

Socio-demographic Determinants of Produce Rejection among Crop Exporters in Nigeria.

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Abstract: Crop produce rejection is an important issue in Nigeria, affecting exporters' livelihood, economic development and food security. This study examined the socio-demographic determinants of crop produce rejection among crop exporters in Nigeria. The study used primary data sourced from a total of 305 crop produce exporters that are present in five of six geopolitical zones in Nigeria. Data were sourced with the aid of a structured questionnaire. The data obtained were analysed using descriptive statistics, Pearson chi-square correlation, and Ordinary least square regression model. Based on the findings, the Nigerian crop produce exporters had an average age of 42 years, majority (87.87%) were male, married (82.30%), and attained higher education (72.46%). A high proportion (29.51%) financed their export businesses with personal savings, most (64.92%) had between 1-10 years of export experience and were southwest dwellers (66.56%). Cocoa was the most exported crop (61.97%). On the average, crop produce had been exported, intercepted, and rejected 59 times, 2 times, and 1 time, respectively. There were significant relationships between exporters' socio-demographic characteristics (age, years of export experience, source of funding) and crop produce rejection at $p < 0.01$. At $p < 0.10$, exporters being male and using family funds for export business, and at $p < 0.01$, times of interception and dwelling in South-East zone positively influenced (increased) crop produce rejection, while attainment of at least secondary education ($p < 0.01$) negatively influenced (decreased) crop produce rejection in Nigeria. The study therefore recommends more effective capacity building programmes, especially in the South-East zone, through the Nigeria Agricultural Quarantine Service, on necessary phytosanitary measures to reduce the interception times. It also suggests strengthening of access to affordable credit options and information on requirements of the destination countries.

Keywords: Crop Produce Exporters, Produce Interception, Phytosanitary Measures, Produce Rejection

I. Introduction

1.1 Background to the Study

Globalization began in the 1990s with the introduction and mobilization of the internet. Mobile technology, as one of the initiatives of globalization, has liberalized international trade, resulting in the need to streamline, regulate and sustain international trade to safeguard human, animal and environmental health, and protection of biodiversity (Khatami *et al.*, 2022). Food is a basic need of man and healthy food has become more imperative and a great concern to the World Trade Organization in view of the estimated 9.7 billion people on the planet by 2050 (Alabi *et al.*, 2022). The evolution of modern farming in developed nations has involved the use of extensive mechanization, and use of agro-chemicals - pesticides, herbicides and fumigants (Okeke *et al.*, 2023). Globalization has further encouraged the setting of standards in the food systems to regulate trade in agro-produce along the agri-food value chain; production, harvesting, processing, distribution, storage and consumption (Khatami *et al.*, 2022). The failure of any food item to meet the standards is the main driver of rejection both at the local and international markets.

Crop produce rejection is the failure of an agro-commodity to access the international market as a result of the inability to pass through the quarantine entry or exit points, or other regulatory agencies of the importing country, due to poor agro-product quality or non-compliance with other specific regulatory standards in international trade (Usman, 2024). In international trade, agro-produce exports are required to meet the nutritional, health, taste, ornamental, industrial and culinary needs of citizens, among other reasons. Studies highlighted the consequences of crop rejection for Nigerian agricultural exports. One such case is the rejection of Nigerian yams by the United Kingdom (UK) in the early 2000s. Nigerian yams are a popular export item to the UK, where they are used in various culinary dishes. However, large consignments of Nigerian yams were rejected due to poor packaging and poor handling during shipping. The rejection of these shipments led to financial losses for exporters, who not only lost the value of the rejected produce but also faced additional costs related to transportation and disposal of the intercepted crops (Giroh, and Nachandiya, 2022).

