



Original Scientific paper

Originalni naučni rad

DOI: 10.5937/POLJTEH2504030K.

**ASSESSMENT OF ARABLE CROP PROCESSORS' SATISFACTION
WITH UTILIZATION OF NIGERIAN STORED PRODUCTS
RESEARCH INSTITUTE (NSPRI) POSTHARVEST TECHNOLOGIES
IN ALAPA COMMUNITY, KWARA STATE, NIGERIA**

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Abstract: The study assessed arable crop processors' satisfaction with utilization of NSPRI postharvest Technologies in Alapa Community of Kwara State, Nigeria. The population of the study includes all the arable crop processors in the study area. A multistage sampling procedure was employed to select 48 respondents for the study. The primary data obtained with the aid of a well-structured questionnaire were analyzed using descriptive and inferential statistics (Linear Regression model).

The mean age of the respondents stood at 38.31 ± 10.743 years, majority of the respondents were male (60.4%) with a mean house holds size of 5.48 ± 1.203 . Most (WMS = 3.44) of the respondents were satisfied with the quality of products (color, taste and odour) derived from the usage of NSPRI postharvest technologies in the study area. Majority (54.2%) of the respondents were satisfied with NSPRI parabolic solar dryer on high level. Lack of training (WMS = 2.10) had been identified as the major challenge faced in the utilization of NSPRI postharvest technologies in Alapa community. The result of linear regression model revealed that age ($t = 4.136^{***}$) and household size ($t = 2.752^{***}$) were significantly related with the level of satisfaction of NSPRI postharvest technologies.

Conclusively, most of the respondents were satisfied with NSPRI postharvest technologies on high level. It was therefore recommended that NSPRI, government and organized private sectors should provide training programs for beneficiaries of their technologies to improve their technical know-how so as to improve the output thereby boosting their income level.

Key words: *Parabolic solar dryer, arable crop, processors, satisfaction*

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INTRODUCTION

Technology transfer plays a vital role in driving innovation by accelerating the commercialization process, bridging the gap between academia and industry, facilitating cross-sector collaboration, and providing resources and support for startups. By understanding the importance of technology transfer and implementing effective strategies, organizations can unlock the full potential of their innovative ideas and contribute to societal progress. Moreover, satisfaction about a technology is an important impetus engendering the penetration and sustainable use of the technology. End users (customers) derive satisfaction from an innovation (technology), product, or a service based on whether their need is met effortlessly, in a convenient way that makes them loyal to the firm. Hence, customer satisfaction is an important step to gaining customer loyalty [1]. Organizations should be aware of the importance of the customer experience especially through feedback mechanism. With appropriate technology in service, customer satisfaction and loyalty rates should increase, and long-term relationships should flourish [2].

Satisfaction had been defined as a feeling of pleasure or disappointment of a person, resulting from comparing a product or service noticed performance (or result) towards his or her expectations [3]. Customer satisfaction is important for companies to gain the trust of consumers, and make them continue to use their services [4]. This can be formed by offering good and competitive services that are well received in the community [5,6].

Developing an effective technology transfer strategy requires the compilation of good data about end users (customers), competitors, and markets, and the innovative conversion of that data into meaningful and leverageable information [7]. Given today's competitive environment, a quality services firm must determine which channels are most appropriate and cost-effective for its various customer segments. It must accurately predict which customers will embrace technology as a substitute for personal service and still be highly satisfied and which customers will demand service with a predominantly personal touch [8]. It is especially important to understand this in the context of a firm's "highly valued" segments of its population.

Though several researches had been done on the customers' satisfaction and loyalty but there is insufficient information on the arable crop processors' satisfaction with utilization of NSPRI postharvest Technologies in Alapa community in Kwara State that could help in prioritizing mediations to improve their utilization.

This lack of understanding hinders efforts to optimize benefits inherent in the usage of NSPRI postharvest technologies which will invariably enhance the livelihoods of many households in this community.

