

**PADDY FARMERS KNOWLEDGE, PERCEPTION AND SATISFACTION
ON THE USE OF FARM MACHINERY IN ZAMFARA STATE NIGERIA**

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ABSTRACT

The present research study was carried out regarding Farmers Knowledge, perception and satisfaction on the use of farm machinery in Zamfara State. The study is representing the perception of Farmers, Extension Agents and the General Public. A total sample of 80 was selected using simple random sampling techniques. Primary data was collected through a structured interview schedule administered by respondents. Data was analyzed using arithmetic mean, frequencies, percentages, and descriptive statistics. The major Conclusion drawn from the study were: Responses recorded regarding perception on the influence of Agricultural mechanization on Farmers crop yield have shown that majority of the respondents 30 (37.5%) and 28 (35%) reported adoption of mechanical land clearance increases crop yield and adoption of mechanical soil sowing and fertilizer application increases crop yield. Opinion regarding satisfaction on the use of machinery indicates that 28 (35%) 21 (26.2%) and 13 (16.2%) reported that the technology used is simple production enhanced and farm machinery suits all types of farms. Perception regarding the influence of Agricultural Mechanization on Farmers standard of Living revealed that majority of the respondents 36(45%) and 23(28.7%) reported that Agricultural Mechanization had encouraged farmers to have better nutrition and it also enabled farmers to have better health facilities. Survey results regarding problems in the use of farm machinery in General indicates that majority 40(50%) and 24(30%) of the respondents reported land tenure system herdsman/farmer clash and Inadequate Farming equipment's. A total of 3(3.7%) and 13(16.2%) agreed on less land to natural disaster and lack of access to fertilizer and improved seeds. On the basis of the above conclusions the following recommendation are made should be provided to farmers in the form of subsidy and ensure that the right category of farmers benefit 2. Harvesting at the right time is important for achieving maximum yield and maintaining grain quality. 3.

Embracing Modern Technology, adhering to best practice and consistent monitoring performance will ensure successful and productive paddy production in the study area. Finally Null Hypothesis Ho is Rejected and Alternate Hypothesis Ha is accepted.

Keywords: Agricultural Mechanization, Farmers' Knowledge and Perception, Farmer Satisfaction, Crop Yield and Productivity, Farm Machinery Adoption

INTRODUCTION

Farm mechanization plays an important role in food production in Nigeria. Today, increased mechanization makes it easier to meet the demand for food production which emphasized the importance of using agricultural machineries by farmers for their farm operations. Agricultural mechanization is a system that uses more machines and technologies to reduce the use of human and animal power in agricultural production, preservation and processing more efficiently and quickly. Mechanization saves materials, time, labour and money. At the same time, it increases farming efficiency (intensity) and productivity of farming and improves crop quality, leading to profitable agriculture and creating jobs' opportunities (Nazia, 2021).

Agricultural mechanization reduces the difficulty and increases the safety and comfort of the working environment. It improves yield, crop intensity and production. It increases the income of Agricultural Workers, which in turn improves social equality and general standard of living. If farm machinery is used properly, it will conserve and rationally use natural resources and reduce production costs. It enables faster agricultural operation produces higher quality agricultural product and more (Sigdel et al., 2022).

Proper Mechanization Interventions and technical knowledge would enhance the production and productivity of rice in Zamfara State. Mechanization is one important aspect that can be applied in every stage of rice production (Ayandiji and Olofinsao, 2015). Poor mechanization of small and fragmented land holdings, labour shortage and youth labour migration are the major drawbacks to better rice production.

Paddy farmers only use farm machinery during harvesting and threshing at a low level but still there are very poor and no use of farm machinery during other stages of production. New Machineries like thresher rotator cultivator, combine harvester, Transplanters etc. are very useful for rice production and can be adopted but lack of mechanization facilities and lack of awareness and training for the farmers limit the use of farm mechanization (Sigdel et al., 2022).