Another notable example is the rejection of Nigerian cashew nuts by European markets. Nigeria is one of the largest producers of cashew nuts in Africa, but the quality of its nuts had often been questioned by international buyers. In 2014, a shipment of Nigerian cashew nuts was rejected by the European Union due to

high levels of aflatoxin contamination. The rejection of the cashew not only resulted in financial losses for the exporters but also raised questions about the country's ability to consistently meet the rigorous standards required by international markets. The case highlighted the need for improved post-harvest handling, storage facilities, shipping conditions and quality control measures within Nigeria's agricultural sector to prevent such rejection in the future (Ogunwolu *et al.*, 2023). Also, Alawode (2025) noted the rejection of Nigerian sesame seed in 2020. Nigerian sesame seeds were exported to Germany, Greece and Netherland. However, 212,783kg of sesame seeds were rejected due to the presence of salmonella.

The creation of the Nigeria Agricultural Quarantine Service (NAQS) in 2018 by the Federal government of Nigeria via an act of parliament, the inauguration of the Inter-ministerial Committee on the Zero Reject by the Federal Ministry of Industry Trade and Investment in 2021, and the Agro-export *ad hoc* Committee by the office of the Vice President under the Presidential Enabling Business Environment Council (PEBEC) on 10th November 2021, are part of the government intervention measures to curb the tide of agro produce rejection (Wu, 2024). The phytosanitary principle for the protection of plants, Pest Risk Analysis (PRA), Crop Pest Survey (CPS), import/export regulations, Pest Free Areas (PFA), phytosanitary certification, notification of non-compliance issues in trade, Integrated Pest Management (IPM), and quarantine regulated produce, are some of the concerns in export trade.

There are several diagnostic protocols for various plants such as phytosanitary treatment measures, sampling methods, product categorization, post entry quarantine protocol, seed/soil movement, wood packages, fumigation protocol, commodity specific standards, and quarantine audits, deployed to safeguard agro exports in trade. Despite government intervention through policies, legislation, collaborations and partnerships, the spate of produce rejection remains a concern; there are alerts of rejection of agro-produce from Rapid Alert System for Food and Feed (RASFF), Europhyte, *et cetera*. This may be due to policy failure, poor policy or its implementation, poor regulation, poor inspection and certification processes, irresponsible application of agro-chemicals, and lack of awareness of the demands of export trade, among others.

Additionally, it could be a lack of personal commitment and inability to self-regulate by critical individual stakeholders, especially exporters (Isegebe *et al.*, 2026), which is necessary to drive the need to willingly accept to play by the rules and ensure that export control measures are diligently pursued and complied without any coercion (Eze *et al.*, 2023). The willingness to accept to play by self-regulation rules will greatly be influenced by the peculiar nature of each stakeholder as it dictates consistency power of individuals. This calls for the need to investigate how socio-demographic features of exporters influence the frequency of rejection by the destination countries. This study examined the socio-demographic determinants of crop produce rejection among crop exporters in Nigeria.

1.2 Objectives of the study

The main objective of this study is to examine the socio-demographic determinants of crop produce rejection among crop exporters in Nigeria. The specific objectives are to:

- i. profile crop produce exportation, interception and rejection in Nigeria
- ii. assess the relationships between exporters' socio-demographic features and crop produce exportation, interception and rejection
- iii. examine the socio-demographic determinants of crop produce rejection among exporters in Nigeria.

II. Literature Review

2.1 Theoretical Review

The theories underpinning this study include social cognitive theory, social learning theory, and the legitimacy theory.

2.1.1 Social Cognitive Theory

Social cognitive theory was proposed by Albert Bandura in 1977 to explain human behaviour through a person's mental abilities, and to address how people are motivated and can motivate others, how they perform, how they go about learning new skills, and how they self-regulate (Griffith *et al.*, 2023). Social cognitive theory also explains how personalities can change through these processes and asserts that people influence others and are influenced by others. The theory emphasizes the ability of an individual to influence change in personality characteristics, behaviour, and capabilities, such as skills, through social interactions, such as using performance feedback and modelling persuasion (Griffith *et al.*, 2023).

