highlights what scholars, academicians and practitioners have said and written about the study variables, with the objective or aim of revealing contributions, weakness and gaps in relation to the specific objectives of the study.

Agricultural mechanization.

Current status of agricultural mechanization to write something

In Rwakishakizi, few households do practiced mechanization to the highest level, as a result of low land holdings of range 2-5 acres for a household [3]. It was reported that farmers believe in mechanization as some farmers who tried it were seeing physical change in productivity as well as production.

Status of agricultural mechanization in Africa

African farming systems remained the least mechanized of all continents – 70% of the farmers cultivate less than two hectares by hand hoe. Further, estimates from the Food and Agricultural Organization (FAO) show that Africa has less than two tractors per 1000 ha of land. In 2012, average tractor use in Africa was around 1.3 per 1000 hectares of cultivated land, compared to around 9.1 and 10.4 tractors in Asia and Latin America respectively, for the same period. In fact, tractor use in Africa peaked at 1.9 per 1000 hectares in 1986 and has gradually declined since then.

Status of agriculture mechanization in Uganda

In Uganda, 99.4% of the farmers relied on the use of rudimentary and outdated technologies and methodologies. Agricultural mechanization necessitated all levels of farming and processing technologies, from simple and basic hand tools to more erudite and motorized equipment (FAO, 2016). It includes all tools, implements and machinery and can use human, animal or motorized power sources. Mechanization eases and reduces hard labor (drudgery), relieves labor shortages, improves farm labor productivity, improves productivity and timeliness of agricultural operations, improves the efficient use of resources, enhances market access and contributes to mitigating climate related hazards. This makes Agriculture in Uganda important to the economy in that it employs approximately 69% of the population and contributes about 26% to the GDP in 2015.Forinstance indicates that in Africa, 65% use human power, 25% use animal power and 10% use engine power because adoption of improved agricultural technologies is associated with higher earnings and lower poverty, improved nutritional status.

The main agricultural crops include coffee, grains, sugarcane, cotton and tea. The government identifies agriculture as a vital contributory growth sector capable of reducing poverty and stimulating economic growth. The costs of inputs influence farmers purchasing decisions. Governments should be continually aware of the profitability of farming and how these affects farmers' decisions on investment both in capital and seasonal inputs. The existence of market information systems for farmers is essential for this.

Agricultural mechanization entails all levels of farming and processing technologies, from simple and basic hand tools to more sophisticated and motorized equipment. It includes all tools, implements and machinery and can use human, animal or motorized power sources. Mechanization eases and reduces hard labor (drudgery), relieves labor shortages, improves farm labor productivity, improves productivity and timeliness of agricultural operations, improves the efficient use of resources, enhances market access and contributes to mitigating climate related hazards.

Agricultural mechanization for smallholder farmers in sub-Saharan Africa (SSA) has, for long, been a neglected one. It is now clear that mechanization is an essential input to raise labor and land

productivity and reduce drudgery. Mechanization can also be used to add value to primary products and so produce employment and income potential along the value chain. Showed that, if agriculture in Uganda grows by 6%, poverty would fall from current 31.1% to 17.9% by 2015. This would be well below 28% MDG target. This is majorly because the major power source is humans who dig, by hand, between 50% and 80% of the area under tillage which is evident in western Uganda. The use of manual power dominates in Central Africa whereas in Western and Eastern Africa more use is made of draught animals. In SSA, tractor usage is highest in Southern Africa.

Agricultural mechanization for smallholder farmers in sub-Saharan Africa (SSA) has, for long, been a neglected one. It is now clear that mechanization is an essential input to raise labor and land productivity and reduce drudgery. Mechanization can also be used to add value to primary products and so produce employment and income potential along the value chain. However this is being hindered by factors like very low level of mechanization to increase acreage and for post-harvest operations, consequently farmers are not able to meet their market needs of quantity, quality and timely delivery of produce and products to market place, As well as ensuring their household food and income security which exist both at farm and institutional level [4].