Most of the farmers lack the required skills for the use of farm machinery and because of the high price most of the farmers neither afford nor hire those implements. To address the major problem like higher cost of cultivation, labour shortages, poor commercialization and traditional practices in rice production it is very important to imply mechanization in Zamfara State of Nigeria. There is a need to increase food production to meet the increasing population from shrinking land resources. Better management of inputs and crops is significant to improve production and for that mechanization would be important so that production would be increased despite low labour availability for rice production (Bite et al., 2015).

Because of various limitations especially lack of labour during critical time of various stages like transplanting, intercultural operations, harvesting and thrashing justify mechanization in paddy cultivation. Moreover, paddy cultivation is a laborious task and requires a greater number of laborers during various stages of rice production from which requires the use of available farm machinery to a great extent (Ani et al., 2018).

The profitable use of agricultural machinery and equipment is influenced by how well it is set up managed and operated. Bad quality of agricultural operations results in lower levels of production. Also, wrong selection of machinery can lead to a negative impact on environment and in particular on the soil. Lack of knowledge and ignorance of the technology used in agricultural mechanization will offset any expected improvement in farm profit to ability (Akinola, 2019).

Encouraging and facilitating the creation of local organization among small scale-farmers is a very effective means of disseminating information on mechanization. Farmers organizations have two main roles to play in assisting individuals' farmers with agricultural, mechanization issues (Akinyele, 2019).

First, they could encourage and promote the sharing of machinery among different farm households. They could enable individual households to use machinery and equipment which is beyond each individual capacity to buy. However, the mechanisms for successful joint use of machinery are often complex. This often relies on the existence of tradition of sharing and assisting in the particular community (Amare and Endalew, 2016).

Enormous emergence had been put by various scientist, extension workers and organizations to achieve higher production and productivity of rice through mechanization. Numerous awareness programmes are needed for the farmers at the grass root level. Adequate level of other input like knowledge, and skill are also important to consider. Keeping all those in consideration the present study has been undertaken which will provide reliable information on knowledge, adoption level along with attitude and satisfaction of the farmers regarding farm machinery and implements use in paddy production. Findings of this study will facilitate for appropriate decisions and actions by policy makers, professionals and other stakeholders to promote farm mechanization in Zamfara state of Nigeria.

PROBLEM STATEMENT

Problem faced by paddy farmers using agricultural machinery in Zamfara state is an important issue for the farmers. Major problems may be fragmented lands, high prices of agricultural machines, lack of quality machines for farm operations, lack of knowledge of the users about using agricultural machines and lack of awareness regarding agricultural machineries. Due to this the problem faced in using agricultural machineries, is in morbid condition in Zamfara state. In these circumstances farmers count economic loss with grief. Considering the above-mentioned points the researchers become highly interested to conduct this research so as to assist farmers in addressing the above problems.

OVERALL OBJECTIVES OF THE STUDY

The overall objectives of the study is to investigate paddy farmers problems, knowledge, perception and satisfaction on the use of farm machinery.

SPECIFIC OBJECTIVES OF THE STUDY

- Examine socioeconomic characteristics and land tenure system and ownership pattern.
- Investigate services offered by extension agents in the study area.
- Assess the perception of respondents regarding role and influence of farm machinery on crop yield
- Investigate the influence of farm machinery on income, living standard and satisfaction.
- Identify the problems and prospects of farm machinery and recommend solutions to the problems.

RESEARCH QUESTIONS

- Did farmers have access economic resources and tenure and owners hip pattern?
- Did farmers have access to credit and services offered by extension agents?
- What is the perception of respondents regarding the influence of farm Machinery on crop yield?
- What are the influences of farm machinery on farmers living standards and satisfaction?
- What are the problems and prospects of farm machinery in the study area?

HYPOTHESIS

The following hypothesis were proposed for the study:

- Ho:** Land tenure and ownership would not have significant effect on agricultural machineries
- Ha:** Land tenure and ownership would have significant effect on agricultural machineries.
- Ho:** Services offered by extension agents would not have significant effect on agricultural machineries.
- Ha:** Services offered by extension agents would have significant effect on agricultural machineries.
- Ho:** The influence of agricultural machineries would not have significant effect on crop yield.
- Ha:** The influence of agricultural machineries would have significant effect on crop yield.