An individual is, therefore also, able to change his destiny or his course through life, by making decisions following the evaluation of chance life events. Social cognitive theory is an extension of the social learning theory, and it provides a basis for understanding, predicting, and manipulating human behaviour by focusing on how children and adults operate cognitively on their social experiences and how the cognition affects behaviour and development (Griffith *et al.*, 2023). The underlining assumption of social cognitive theory is that behaviour is directed towards specific outcomes, and the person eventually becomes self-regulated. Cognition is essential in learning (Vignesh *et al.*, 2025). Social cognitive theory in this study applies to the

exporters on the basis of trainings and interactions with NAQS and other exporters. This relates to their ability to be influenced and self-regulate based on their interactions with regulatory authorities and peer learning from other exporters.

2.1.2 Social Learning Theory

Social learning theory is an essential component for the promotion of desirable behavioural change. Social learning theory is based on the idea that we learn from our interactions with others in the society (Leimar *et al.*, 2022). By observing the behaviour of others, people gradually develop similar behaviour due to the fact that, after observing the behaviour of others, people assimilate and imitate that behaviour, especially if their observational experiences are positive ones or include rewards related to the observed behaviour. The general principle of the social learning theory states that people learn from others through observation, imitation, and modeling at any stage of life (Leimar *et al.*, 2022). Based on the general principle, learning can occur without a change in behaviour (that is, learning may not result in a change of behaviour) as people can learn through observation alone.

In the real sense, learning may result in a behavioural change because cognition plays vital roles in learning. Imitation involves the actual reproduction of observed motor activities, and imitation as well as modeling will be successful if the desired outcome in the first stage is positively observed. This is because the behaviour observed can be imitated and used to model others (Leimar *et al.*, 2022). Social learning theory, in the context of this study, is the ability of the crop produce exporters to learn through observing others who are successful in the trade and therefore also decide to self-regulate to be successful in the business.

2.1.3 Legitimacy Theory

Legitimacy Theory was originally conceptualised by some sociologists who posit that organisations must align their operations with societal norms and values to gain and maintain legitimacy. The core assumptions of Legitimacy Theory include the idea that organisations operate within a social contract and must continually justify their existence and practices to stakeholders (Hamm *et al.*, 2022). This theory emphasizes that legitimacy is not a static attribute but a dynamic process requiring ongoing efforts to meet societal expectations (Okunlola and Akinlo, 2021). Organisations perceived as legitimate are more likely to receive support and resources from stakeholders, while those failing to conform may face opposition or reduced resources (Kumar *et al.*, 2022).

The legitimacy theory also suggests that companies are likely to disclose information about their adherence to phytosanitary standards, especially when under social or political scrutiny. By doing so, these exporters can demonstrate their compliance with societal expectations, thereby securing their legitimacy. In this context, fresh leafy vegetable exporters are expected to voluntarily share information regarding their adherence to phytosanitary standards, thereby aligning their operations with societal values and maintaining their legitimacy in the market (Hamm *et al.*, 2022).

One of the primary strengths of Legitimacy Theory is its focus on the social context in which organizations operate, highlighting the importance of aligning organizational practices with societal expectations. However, the theory is limited by its assumption that organizations can easily adapt to changing societal expectations (Hamm *et al.*, 2022). In the context of phytosanitary standards, this may not always be feasible for exporters facing constraints such as limited resources or infrastructure. Additionally, the theory may overlook power dynamics and the roles of regulatory bodies in shaping legitimacy, which can impact exporters' ability to comply with standards. This could result in a misalignment between theoretical expectations and practical challenges faced by exporters in meeting phytosanitary requirements (Hamm *et al.*, 2022).

2.2 Empirical Review

Van Klinken *et al.* (2020) provided evidence associated with a restrictive market access for fruit and vegetable products by the US phytosanitary regime. The methodology used was qualitative reviews of the US sanitary and phytosanitary measures (SPS) system and its scope for use to protect markets, in addition to protecting life and health. Findings for most products showed that only a portion of global production is authorized for export to the USA. Even among authorized countries, only a small proportion is actually exported. As a result, the number of countries exporting fresh fruit and vegetables to the USA is far lower than those exporting to countries like the EU and Canada.