Agricultural mechanization is therefore an important input to agriculture for execution of timely farm operations, reducing the cost of operation, maximizing the utilization efficiency of costly inputs (seeds, fertilizer, plant protection chemicals, water and agricultural machinery), improving the quality of produce, reducing drudgery in farm operations; improving the productivity of land & labor and for improving the dignity of labor to the economy of the country. The rate of use of agricultural machinery is still below that which is considered necessary to meet the rising demand for food. (Mrema, 2018).

The scheme for mechanization in different regions will be different depending on the conditions and resources available for that particular region. Therefore, suggesting an agricultural mechanization system to be used by a particular region depends on keeping in view the land holding pattern, the available resources in the region, the population depending on agriculture, the important cropping systems being followed in this region, farm power availability and the infrastructural facilities available for promotion of agricultural mechanization. Developed countries have mechanized agriculture according to the specific requirements of the farming system. Many factors such as labor availability and cost, as well as the productivity of land, determine how mechanization develops. However, in developing countries, particularly in the majority of sub-Saharan African countries, agricultural mechanization is not making much progress at all and in some instances even the achievements obtained in earlier years are being lost. The transition to sustainable development and increased production has not yet begun and many sub-Saharan African countries are still looking for mechanized methods of farming that can be adapted to their conditions.

Many sub Saharan African countries are introducing schemes, development projects and incentives, designed to encourage farmers to make more use of agricultural machinery, in particular tractors. It was generally recognized though that most of these efforts did not meet expectations. Thus frequency of use of agricultural gear is still below that which is considered necessary to meet the rising demand for food. Though agriculture mechanization is an essential agricultural input in Sub-Saharan Africa (SSA) with the potential to transform the lives and economies of millions of rural families. For

example, farm mechanization can facilitate increased output of higher value products while eliminating the drudgery associated with human muscle powered agricultural production. Improved agricultural mechanization for smallholder farmers means increased access to input supply chains and integration in modern food systems, resulting in improved incomes, numerous and renewed business opportunities, further value addition and overall improved livelihoods for smallholder families. Mechanization, in fact, enables family members not only to increase farm productivity via production intensification and expansion, but also to seek off-farm employment opportunities as a result of the increased time made available to look for and be engaged in such employment.

In Mbarara district, agriculture is the mainstay of most of the residents within the area. Both crops and livestock are raised in the area primarily on subsistence level though in some cases commercial production is also done in the area. Major crops include matooke, sweet potatoes, beans, sweet bananas, Irish potatoes millet, and others and animals raised in the district include Ankole cattle, goats, sheep, pigs, Chicken. FY2014/15 indicates that different equipment was distributed among the different regions of the country for example central region had 19% of the farmers accessing the equipment, Northern region had 0%, eastern region had 27% and western took the highest proportion of the farmers accessing the mechanization equipment. This was mainly because western comprises of the biggest portion of the farmers engaged in farming in Uganda. These machines were given to either free of charge or at a subsidized price rom projects funded by the government of Uganda. Farmers were given or bought this equipment or hired them at a reduced price compared to the market rate.

The provision of this equipment has helped famers to increase production, reduce the costs of production through modern production methods, increase market access, control pests and diseases, harvest good quality agricultural products, and timely implementation of planned activities resulting into increased output. The equipment accessed by the farmers were mainly used for opening up land for bumper production, clearing thickets to allow green pasture growth, opening up new roads to access the markets, di-silting/excavating valley dams/tanks for water harvesting irrigation and preparation for dry spell, spraying, drying, value addition and planting. Mechanization is a necessary input in agriculture from cultivation of land to final marketing stage of production. Despite the provision of equipment to boost agricultural production, a number of factors have hindered the effective access and use of equipment in agricultural production. For instance Poor access to information about the availability of the equipment, inadequate complementary infrastructure for using agricultural equipment, delayed initiation of procurement process, absence of some spare parts, high poverty levels, Inadequacy and inappropriateness of some supplied equipment, famers' conservativeness and others While farmers in developed countries have devoted to using machines in their day to day activities including farming, farmers in developing countries are still hesitant on using the rudimentary farming yet agriculture is devoted for as the way forward (monitor, 13 th July 2013). This remains a challenge to the Ugandan economy.