Ho: The influence of agricultural machineries would not have significant effect on farmers income, living standard and satisfaction.

Ha: The influence of agricultural machineries would have significant effect on farmers income, living standard, and satisfaction.

ASUMPTION OF THE STUDY

In this study, the following assumptions were taken into consideration while undertaken this study:

- The respondents selected for this study were competent enough to provide responses to the questions included in the interview.
- The views and opinions furnished by the respondents were the representative views and opinion of all the farmers in the study area.
- The responses furnished by the respondents were valid and reliable.
- The data collected by the researcher is free from bias.
- Data were formally and independently distributed.
- The sampling procedures followed for this study, include the analysis of data and interpretations of findings were free from all biases.

SIGNIFICANCE OF THE STUDY

Nigerian agriculture is still characterized by small land holdings. These holdings farm lands that are rain fed, fertilizer use, agricultural activities are manually carried out and improved seed variety not adopted. This calls for mechanization of agricultural production operations from land clearing, sowing, harvesting and processing and storage of food. In this study Paddy Farmers will be assisted to obtain the requisite knowledge and satisfaction on the use of farm machinery.

REVIEW OF LITERATURE

In this section, reviews of the related literature to the study are presented. The researcher intensively searched the internet and available books, journals, and printed materials from different sources at home and abroad.

First Section: Theoretical concept of farm mechanization.

Second Section: Review related to Impact of Agric Mechanization on Agriculture and as well as the use of Agricultural Machineris.

Third section: The conceptual framework of the study.

FARM MECHANIZATION

Farm mechanization is the process of driving energy between man and materials (Khalique Zaman et al., 2007). In a farm production system powered by engines or motorized equipment (Negrete, 2018). It simplifies and reduces heavy work, compensates for labour shortages, enhances productivity and may contribute to the mitigation of climate-related threats (Negrete, 2018). Mechanization is an operative process through which improved agricultural activities and optimum crop production can be achieved. Currently, the mechanical inputs were used in different farming activities in Nigeria like pump, power tillers, sub soilers, weeder, sprayers, combine harvesters and threshers for sustainable crop production. The cropping intensity and production of crops have recently been increased significantly due to adoption of mechanized tillage, irrigation and spraying practices (Adetimehin et al, 2018).

IMPACT OF AGRICULTURAL MECHANIZATION ON AGRICULTURE

In Africa and Asia Pacific Region, the promotion of agricultural modernization and mechanization has made a tremendous impact in the agricultural sector. Many of the technologies had been utilized in food production areas. Agricultural mechanization was increasingly important in modern agricultural production. It reduces difficulty in work equity and increases labor productivity and farm yield. It corrects environmental problems and increases crop yield, crop intensity and improved food security. The income of farmers also improved.

Mechanization improves the quality of life, safety, use of standard equipment, reduces drudgery and is more efficiently used. It conserves time and energy needed for agricultural activities. Modern science and technology in agriculture are very essential for development of agricultural mechanization (Soni, 2010).

USE OF AGRICULTURAL MACHINERIES

Use of technology had a decision that is fully utilized in providing the best and improved technology. The best was known and

adopted by farmers to improve food production, increase yield and reduce drudgery in normal agricultural operations over extended period of time.

Machinery Utilization as the actual use of machines compared to the potential capacity. In particular, we focus on the number of hours of actual use in relation to scale and average among different equipment types. In agricultural engineering, mechanization is often referred to as only physical operations (Enacher, 2015). According to Oxford dictionary, mechanization is the actual use of an idea rather than the theoretical method as opposed to it.

Therefore, in terms of multifunction use or use of agricultural machineries were used to cover all the various of employing field farm machineries such a way that capital outlay or running costs may be reduced by using the machineries on more than farm (Lonnemark, 1967).

FARM SELECTED CHARACTERISTICS AND THEIR CONTRIBUTION TO THE USE OF AGRICULTURAL MACHINERIES

Age and Use of Agricultural Machineries:

Khan (2020) conducted a study and found that age had a significant contribution with the use of agric machineries.