Alabi *et al.* (2022) studied the determinants of ginger (*Zingiber officinale*) export performance in Nigeria using secondary data spanning the period from 1995 to 2020. The data were subjected to Augmented Dickey Fuller (ADF) test, Phillips-Perron (PP) test, Johansen Co-Integrating Test, and Vector Error Correction Model (VECM). Findings indicated that in the short term, both the exchange rate and interest rate had negative coefficients and were statistically significant factors influencing the export performance of ginger (*Zingiber officinale*) in Nigeria. On the other hand, the ratio of producer price to domestic price, the ratio of producer price to export price, and the quantity of ginger exported had significant and positive effect on ginger export performance in Nigeria in the short term. In the long run, the exchange rate, interest rate, ratio of producer price

to domestic price, and the ratio of producer price to export price remained statistically significant in influencing the export performance of ginger in Nigeria.

Lengai *et al.* (2022) assessed the improvement of access to export market for fresh vegetables through reduction of phytosanitary and pesticide residue constraints. The review discussed four-tiered approach to compliance with phytosanitary and pesticide residue requirements. The tiers include the use of alternative pest management approaches (bio-control options, cultural and physical practices), collaboration among regulatory agencies (institutions, producers and regional countries) in the enforcement of standards, investment in research and the adoption of innovative technologies, and awareness creation and training of stakeholders along the fresh vegetable value chain. It was envisaged that the approaches would contribute to sustainable fresh vegetable value chains, leading to improved access to export markets, and increased export volumes and income to smallholder farmers and other actors in the fresh vegetable value chain. It was found that reducing phytosanitary and pesticide residue constraints through alternative pest management, collaboration, research, and training can improve access to export markets for fresh vegetables, increasing export volumes and income for smallholder farmers.

Tolossa and Pandya (2023) defined and measured the key internal factors impacting export performance of vegetable and fruit export firms in Ho Chi Minh City, Lam Dong, Dong Nai, Binh Duong, Vung Tau, Binh Phuoc, Tay Ninh, Long An và Tien Giang province. The study used both qualitative and quantitative methods of data collection. The qualitative method was carried out through in-depth interviews of 10 chief executive officers, while the quantitative method was conducted through direct interviews with 228 managers of vegetable and fruit companies. Export performance was measured under the subjective perspective to collect information from firms, considering the perception or satisfaction of firms on export activities. The results showed that firm's export performance was directly influenced by four internal factors; international experience, export commitment, product characteristics, and technology orientation.

Ter Jerin *et al.* (2025) analysed the marketing performance of selected exportable vegetables of Bangladesh at some national and international regions using a regression analysis. Among the national regions, Ullokhola (Gazipur) was the most profitable market of selected vegetables for the Beparies/selected agents due to its lowest marketing cost. The highest benefit-cost ratio of the selected vegetables was achieved for the Middle-East countries (except Kuwait). The exported quantity of vegetables increased for an increment in each of the factors like total production, average unit export price, world import of fresh vegetables and exchange rate of money. A decreasing trend in the exported quantity of vegetables was observed only for increasing the national weighted average farmgate constant (1987-88) price. The highest average change in the exported quantity of vegetables was found for a unit change in the exchange rate of money. On the average, the exported quantity of vegetables increased by 775.96 Metric Tons (MT) for an increment of one taka in the exchange rate of money with US dollar, when all other factors (variables) were held as fixed. The national weighted average farm gate constant (1987-88) price and the average unit export price were inelastic with the exported quantity of vegetables. That means percentage change in exported quantity of vegetables is lower than that of national weighted average farmgate constant price and that of average unit export price.

2.3 Conceptual Review

2.3.1 Crop Produce Rejection

Crop produce rejection refers to the refusal or disqualification of agricultural products from entering local or international markets due to non-compliance with set quality, safety, and regulatory standards (Usman, 2024). These standards typically include quality measures related to pesticide residues, contamination, and other factors that may affect the safety and quality of the produce (Laoye *et al.*, 2025).