Current status of small holder farmers

Agriculture is primarily dominated by about 3million small holder subsistence farmers who account for 15%, own an average farmland area of 2.5ha involved in the cultivation of main food crop as bananas which accounts for 28% of the total cropped area. As smallholder agriculture becomes more commercial and modern, and agricultural value chains get more intricate, there is need for strategies to promote diverse types of mechanization technologies along these value chains (Mrema, 2018) . Massive mechanization opportunities for small to medium scale farmers and other entrepreneurs lie in agro-processing, transport or other off-farm activities. In identifying farm operations that should be mechanized, priority ought to be given to tasks where labor productivity is low and/or where labor drudgery is high.

According to, smallholder farmers can feed the whole world. Furthermore, very many smallholder famers have managed to standardize their ways of living, survived while practicing small holder farming by acquiring fertilizers, improved seed and plant varieties. Agriculture is the lifeblood of the smallholder household in Uganda. It provides the primary sustenance of the household, gives the household strength. Many smallholder farms have limited access to production inputs, especially mechanization; they therefore reach low levels of productivity, and often contribute to the increase in negative environmental impacts on already dwindling natural resources and are categorized as subsistence who are estimated to deliver between 75–80% of the total agricultural output and marketed agricultural produce. They also have fewer opportunities to access markets and take advantage of the numerous value-adding activities that more developed food systems can provide. The small holder agriculture in the sub Saharan Africa is predominantly being dominated the women as there is a growing feminization of smallholder agriculture, especially as women are increasingly left in charge of the family farm while the men migrate in search of higher incomes. Agricultural mechanization can offer women in rural areas opportunities appropriately adapted to cultural, social and traditional work norms, and to the overall development of local economies; however, these opportunities are often underestimated.

Farming is dominated by small-holder peasant farmers which who are based on subsistence farming with small landholding of farmers less than 2 hectares which is evident in western Uganda. In addition, use of supplementary fertilizers to farming is still considered less in Africa as compared to the rest of the world.

Farm mechanization is essential in increasing land and labor productivity. Without proper mechanization, agricultural productivity in the smallholder sector will continue to stagnate, or even decline especially due to increasing labor constraints Women's labor drudgery and demand for mechanization cannot be taken for granted. It questions whether a high labor burden and intensity translate into, firstly, demand for labor-saving technologies, and, secondly, to its actual adoption. Substantial part of the agricultural work is done by women (household heads, wives, daughters and daughters-in-law) Discovers the gender gaps in technology adoption and access to innovations resulting in gender differences in productivity which is evidenced in western Uganda [5].

Women's time is less valued and farmers are therefore more likely to decide to invest in and adopt technologies that save men's time. This could potentially undermine the adoption of multi-functional mechanized technologies (i.e. technologies that can be used for land preparation as well as post-harvest processing which is often a women's task) as it might be less likely that investments are made in technologies that benefit women more than men.

Many women talk about their experience of men separating from providing labor to agriculture, and women are taking over tasks that were conventionally done my men for example. 33 % of male headed households use improved or hybrid seeds compared to 24 % of female 32% headed households. 44 % of male-headed households use veterinary drugs compared to 36% of female headed households which is evident in western Uganda. Norms in favor expecting women to work hard, combined with norms against women voicing their concerns of making decisions, not only directly undermine demand articulation also affect women's decision-making power in intra-household decision-making which is completely evidenced in western Uganda. Women and men have different roles in farming and unequal access to and control over resources. The roles of women in agriculture, as well as the social relations in farming, service supply and marketing systems that mediate women's access to resources in general, and agricultural innovations in particular, have often gone unrecognized in the design and delivery of technologies to farmers yet, agricultural interventions have gendered impacts and new technologies frequently change the labor division as well as the distribution of benefits within households. The low access to and control of women over resources as land and income undermine demand articulation, and also weaken women's bargaining position in intra-household decision-making.