Rahman (2020) conducted a study and found in his research that age had a long-term effect/impact on using agricultural machineries.

Sabi et al. (2014) revealed that age of farmers showed a positive and significant contribution with their technological gap and adoption.

Sharma (2010) found that there was a positive and non-significant contribution between age and adoption of chillie technology by farmers.

Joseph (2007) found that an average farmer with an average age of 44 years and with other farmers' characteristics would almost certainly adopt 90% adopt an EFTE. He also reported that the regression coefficient for age was positive and statistically significant at the one percent level. The positive and significant contribution of age suggests that adoption of IFTE was higher among older farmers than the younger ones.

Hussain (1999) conducted a study on age of farmers and adoption of technology. He found that farmers' age had no

contribution to the use of fertilizer application in their farming activities.

Level of Education and Use of Agricultural Machineries

Khan (2020) conducted a study and found that education level significantly contributed with the use of agricultural machines.

Owolabi (2019) showed that farmers' education plays an important role in the realization of farming mechanization among farmers' use of agricultural machineries.

Pullalu (2018) reported that educational background (formal human capital formation) was not found to significantly affect the use of agricultural machineries.

Sanam (2016) found that education had a significant contribution with respondents' use of farm machinery.

Islam (2003) conducted a study on the use of organic fertilizer. He found that education had a significant contribution with respondents' use of farm machinery. There was contribution of farmers' education and uses of different fertilizer application in their farming.

Dulle and Aina (1999) observed that education influences the ability to access information, understand and use of new agricultural innovation practices.

Farm Size and Use of Agricultural Machineries

Khan (2020) conducted a study and found that farm size had a non-significant relationship with the use of agricultural machineries.

Ani (2018) found that in his studies the larger farm size reduces negative perceptions about implement use of agricultural machineries (transplanter and combine harvester).

Deininger (2018) showed that farm size and yield per unit of land had a positive impact.

On Machine Utilization

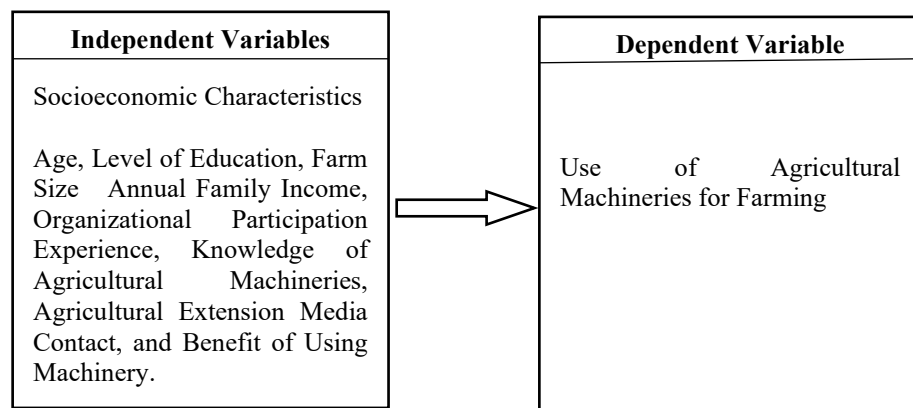
Keijiro (2016) found that unless new policy measures were taken to expand farm size, Asia as a whole risk losing its comparative advantage in using agricultural machinery and becoming a grain importer in the future. He showed with his studies that farm size had a significant contribution on using agricultural machinery.

Islam (2011) conducted research where large farmers had purchased high-speed harrows and rotary seeders, using them commercially with other farmers. From a field visit to Raj Bari and Dinajpur, it is known that farmers who purchased agricultural machinery had switched to commercial farming using machinery.

Ghosh (2016) found that farm size had significant contribution on using agricultural machinery.

THE CONCEPTUAL FRAMEWORK OF THE STUDY

In scientific research, a conceptual framework is the selection and measurement of variables. A properly formulated research hypothesis contains one dependent variable and one or more independent variables. This study involves farmers’ characteristics.