To effectively improve end users satisfaction of technologies which will engender assurance of raising expectations to the highest level, while the tangibility meets the highest perception, it is imperative to assess the socio-economic characteristics of arable crops processors, identify NSPRI postharvest Technologies in the study area, and to assess arable crop processors' satisfaction with utilization of NSPRI postharvest Technologies in the study area.

MATERIAL AND METHODS

Study Area: The study was carried out in Alapa community, Asa Local Government area of Kwara State, Nigeria. It is located at an elevation of 316 meters above sea level and its population amounts to 174,152 in National Population Census [9]. Its coordinates are 8°37'0"N and 4°22'60"E in DMS (Degrees Minutes Seconds) or 8.61667 and 4.38333 (in decimal degrees). Alapa stands as "a thriving agricultural hub" in Kwara State with a rich farmlands and bustling trade. It serves as a vital marketplace where farmers and traders converge on market days. The major crops in Alapa are yam, cassava and maize. The study area is dominated mainly by Yoruba people.

Population of the study: the population of the study includes all the arable crop processors in the study area.

Sampling procedure and sample size: A multistage sampling procedure was employed to select 48 respondents for the study. The first stage involved purposive selection of Alapa community since it is one of adopted villages in Asa Local Government Area of Kwara State while the second stage involved the random selection of four (4) cells out of the eight (8) cells in Alapa community. The third stage involved the random selection of twelve (12) arable crop processors from each of the selected cells in the community to give a total number of forty eighty (48) respondents as the sample frame for the study.

Source and type of data: Primary data were used for this study. The primary data were obtained with the aid of a well-structured questionnaire.

Data analysis: The data collected were analyzed using descriptive statistics and inferential statistics (Linear Regression model).

Measurement of variables: The level of satisfaction with the utilization of NSPRI technologies was obtained using a 5-point Likert scale namely; outstanding = 5, exceed expectation = 4, meet expectation = 3, below expectation = 2, and needs improvement = 1. The benchmark was obtained by adding $5+4+3+2+1 = 15$ which is divided by 5 to give 3.0. Any mean score of 3.0 and above is high level of satisfaction, otherwise low level of satisfaction (Author defined). The challenges faced in the utilization of NSPRI technologies was obtained using a 4-point scale namely; very severe = 3, severe = 2, mildly severe = 1, and not a challenge = 0. The benchmark was obtained by adding $3+2+1+0 = 6$ which is divided by 4 to give 1.5. Any mean score of 1.5 and above is high level of challenge, otherwise low level of challenge (Author defined).

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the espondents

Table 1 presents the socio-economic characteristics of the arable crop processors in Alapa community.

The results in the Table 1 showed that 31.3 percent of the respondents were between 41-50 years of age, 27.1 percent of the respondents were between 31-40 years of age, 22.9 percent of the respondents were within 30 years of age while 18.7 percent of the respondents were above 50 years of age. The mean age of the respondents stood at 38.31 ± 10.743 years.

This implies that the respondents are still in their economically active age and can engage adequately in arable crops processing activities. This finding is in agreement with the earlier study of [10] who stated that individuals who are in active age group are highly productive in their undertakings. Similarly, the mean age in this research work is within the mean ages of 43 and 42 years recorded in Kwara State and Kogi State respectively as reported by [11].

Also, the results in Table 1 showed that majority (60.4%) of the respondents were male while 39.6 percent of the respondents were female. This finding indicated that most of the processors in Alapa community were male. However, this is inconsistent with the studies of [12] who reported that cassava processing industry is dominated by married women.