METHODS AND MATERIALS

This chapter presented the research methodology that was used in the study. This included description of the study design and rationale, description of the study setting and rationale, study population, sample size determination and rationale, sampling procedure, inclusion criteria, definition of variables, research instruments, data collection procedure, description of data analysis and management, ethical consideration, study limitation and dissemination of results.

Study design and rationale

Descriptive research design was employed for this research where it was used to obtain information concerning the perception of small holder farmers on agricultural mechanization. Quantitative and qualitative approaches will be adopted to facilitate findings and analyze information concerning the respondent's thoughts about agricultural mechanization.

Description of study setting and rationale

The study was carried out in Rwakishaakizi village, Nyakayojo division Mbarara municipality, Mbarara District. The area comprises of Wards of Nyakasa A and B. The area was bordered by Nyamitanga to the north Mwizi division to the South, Bugamba to the southwest and Rugando division to the west. The area was located approximately 3kilometers off Mbarara-kabale high way.

Geographical scope

The research study was conducted in Rwakishaakizi village in Nyakayojo division Mbarara district. The area was located in the western Uganda in Mbarara District. The research area was located 4 km away from Mbarara town along Kabale-Ntungamo road. The district had 13 sub-counties of which Nyakayojo was chosen from where Rwakishaakizi was located. The major economic activities in the district are; intensive agriculture, trade and commerce and transport. But intensive farming constitutes the largest percentage (78%) support of livelihoods of the people in Nyakayojo The major crops grown include; vegetables, sweet potatoes, Irish, water melon, bananas, cassava, tomatoes, onions and fruits. And also, some improved breeds of livestock including: cattle, goats Rabbits sheep and pigs are raised in the area.

Study population

Nyakayojo division comprised of 18,852 males, 19,333 females making the total population of 38,185 people. More than 50 percent of the population were involved in subsistence farming. Therefore, the study was carried out among the smallholder farmers who were engaged in agriculture in the area of Rwakishaakizi village in Nyakayojo division. The study population included participants with a diversity of diverse ages, genders, religions and cultures.

Sampling techniques

A purposive sampling procedure was used where by all people who are engaged in farming were requested to consent for the research, and then participate in the study until the required number of participants or respondents was reached. Both farmers practicing mechanized agriculture and those involved in farming but don't rely on mechanization were selected The selection of the categories was made feasible with the help of the natives who directed the researcher to correctly trace the desired categories suiting the study.

Data collection

Data collection methods and tools

Data were collected from primary and secondary sources.

Primary sources: where the researcher collected first-hand information relevant to the topic and this helped to give reliable information on the situation in study.

Secondary sources: Respondents gave information about their perception. This study considered information from public libraries and other resource centers. Secondary sources of information like text books, journals, newsletters, manuals, dissertations, annual reports/field reports and other forms of written materials pertinent to the study will be used. The method helped in getting wider views of the study.

Key informant interviews

Interviews were used during data collection from community leaders, police officers, Sub-count Agricultural Officers as well as District Agricultural Officers since they are key informants in this study. The researcher designed an interview guide consisting of questions to be asked during collection of primary data because it enabled the researcher ask respondents more questions than the questionnaire tool. Through the conversational interviews, the researcher used interview questions to get data from the respondents.

Observations

In some cases, the researcher made some personal observations on the aspects like type of crops grown in the area of study, the existing systems used to mechanization. This helped to improve the credibility of the data collected using the other used methods like questionnaires and interviews.

Interviews

The interview guide was designed using open ended questions and pre corded questions and for the key information some of the respondents for example the government agricultural officials may be busy as the researcher anticipates for they normally have busy schedules so it will be easy for them to fill in questionnaires. These were interviewed one at a time to maximize benefits of face to face interaction with the research like in depth penetrating of incomplete and sensitive area simplifying explaining questions and essays.