RESEARCH METHODOLOGY

Research Design: This research employed descriptive survey method. It entails the use of questionnaire and interviews to enable the researcher to appropriately get appropriate responses from the respondents which may represent the actual situations of the phenomenon. Paddy farmers’ knowledge, perception and satisfaction on the use of farm machinery in Zamfara State.

Sample Selection and Sampling Techniques: Simple random techniques were used in selecting the sample size of 80 from a population of farmers in four wards of Gusau LGA as follows:

SAMPLE SIZE SELECTION

Collection Centre	Sample Size
Magami	20
Wanke	20
Damba	20
Tudunwada	20
Total	80

Instrument of Data Collection: Structured questionnaires and interview were designed for 80 respondents in Gusau LGA. The preferred methods of data collection for this research are questionnaires and key informant interview. The survey consisted of closed and open-ended questions which are easy to quantify. This means it is easy to test for reliability. On the other hand, key informant interviews are fairly quick to conduct which means that many interviews can take place within a short amount of time.

Administration of the Questionnaire: A total of 80 questionnaires were distributed to sample farmers in the study area. The questions were based on research questions and objectives and they were grouped into two sections. Section (A) dealt with socio-economic characteristics of respondents such as age, sex, qualification, marital status, educational background, income, years of farming experience, size of land and number/cooperative organization belong. Section (B) dealt with responses from farmers on their knowledge, perception, and satisfaction on the use of farm machinery in the study area.

Validity and Reliability of the Questionnaire: The effectiveness of the research questions were confirmed by some experts in the field. The questionnaire was also tested by them and given to people who have adequate knowledge about the topic for their own confirmation. The final questionnaire was written and presented to project supervisor to give his final recommendations and approval.

DATA ANALYSIS

The researcher used both qualitative and quantitative data but it's more rooted on qualitative approach so that data collected can easily be understood by all stakeholders. Content analysis was used to analyze respondent views about their perception and satisfaction on

the use of farm machinery. Descriptive method of statistics that involved calculating frequency and percentages to analyze the data. Data was interpreted to draw up conclusions.

RESULTS AND DISCUSSIONS

Socioeconomic characteristics of respondents in the study area:

TABLE 4.1.1
SEX/GENDER

Gender	Frequency	Percentage
Male	62	77.5
Female	18	22.5
Total	80	100

Source: Field Survey Data, 2026.

Opinion regarding gender is presented in Table 4.1.1. The results indicates that 62(77.5%) are male while 18(22.5%) are female respondents in the study area.

TABLE 4.1.2
AGE OF RESPONDENTS

Age	Frequency	Percentage
Less than 20 years	12	15
18–20 years	16	20
21–30 years	20	25
31–40 years	24	30
41–50 years	5	6.2
Above 50 years	3	3.7
Total	80	100

Source: Field Survey Data, 2026.

Survey results regarding age are presented in Table 4:1.2. The results revealed that 12(15%) (6(20%) and 20(25%)) of the respondents are less than 20 years, 18–20, and 21–30 years of age. A total of 24(30%), 5(6.2%) and 3(3.7%) are in the age range of 31–40, 41–50 and Above 50 years respectively.

TABLE 4.1.3
EDUCATIONAL LEVEL

Educational Level	Frequency	Percentage
Adult Education	24	30
QurAnic Education	15	18.7
Primary Education	13	16.2
Secondary Education	20	25
Tertiary Education	8	10
Total	80	100

Source: Field Survey Data, 2026.

Data presented regarding educational level of respondents is presented in Table 4.1.3. The results revealed that majority 24(30%) and 20(25%) possess adult and quaranic education. A total of 15(18.7%),13(16.2%) and 8(10%) of the respondents are educated at quranic, primary and tertiary level of education in the study area.

TABLE 4.1.4
OCCUPATION

Occupation	Frequency	Percentage
Farming	34	42.5
Trading	14	17.5
Poultry/livestock	10	12.5
Civil Servants	16	20.0
Rearing domestic animals	6	7.5
Total	80	100

Source: Field Survey data, 2026.