Table 1. Distribution of Respondents by Socio-Economic Characteristics (N = 48)

Socio-Economic Characteristics	Frequency	Percentage
Age range (Years)		
≤30	11	22.9
31-40	13	27.1
41-50	15	31.3
Above 50	9	18.7
Mean	Mean = 38.31 S.D= 10.743	
Sex		
Male	29	60.4
Female	19	39.6
Household size		
1-5	24	50.0
6-10	21	43.7
Above 10	3	6.3
Mean	Mean = 5.48 S.D = 1.203	
Educational level		
No formal education	6	12.5
Primary school	22	45.8
Secondary school	12	25.0
Tertiary school	1	2.1
Non-formal education	7	14.6

Source: Data Analysis Outputs, 2025., S.D = Standard Deviation

Moreover, it was also indicated in the Table 1 that 50.0 percent of the respondents had between 1-5 members in their house holds, 43.7 percent of the respondents had between 6-10 members in their households while only 6.3 percent of the respondents had above 10 members in their households. Moreover, the average member of the households was found to be 5.48 ± 1.203 indicating a large household size. It was indicated that 12.5 percent of the respondents had no formal education.

However, 45.8 percent of the respondents had primary school education, 25.0 percent of the respondents had secondary education, 2.1 percent of the respondents had tertiary school education while 14.6 percent of the respondents had non-formal education.

The finding vividly connotes the fact that most of the respondents were educated which could go a long way in influencing the level of adoption of technology as related to cassava and yam handlings.

Available NSPRI postharvest Technologies at Alapa community

Table 2 presented the distribution of respondents based on the availability of NSPRI postharvest technologies in the study area. The result in the Table 3 indicated that all (100.0%) of the respondents indicated the availability of parabolic solar dryer provided by NSPRI in their area while 75 percent of the respondents identified with the NSPRI yam barn in the study area. The finding therefore revealed that both parabolic solar dryer and yam barn provided by NSPRI are readily available for the use of processors in the study area.

Table 2. Distribution of respondents by available NSPRI postharvest Technologies in the study area

NSPRI Technologies	Frequency	Percentage
Parabolic solar dryer	48	100.0
Yam barn	36	75.0

Source: Data Analysis Outputs, 2025

Satisfaction with NSPRI postharvest Technologies in Alapa community

Table 3 presented the distribution of respondents by the level of satisfaction with NSPRI postharvest Technologies in Alapa community. The result in the Table 3 indicated that most of the respondents were more satisfied with the quality of products (colour, taste and odour) with a weighted mean score (WMS) of 3.44. Other attributes in the rank order of satisfaction include accessibility of the technologies (WMS = 2.85), safety of products (WMS = 2.75), ease of use (operational design) (WMS = 2.71), location of the technologies (WMS = 2.44), timeliness of action/result/output (WMS = 2.33), capacity (WMS = 1.96), organizational supports (WMS = 1.44) and technology status/condition (WMS = 1.29). This finding implies that quality of products is a good determinant of the level of satisfaction with NSPRI postharvest technologies in the study area. The research results showed that quality of products has a positive and significant effect on satisfaction. This means that the better the quality of products obtained, the higher the customer satisfaction. These results support [13,14,4] which showed that service quality and price has a significant effect.

Table 3. Distribution of respondents by level of satisfaction with NSPRI postharvest Technologies in Alapa community

NSPRI Technologies	O	EE	ME	BE	NI	WMS	Rank
Quality of products (color taste odor)	5(10.4)	17(35.4)	22(45.8)	2(4.2)	2(4.2)	3.44	1 st
Accessibility	2(4.2)	13(27.1)	13(27.1)	16(33.3)	4(8.3)	2.85	2 nd
Timeliness of action/result/output	0(0.0)	10(20.8)	9(18.8)	16(33.3)	13(27.1)	2.33	6 th
Capacity	0(0.0)	5(10.4)	12(25.0)	7(14.6)	24(50.0)	1.96	7 th
Location	2(4.2)	10(20.8)	13(27.1)	5(10.4)	18(37.5)	2.44	5 th
Technology status/cond.	0(0.0)	2(4.2)	2(4.2)	4(8.3)	40(83.3)	1.29	9 th
Safety of products	0(0.0)	13(27.1)	15(31.2)	15(31.2)	5(10.4)	2.75	3 rd
Ease of use (operational design)	0(0.0)	12(25.)	16(33.3)	14(29.2)	6(12.5)	2.71	4 th
Organizationa supports	0(0.0)	0(0.0)	4(8.3)	13(27.1)	31(64.6)	1.44	8 th