Questionnaires

These were self-administered questionnaires to household farmers, local leaders, in the area of the study research. They contained both closed and open-ended questions. Closed ended questions were helpful in getting precise responses, while open ended questions were employed to get detailed information on the subject matter precise responses. Questionnaires targeted all respondents in the study.

Geographical positioning scale.

It was mainly used when conducting a field data survey. It helped to obtain systematic data regarding the area that one wishes to study. For one to use a GPS, one must have a data collection form which included the following information where records were made at the start of each survey day.

Data collection procedure.

After obtaining ethical approval from the research ethical committee, the researcher obtained permission from chairman LC1 Rwakishaakizi village to access the participants. During this process, the researcher explained to the relevant bodies the purpose, objectives and benefits of this study. Prior to data collection the researcher made a pre-visit to study the area to seek permission from the responsible personnel so as to get the best time for the data collection exercise.

Before administering the interviewer questionnaires, the researcher fully explained the questions to the participants. Interviewer questionnaires were used to collect data for those who did not know how to read and write. Interpretation was used for participants who were illiterate. This was done so as to facilitate smooth data collection from the participants. Each filled-in questionnaire was checked for accuracy and completeness by the researcher

Data analysis

Collected data from the questionnaires were sorted, edited and coded. Coded data were analyzed using a computer package called SPSS used for addition, division, construction of tables and graphs reflecting the participants' responses in frequencies and percentages. The respondents' views were quoted directly where necessary. Data were analyzed thematically. The researcher reviewed all the respondents' views from the interviews that were conducted. Findings were presented in tabular form, pie-chart and graphs using SPSS program.

Limitations and delimitations of the study

The study faced the following limitations; hesitation by experts to give responses to the researcher. This was managed through explaining the reason of undertaking the research study so as to minimize the respondents' bias towards the study that will be conducted. Less time that was given to the respondents to think and the likelihood to collect biased data. This was managed by directing the respondents to the research questions so as to remain in the scope of the research study. Inadequate funds to conduct the study with ease. The researcher tried to fund raise for adequate funds to complete her research on time.

Ethical considerations

An introductory letter from the Faculty of Interdisciplinary studies of Mbarara University of Science and Technology introducing the researcher to the authority of Nyakayojo was carried by the researcher and presented to the local council administrators of Rwakishaakizi seeking for permission to carry out research in the stipulated area. In every household for each respondent, the researcher first introduced herself to seek permission from the respondents on their will. The researcher also ensured that the respondents' names do not appear anywhere in the records for confidentiality purposes. Also, the respondents were assured that the information obtained from them was not be used anywhere other than for the academic intended use.

Results

These tables show the overview status on different parameters of the respondents encountered while collecting data in Rwakishakizi-Nakayojo, Mbarara.

Gender	Frequency	Percentage
Male	31	43.7
Female	40	56.3
Age		
20-30	14	19.7
31-40	25	35.2
41-50	30	42.3
51 and above	2	2.8
Marital status		
Single	8	11.3
Married	51	71.8
Widowed	12	16.9
Source of income		
Agriculture	52	73.2
Business	13	18.3
Teacher	6	8.5
Land size		
0-5	44	62
06-Oct	17	23.9
Nov-20	10	14.1

Table 1: Back ground of the respondents.

From the research conducted, out of 80 questionnaires distributed 71were filled and returned for analysis. From 71 respondents, 56.3% were females and 43.7% males.

The respondents dealt with had their livelihood depended on activities like Agriculture, Business and Teaching in the percentages of 73.2%, 18.3% and 8.5% respectively. Majority of the respondents reported to have the small plots of land of relatively 0-5 acres of land covering 62% of the respondents.

How do you plough your land	Frequency	Percentage
Use of hoes and pangas	54	76
Use of tractors	17	24
Do you belong to any tractor group		
Yes	65	91
No	6	9
If yes how often do you access in a year		
Twice	3	59

Thrice	3	41
How many members are in your tractor group		
20-25	3	51
26-30	3	49
How many know how to use a tractor in your tractor group		
02-May	3	50
06-Aug	3	49

Table 2: Showing tractor ownership and usage.