Perception regarding occupation is presented in Table 4.1.4. The results revealed that majority 34(42.5%) of the respondents are farmers. A total of 14(17.5%) 10(12.5%) and 16(20%) are Traders, poultry/livestock business and civil servants respectively. Only 6(7.5%) of the respondents are rearing domestic animals in the study area.

TABLE 4.1.5
MARTIAL STATUS

Martial Status	Frequency	Percentage
Single	9	11.2
Married	44	55
Divorced	12	15
Widow	15	18.7
Total	80	100

Source: Field Survey data, 2026.

Data presented regarding Martial status is presented in Table 4.1.5. The results have shown that majority of the respondents 44 (55%) are married. A total of 9 (11.2%) 12 (15%) and 15 (18.7%) are single, divorced and widow respectively.

TABLE 4.1.6
YEARS OF FARMING EXPERIENCE

Years of Farming Experience	Frequency	Percentage
1 - 10 years	16	20
11 - 20 years	22	27.5
21 - 30 years	32	40
31 - 40 years	6	7.5
Above 40 years	4	5.0
Total	80	100

Source: Field Survey Data, 2026

Responses recorded regarding farming experience is presented in Table 4.1.6. The results shows that 16 (20%) and 22 (27.5%) of the respondents are in the age range of 1-10 and 11-20 years farming experience. A total of 32 (40%) 6 (7.5%) and 4 (5%) are in the range of 21-30, 31-40 and above 40 years respectively. The above findings are in line with Khadija M.K (2025) who reported 13 (16.2%), 24 (30%) and 22 (27.5%) of the respondents possess 1-10, 11-20 and 21-30 years farming experience. A total of 13 (16.2%) and 8 (10%) had between 31-40 and above 40 years farming experience.

TABLE 4.1.7
LAND TENURE SYSTEM AND OWNERSHIP

Land/Tenure & ownership	Frequency	Percentage
Bought	33	41.2
Leased	13	16.2
Inherited	26	32.5
Renting	8	10.0
Total	80	100

Source: Field Survey data, 2026.

Opinion regarding Land Tenure System and ownership is presented in Table 4.1.7. The results indicate that a majority of 33 (41.2%) and 13 (16.2%) of the respondents stated that they bought and inherited their lands, while a total of 26 (32.5%) and 8 (10%) agreed that they leased and rented their lands.

TABLE 4.1.8
SERVICES OFFERED BY EXTENSION AGENTS

Services offered by Extended Agent	Frequency	Percentage
Poor	20	25
Good	48	60
Very Good	8	10
Excellent	4	5
Total	80	100

Source: Field Survey Data, 2026

Survey results regarding services offered by Extension Agents is presented in Table 4.1.8. The results show that 20 (25%), 48 (60%), 8 (10%) and 4 (5%) of the respondents reported poor, good, very good and excellent respectively.

TABLE 4.1.9
PERCEPTION ON THE INFLUENCE OF AGRIC MECHANIZATION
ON FARMERS CROP YIELD

Influence of Agric mechanization	Frequency	Percentage
Adoption of mechanical land clearance increases crop yield	30	37.5
The use of irrigation system to increases crop yield	14	17.5
Adoption of mechanical sowing and fertilizer application increases crop yield	28	35.0
Use of mechanized weeding and sprayers increases crop yield	8	10.0
Total	80	100

Source: Field Survey Data, 2026.

Responses recorded regarding perception on the influence of Agric mechanization on Farmers crop yield is presented in Table 4.1.9. The results revealed that majority of the respondents 30 (37.5%) and 28 (35%) reported adoption of Mechanized Land clearance increases crop yield and Adoption of mechanical sowing and fertilizer application increases crop yield. A total of 14 (17.5%) and 8 (10%) agreed on the use of irrigation system to increase crop yield and the use of mechanical weeding and sprayers increases crop yield.

TABLE 4.1.10
PERCEPTION ON THE INFLUENCE OF AGRIC MECHANIZATION
ON FARMERS INCOME

Influence: Agric Mechanization on Farmers Income	Frequency	Percentage
I was able to invest in other business as a result of mechanical or production	24	30
I was able to settle some of debt as a result of debating mechanical or production	19	23.7
I have money to spend now from mechanical and production	15	18.7
Adoption of Mechanized crop production has increased my income	22	27.5
Total	80	100

Source: Field Survey Data, 2026.