2.3.2 Key Markets Rejecting Nigerian Produce and Reasons

Over the past few decades, Nigeria has experienced a noticeable increase in the rejection of its agricultural produce at international export terminals. This trend has been most pronounced in crops like cocoa, sesame seeds, yams, and cashew nuts, which represent significant portions of Nigeria's agricultural export revenues (Etuk and Idem, 2021). The European Union, the United States, and parts of Asia remain key markets for Nigerian agricultural exports (Alawode, 2025). However, these markets have increasingly raised concerns about the quality of Nigerian agricultural products, leading to frequent rejection (Laoye *et al.*, 2025). The main reasons for the rejection can be grouped into different categories, including contamination, pesticide residues, and failure to meet required physical and phytosanitary standards (Alawode, 2025).

2.3.3 Reasons for Produce Rejection in Nigeria

According to the Nigerian Investment Promotion Council (NIPC), the main reason for the rejection of Nigerian products in foreign markets are the lower than acceptable standard quality of packaging and inadequate labeling on exported products from Nigeria (Obikaeze *et al.*, 2023). Also, during the 2019 Packaging, Plastics, Food Processing, Labelling, and Print exhibition organized by Propak West Africa in Lagos, it was emphasized that the packaging challenges in Nigeria had become increasingly intricate and this

complexity stems from the constant evolution of innovation in response to changing market trends and shifts in consumer demand and behaviour (Inyang & James, 2022).

2.3.4 Implications of Crop Produce Rejection

The rejection of Nigerian agricultural produce has serious implications for the country's agricultural sector, which is a vital source of income and employment for millions of Nigerians. First, the economic losses resulting from crop rejection undermine the livelihoods of smallholder farmers and exporters. These financial setbacks can discourage investment in agriculture and result in a decrease in export revenues, which are essential for Nigeria's foreign exchange earnings. The cumulative effect of rejection also damages Nigeria's reputation as a reliable supplier of agricultural products, further reducing demand for its exports (Alawode, 2025).

Second, the consistent rejection of Nigerian agricultural produce highlights systemic challenges within the sector, particularly in areas like quality control, post-harvest handling, and storage infrastructure. The lack of modern facilities to handle crops efficiently, combined with inadequate training for farmers on best agricultural practices, contributes to the poor quality of produce being rejected in international markets (Olaniyi, 2023). Addressing these issues would require significant investment in both infrastructure and capacity building for farmers.

Third, the rejection also poses a threat to food security within Nigeria. When large quantities of agricultural products are rejected for export, they are often diverted to local markets. However, due to quality concerns, many of these products are unfit for human consumption or fail to meet local demand for quality produce. This scarcity of high-quality agricultural products drives up prices and further exacerbates the food insecurity challenges faced by Nigeria, where millions of people already lack access to nutritious and affordable food (Ibbih, 2024).

III. Methodology

3.1 The study area

The study area is Nigeria. Nigeria has six geopolitical zones (North-Central, North-East, North-West, South-East, South-South, and South-West) and there are crop produce exporters in all the zones. This study covers all the zones except North-East zone because of insurgency, which is being addressed by the government.

3.2 Source of data

The study used primary data that were sourced using structured questionnaire. The questionnaire was sectioned to elicit required information from the crop produce exporters. Information was sought on the crops being exported, number of times the exporter has exported, and number of times produce were rejected by the destination countries, information on crop produce rejection from the exporters, and socio-demographic features of the exporters.

3.3 Sample size

A total of 305 crop produce exporters present across the 5 zones were interviewed. There were 305 crop produce exporters registered with Nigeria Agricultural Quarantine Service (NAQS) from the five geopolitical zones. The highest number, 203 were from the South-West, 55 from North-West, 20 from the South-East, 15 from the South-South, and the least number, 12 from the North-Central.