O = Outstanding (5); EE = Exceed Expectation (4); ME = Meet Expectation (3);

BE = Below Expectation (2); NI = Need Improvement (1); WMS = Weighted Mean Score

Source: Data Analysis Outputs, 2025

Categorization of level of satisfaction with NSPRI Technologies in Alapa community

Table 4 presented the distribution of respondents by categorization of level of satisfaction with NSPRI postharvest Technologies in Alapa community. The result in the Table 4 indicated that 54.2 percent of the respondents were satisfied with NSPRI parabolic solar dryer on high level. About 18.8 percent of the respondents were satisfied with NSPRI parabolic solar dryer on moderate level while 14.3 percent of the respondents were satisfied with NSPRI parabolic solar dryer on a low level. It can be deduced from this present finding that a highly satisfied customers produce several benefits for the organization. In tandem with tis finding, [3] conceptualized satisfaction as a feeling of pleasure or disappointment of a person, resulting from comparing a product or service noticed performance (or result) towards his or her expectations. This feeling of pleasure or disappointment has decisive influence on the usage of any technology or services. In line with this idea, [4] opined that customer satisfaction is important for companies to gain the trust of consumers, and make them continue to use their services.

Table 4. Distribution of respondents by categorization of level of satisfaction with NSPRI postharvest Technologies (PHTs) in Alapa community

NSPRI Technologies	Categorization of satisfaction with NSPRI PHTs		
	High	Medium	Low
Processors	26(54.2)	9(18.8)	13(27.0)

Mean = 21.21; Standard Deviation = 5.124., Source: Data Analysis Outputs, 2025.

Hypothesis

Influence of selected Socio-economic characteristics and level of satisfaction with NSPRI postharvest Technologies

Table 5 presented the result of linear regression model showing the relationship between selected socio-economic characteristics and level of satisfaction with NSPRI postharvest technologies in Alapa community. It was revealed that age ($t = 4.136^{***}$) and household size ($t = 2.752^{***}$) were significantly related with the level of satisfaction of NSPRI postharvest technologies. The relationship was significant at 1% level indicating the fact that age of the respondents and household size are strong determinants of the level of satisfaction with the usage of NSPRI postharvest technologies. The positive relationship is an indication that a unit increase in any of the significant variables will result in an equivalent increase in the level of satisfaction with NSPRI postharvest technologies. This direction of relation connotes the fact that most of the respondents are highly innovative thereby developing positive attitude toward technology. People with high innovativeness traits have been described as those who possess powerful inherent inspiration when it comes to the use of new technology as they cherish the excitement of trying the innovation [15].

Table 5. Relationship between selected Socio-economic characteristics and level of satisfaction with NSPRI postharvest Technologies

Variables	B-Value	Standard Error	t-value	p-value
Constant	25.759	2.608	9.878	0.000
Age	7.326	1.179	4.136***	0.000
Household size	1.121	0.407	2.752***	0.009
Educational Level	0.865	0.606	1.428	0.160

R = 0.963; R² = 0.886; Adj.R² = 0.824; Std. Error of the Estimate = 4.467;

F-statistics = 5.944

***Significant at 1% level

Source: Data Analysis Outputs, 2025.