Data presented regarding Influence of Agric Mechanization on Farmers Income is presented in Table 4.1.10. The results indicates that 24(30%) and 19(23.7%) of the respondents agreed that they were able to invest in other businesses as a result of mechanized crop production. A total of 19(23.7%) and 22(27.5%) reported they were able to settle some of their debt as a result of adopting mechanized crop production. A total of 15(18.7%) and 22(27.5%) also stated that they borrow money to spend now from mechanized crop production and the adoption of mechanized crop production has increased their income in the study area.

TABLE 4.1.11
INFLUENCE OF AGRIC MECHANIZATION FARMERS STANDARD
OF LIVING

Influence of Agric Mechanism Farmers standard of Living	Frequency	Percentage
Agric Mechanization had encouraged farmers to have better nutrition	36	45.0
Agric Mechanization had enabled farmers to have better health facilities	23	28.7
Agric Mechanization enable farmers to send their children to school	17	21.2
Agric Mechanization enabled farmers to enjoy better housing and luxury items of life	4	5.0
Total	80	100

Source: Field Survey Data, 2026

Perception regarding the influence of Agric Mechanization on Farmers standard of Living is presented in Table 4.1.11. The results revealed that majority of the respondents 36(45%) and 23(28.7%) reported that Agric Mechanization had encouraged farmers to have better nutrition and it also enabled farmers to have better health facilities. A total of 17(21.2%) and 4(5%) agreed that they were able to send their children to school due the influence of Agric Mechanization and also enabled farmers to enjoy better housing and luxury items of life.

TABLE 4.1.12
SATISFACTION OF RESPONDENTS REGARDING
USE OF FARM MACHINERY

Satisfaction regarding use of Farm machinery	Frequency	Percentage
The Technology is Simple	28	35.0
Production enhanced	21	26.2
Low Labour requirements	7	8.7
Cultural Management will be easier	8	10.0
Farm machinery suits all types of farms	13	16.2
Time saving advantage	3	3.7
Total	80	100

Source: Field Survey Data, 2026.

Opinion regarding satisfaction on the use of farm machinery is presented in Table 4.1.12. The results have shown that majority of the respondents 28(35%), 21(26.2%) and 13(16.2%) reported the technology used is simple, production enhancement and farm machinery suits all types of farms. Only 8(10%) and 3(3.7%) reported cultural management will be easier and time saving advantage respectively. The above findings were in line with Sigdel et al, 2022 who reported satisfaction level of respondents from Jpha was higher as compared to other districts in the study area.

TABLE 4.1.13
PROBLEMS ON THE USE OF FARM MACHINERY IN GENERAL

Problems in the use of farm machinery	Frequency	Percentage
Land Tenure System Herdsmen/Farmer clash	40	50.0
Less land to natural disaster	3	3.7
Inadequate Farming equipment	24	30.0
Lack of Access to Fertilizer & improved seeds	13	16.2
Total	80	100

Source: Field Survey Data, 2026.

Survey results regarding problems in the use of farm machinery in General is presented in Table 4.1.13. The results indicates that majority 40(50%) and 24(30%) of the respondents reported land tenure system herdsmen/farmer clash and Inadequate Farming equipment's. A total of 3(3.7%) and 13(16.2%) agreed on less land to natural disaster and lack of access to fertilizer and improved seeds.

SUMMARY

The study on Paddy farmers, knowledge, perception and satisfaction on the use of farm Machinery in Zamfara State of Nigeria was accomplished larger area was accomplished. To achieve the aim of the study five research questions were initiated. Survey research design was employed for the study. A total of 80 participants were randomly selected using a simple random technique in the study area. A structured questionnaire designed by the researcher was used for data collection. Data obtained were analyzed using descriptive statistics, frequencies and percentages to draw up conclusions.