3.4 Validity and Reliability of Research Instrument

Pilot survey was carried out to test the validity of the questionnaire used. Adjustments were made where necessary and the final questionnaire was vetted by experts in agribusiness field to ensure its reliability and ability to elicit required information.

3.5 Analytical techniques

Data were analysed using descriptive statistics, Pearson chi-square, and ordinary least square regression model. Descriptive statistics were used to analyse the socio-demographic characteristics of the crop exporters, profile the kinds of crop exported and the times of crop produce exportation, interception and rejection. Pearson chi-square was employed to assess the relationship between crop produce rejection and some socio-demographic features, while ordinary least square regression model was adopted to examine the socio-demographic determinants of crop produce rejection among crop exporters in Nigeria.

The ordinary least square equation is given as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \varepsilon_i$$

Where Y = Crop Produce Rejection (Number of times)

β_0 = Intercept, β_1 – β_7 = regression coefficients and X_1 – X_7 = sociodemographic variables

X_1 = Age (years), X_2 = Sex (male =1, otherwise = 0), X_3 = Level of education (no formal, primary, secondary, and higher education), X_4 = Sources of funding (personal savings, Family, Cooperative society, Bank loans, and Government fund)

X_5 = Times of export (number), X_6 = Times of interception (number), X_7 = Geopolitical zones (North-Central, North-West, South-East, South-South, and South-West)

IV. Results and Discussion of Findings

4.1 Socio-demographic Characteristics of Crop Produce Exporters in Nigeria.

In Table 1, the socio-demographic characteristics of the crop produce exporters in Nigeria are presented. More than half (56.72%) of the respondents had age range of 25 to 40 years, and an average age of 42years. Majority were male (87.87%), married (82.30%) and attained a higher level of education (72.46%). Further, the highest proportion (29.51%) funded their business with personal savings, about one-quarter (25.90%) got funds from cooperative societies and less than one-quarter (21.31%) sourced loans from banks, while a few (8.52%) sourced funds through government. About 64.92% of the exporters had 1 to 10 years of working experience and many (66.56%) were in the southwest geopolitical zone.

Table 1: Socio-demographic Characteristics of Crop Produce Exporters in Nigeria

Socio-demographic Characteristics	Frequency (n=305)	Percentage	Mean
Age (years)			
25-40	173	56.72	42.19 ± (11.53)
41-55	90	29.51	
>55	42	13.77	
Sex			
Female	37	12.13	
Male	268	87.87	
Marital status			
Single	41	13.44	
Married	251	82.30	
Divorced	13	4.26	
Educational level			
Primary education	30	9.84	
Secondary education	54	17.70	
Higher education	221	72.46	
Source of funding			
Personal savings	90	29.51	
Family	45	14.75	
Cooperative society	79	25.90	
Bank loans	65	21.31	
Government	26	8.52	
Years of experience			
1-10	198	64.92	10.72 ±(7.55)
11-20	74	24.26	
21-30	28	9.18	
>30	5	1.64	
Geopolitical zones			
North central	12	3.93	
Northwest	55	18.03	
Southeast	20	6.56	
South-south	15	4.92	
Southwest	203	66.56	

Source: Field Survey, 2024.

4.2 Crop Produce Exportation, Interception and Rejection in Nigeria

4.2.1 Major Exported Crop Produce

The major crop produce exported by Nigerian crop produce exporters are presented in Table 2. Several crops were exported, but the main ten exported crop produce include; cocoa, sesame, hibiscus, cashew, ginger, yam, soybean, melon, potatoes and maize. Most (61.97%) of the exporters exported cocoa, almost half (44.92%) were into sesame exportation, 39.34% exported hibiscus, and 32.46% were into cashew exportation. Also,

28.52%, 22.30% and 21.64% of the exporters exported ginger, yam and soybean respectively, while few of the exporters were into potatoes (9.84%) and maize (7.54%) exportation.