Are there some crops you prefer to grow using a tractor	**Frequency**	**Percentage**
No	33	54
Yes	38	46
If given the following what would you choose		
Animal	9	12
Tractor	35	49
Hoe	27	38
Give a reason for your answer		
It's cheap to maintain	3	0.04
Its fast	17	27
It's simple to work with	12	19
It's the one am used to	10	16
Fuel is expensive	21	33
which breeds do you prefer to rear		
local breeds	29	51
hybrids	27	
		49

Table 3: Showing preferences in using the tractor.

Are you involved in mechanizing agriculture	**Frequency**	**Percentage**
Yes	42	51
No	29	49
If yes to what extent		
0-20%	14	48
21-40%	9	31
41-60%	6	20

Which challenges are involved in mechanizing agriculture		
Inadequate land, little knowledge to operate some machines, high costs of inputs		
Inadequate land, limited market for inputs, high costs of inputs,	29	40
Inadequate land		
Inadequate land, high costs of inputs, limited sources of quality inputs	7	9
Inadequate land, high costs		
high costs of inputs	16	9
systems	5	7
	5	7
	2	9
Are you okay with the level of mechanization in your area		
Yes	60	84
No	11	16

Table 4: Showing the extent of mechanization.

Generally, most respondents reported to be using hand hoes to cultivate their land over the use of tractor and other improved tools. In Rwakishakizi, only less than 20% of the respondents use tractor in their gardens and still less than 50% of those using the tractor know how to operate it which indicates a low and slow rate of agricultural mechanization. However this was as a result of many challenges facing the small holder farmers in the area for example the limited access to agricultural mechanization tools like tractors and improved varieties for mechanized agriculture.

Basing on the results from the table 6 above, almost every farmer (100%) believes that its easy and possible to improve on the status of mechanization of agriculture in the eare.as suggested by the farmers, supporting the existing famer groups and the cooperatives through the provision of machinery at subsidized price and sensitizing people can help to improve the mechanization status of agriculture in the area. However the 20% of the farmers believes supplying tractors or any other agricultural mechanization related equipment would help to improve the mechanization status in the area.

Possible suggested strategies from the farmers

From the table 6, almost every farmer (100%) believes that its easy and possible to improve on the status of mechanization of agriculture in the area as suggested by the farmers, supporting the existing famer groups and the cooperatives through the provision of machinery at subsidized price and sensitizing people can help to improve the mechanization status of agriculture in the area.

However the 20% of the farmers believes supplying tractors or any other agricultural mechanization related equipment would help to improve the mechanization status in the area. This is so less because the agriculture of most Ugandans is characterized by small area holdings that less require tractors. There for the government should not stop at supplying tractors as the only way of mechanization, but rather study the area and involve people on how best they can be helped to improve their livelihood status because the farmers know themselves better.

CONCLUSION

In Rwakishakizi, only 18% and 54% of people who practiced agriculture use tractor and hand home respectively to plough their land. The agriculture of Rwakishakizi was highly characterized by the small land holdings making it pure subsistence. From findings, 62%, 23.9%, 14.1% of the respondents had land size of the range 0-5, 6-10 and 11-20 acres respectively. Women took the largest portion in agriculture representing 56.3% as opposed to men with 43.7%. Most of agriculture activities are found to be run by women. This was evident in the questionnaires filled as most women tried to fill almost all questions set in the questionnaire. Challenges facing agriculture in Rwakishakizi ranged from, inadequate land, little knowledge to operate some machines, high costs of inputs, limited market for outputs, limited sources of quality inputs and limited accessibility to mechanization facilities and services. As from the findings, the following were also suggested as measures to harness the farming challenges; through market stabilization, give tractors to farmers in groups, through teaching farmers about importance of mechanization, provision of mechanization facilities, supply more machines, give us more land, through formation of cooperatives, supporting the existing mechanization, creating awareness, support cooperative, formation of farmer groups, financial aid in terms of loans, embracing technology change, getting subsidized machines, sensitizing people on mechanization.

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