RECOMMENDATIONS

On the basis of the above conclusions the following recommendations are made:

- There is need for information leaflets on the following topics to educate farmers on i. Paddy size, and factors affecting combine harvesting efficiency ii. Crop establishment method and iii. Optimum time of harvesting rice and drying.
- It is very important to promote the development of mechanized agriculture for a commercialization that are all actors in the rice value chain are engaged.
- Mechanized farm tools and equipment's should be provided to farmers in the form of subsidy and ensure that the right category of farmers' benefit.
- There is need for collaboration between Government and NGOs to provide regular trainings to educate farmers on the use of farm machinery in the study area.
- Government should provide adequate funding to Agric mechanization centres to provide efficient services to farmers in the study area.
- Government should increase employment opportunities for tractor operators, technicians and craftsmen.
- Harvesting at the right time is important for achieving maximum yield and maintaining grain quality.
- Monitoring the moisture content of the paddy is essential to determine the optimal harvest time.
- Farmers in the study areas would create an environment where their farm machines can function effectively.

- To ensure consistent and efficient performance farmers should regularly inspect and service their machines promptly so as to address any wear and tear.
- Efficient threshing and separation achieved through manipulation of advanced machinery settings translates into tangible benefits for farmers.
- Embracing Modern Technology adhering to best practices and consistently monitoring performance will ensure a successful and productive paddy production in the study area.
- Farmers in the study area are advised to use the type of farm machinery that fit a particular purpose in terms of cost and technology to ensure that the required services are carried out on time to maximize machinery efficiency.
- Farmers in the study area are advised to use new machinery equipped with new technologies to ensure the required services are carried out on time to maximize efficiency.

CONCLUSIONS

The major conclusions drawn from the study were presented as follows:

Survey results regarding awareness on the role of farm machinery revealed that majority 23(28.7% and 25(31.2%) of the respondents reported that machinery deals with machines in Africa with this mechanization reduces drudgery. A total of 16(20%) 10(12.5%) and 6(7.5%) agreed on timely completion of farm operations, precision, in the usage of farm inputs and minimizes labour requirements respectively in the study area.

Responses recorded regarding perception on the influence of Agric Mechanization on farmers crop yield have shown that majority of the respondents 30(37.5%) and 28(35%) reported adoption of mechanized land clearance increases crop yield and adoption of mechanized sowing and fertilizer application increases crop yield. A total of 14(17.5%) and 8(10%) agreed on the use of irrigation system to increase crop yield and the use of mechanized weeding and sprayers increases crop yield.

Perception regarding influence of Agric mechanization on farmers standard of living revealed that majority of the respondents 36 (45%) and 23(28.7%) reported that Agric mechanization had

encouraged farmers to have a better nutrition and it also enable farmers to have better health facilities. A total of 17(21%) and 4(5%) agreed that they were able to send their children to school due to influence of Agric mechanization and also enjoy better housing and luxury items of life in the study areas.

Opinion regarding satisfaction on the use of machinery indicates that 28 (35%) 21 (26.2%) and 13 (16.2%) reported that the technology used is simple, production enhanced and farm machinery suits all types of farms. Only 8 (10%) and 3 (3.7%) reported cultural management will be easier and time saving advantage respectively.

Data presented regarding problems in the use of farm machinery shows that majority 40 (58%) and 24 (30%) of the respondents reported land tenure system, herdsmen farmer clash and inadequate farming equipment's. A total of 3 (3.7%) and 13 (16.2%) agreed on less land to natural disasters and lack of access to fertilizer and improved seed in the study area.

Perception of regarding future prospects of farm mechanization indicates that the 17.5% and 18(22.5)% of the respondents agreed with better food self-sufficiency and foreign exchange earnings. A total of 20 (25%) and 28 (35%) reported improved packaging, processing and storage. Finally, employment opportunities for youth and women is one of the greatest prospects of farm mechanization in the study area.

Finally, it can be concluded that the larger the farm size, the more training provided by Government Extension Department and the longer farming experience, the lesser the negative perception on the use of farm machinery in the study area. Educational background, number of family members and yield per hectare are not found to be significantly affecting farmers negative perception on the use of farm machinery. Null Hypothesis is rejected and Alternate Hypothesis is accepted.

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