CONCLUSIONS

The study assessed arable crop processors' satisfaction with utilization of NSPRI postharvest Technologies in Alapa Community, Kwara State, Nigeria. The mean age of the respondents stood at 38.31 ± 10.743 years, majority of the respondents were male (60.4%), educated (87.5%) with a mean households size of 5.48 ± 1.203 . All (100.0%) of the respondents indicated the availability of parabolic solar dryer provided by NSPRI in their area while 75 percent of the respondents identified with the NSPRI yam barn in the study area. Most (WMS = 3.44) of the respondents were more satisfied with the quality of products (colour, taste and odour) derived from the usage of NSPRI postharvest technologies in the study area.

Majority (54.2%) of the respondents were satisfied with NSPRI parabolic solar dryer on high level. The result of linear regression model revealed that age ($t = 4.136^{***}$) and household size ($t = 2.752^{***}$) were significantly related with the level of satisfaction with NSPRI postharvest technologies.

Based on the findings of this study, the following are recommended:

1. NSPRI, government and organized private sectors should provide training programs for beneficiaries of their technologies to improve their technical know-how so as to improve the output thereby boosting their income level.
2. Since NSPRI postharvest technologies are usually delivered to adopted village with no cost, it may not be able to address the issue of limited capacity. There is therefore for donors to collaborate by providing funds in order to upscale those technologies in order to satisfy the needs of more beneficiaries.

Acknowledgements

No financial support was obtained from any source during the course of the research and manuscript development and there was no conflict of interest within the authors.

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**PROCENA ZADOVOLJSTVA PRERAĐIVAČA RATARSKIH USEVA
KORIŠĆENJEM POSLEŽETVENIH TEHNOLOGIJA NIGERIJSKOG
INSTITUTA ZA ISTRAŽIVANJE SKLADIŠTENIH PROIZVODA (NISP),
U ZAJEDNICI ALAPA, DRŽAVA KWARA, NIGERIJA**

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Apstrakt: Studija je procenila satisfakciju prerađivača ratarskih useva korišćenjem NISP tehnologija Nigerijskog instituta za posležetvene obrade u zajednici Alapa u državi Kwara, Nigerija. Studija obuhvata populacije svih prerađivača ratarskih useva u području istraživanja.

Korišćen je višestepeni postupak uzorkovanja za izbor 48 ispitanika za ovu studiju. Primarni podaci su dobijeni uz pomoć dobro strukturiranog upitnika i analizirani su korišćenjem deskriptivne i interferencijalne statistike (model linearne regresije).

Prosečna starost ispitanika u ovoj studiji, iznosila je $38,31 \pm 10,743$ godina. Većina ispitanika bili su muškarci (60,4%), sa prosečnom veličinom domaćinstva od $5,48 \pm 1,203$. Većina ispitanika (WMS = 3,44) bila je zadovoljna kvalitetom proizvoda (boja, ukus i miris) dobijenih upotrebom NISP tehnologija nakon žetve u ispitivanom području. Većina (54,2%) ispitanika bila je zadovoljna NISP tehnologijom parabolične solarne sušare visokog nivoa korišćenja.

Nedostatak obuke (WMS = 2,10) je identifikovan kao glavni izazov u korišćenju NISP tehnologija Nigerijskog Instituta, nakon žetve u zajednici Alapa.

Rezultat linearnog regresionog modela pokazao je da su starost ($t = 4,136^{***}$) i veličina domaćinstva ($t = 2,752^{***}$) značajno povezani sa stepenom zadovoljstva NISP tehnologijama nakon žetve. Zaključno, većina ispitanika je bila zadovoljna na visokom nivou sa NISP tehnologijama nakon žetve.

Zato je preporučeno da NISP, Vlada i organizovani privatni sektor obezbede programe obuke za korisnike ovih tehnologija kako bi unapredili svoje tehničko znanje i poboljšali proizvodnju, a time i povećali svoj nivo prihoda.

Ključne reči: Parabolična solarne sušare, ratarski usevi, prerađivači, zadovoljstvo

Prijavljen:

Submitted: 17.08.2025.

Ispravljen:

Revised: 20.09.2025.

Prihvaćen:

Accepted: 21.10.2025.