Table 2: Major Exported Crop Produce

Exported Crops	Frequency (n=305)	Percentage
Cocoa	189	61.97
Sesame	137	44.92
Hibiscus	120	39.34
Cashew	99	32.46
Ginger	87	28.52
Yam	68	22.30
Soybean	66	21.64
Melon	41	13.44
Potatoes	30	9.84
Maize	23	7.54

Source: Field Survey, 2024.

4.2.2. Crop Produce Exportation, Interception and Rejection

Table 3 gives the distribution of the exporters based on the numbers of crop exportation, interception and rejection. The average number of export per exporter was approximately 59 times. Many (45.90%) had exported between 1 and 50 times, 36.72% had exported about 51 to 100 times, 13.11% had exported about 101 to 150 times and 4.26% had exported more than 150 times, over their years of exportation business.

More so, the average interception times was approximately 2 times, translating to an average of 2 times of produce rejection per exporter. Most (63.93%) of the exporters experienced no interception of their crop produce, about 22.62% and 13.44% had experienced interception between 1 to 5 times and 6 to 10 times, respectively. Additionally, the mean number of rejection was found to be $0.64 \pm (1.25)$, denoting approximately 1 rejection per exporter. This may be because majority (73.11%) of the exporters claimed that their produce had never been rejected. However, a high proportion (21.97%) of the exporters stated that their produce had been rejected 1 to 3 times, and a few (4.92%) had experienced rejection 4-6 times.

Table 3: Crop Produce Exportation, Interception and Rejection

Variables	Frequency (n=305)	Percentage
Number of exports		
1-50	140	45.90
51-100	112	36.72
101-150	40	13.11
>150	13	4.26
Mean: $58.62 \pm (46.74)$		
Number of interceptions		
0	195	63.93
1-5	69	22.62
5-10	41	13.44
Mean: $1.78 \pm (2.97)$		
Number of rejection		
0	223	73.11
1-3	67	21.97
4-6	15	4.92
Mean: $0.64 \pm (1.25)$		

Source: Field Survey, 2024.

4.3 The Relationships Between Exporters’ Socio-Demographic Features and Crop Produce Exportation, Interception and Rejection

The significant relationships between exporters’ socio-demographic features and crop produce exportation, interception and rejection are presented in Tables 4, 5, 6 and 7.

4.3.1 The relationships Between Exporters’ Years of Experience and Crop Produce Exportation, Interception and Rejection

Table 4 shows the distribution of exporters based on the interaction between their years of experience and number of times of export, times of interception, and times of rejection. Results show that the relationship between the number of times of export and years of experience was significant at 1% ($Pr=0.000$) with Pearson χ^2 value of 44.5264. From the results, more than half (54.55%) of the exporters who had 1 to 10 years of export experience had exported up to 50 times, about 50% with 11 to 20 years of export experience had

exported between 50 to 100 times, 40% with greater than 30 years of export experience had exported between 101 to 150 times, while less than 10% of the exporters in each category had exported above 150 times.

Results show further that the relationship between years of experience of exporters and the number of times of interception was significant at 1% (Pr=0.000) with Pearson chi2 value of 24.4637. It was found that most (68.16%) of the exporters with 1 to 10 years of export experience encountered no interception, more than one-third (40.00%) of exporters whose crop produce had been intercepted between 1 to 5 times had more than 30years of export experience and about 32.14% of exporters who declared having been intercepted 6 to 10 times had 21-30years of export experience.

Additionally, there was a significant relationship between the number of times of rejection and years of experience of exporters at 1% (Pr=0.004) with Pearson chi2 value of 19.016. Results show that 79.85% of the exporters that were into exportation between 1 to 10 years never encountered produce rejection, many (42.86%) had encountered rejection between 1 to 3 times had 21 to 30 years of experience, while 8.11% with 11 to 20 years of export experience encountered rejection between 4 and 6 times. The trend of the result shows that number of rejection decreased with increase in years of experience of exporters.

Table 4: The relationships Between Exporters’ Years of Experience and Crop Produce Exportation, Interception and Rejection

Number of times of export	Years of experience			
	1-10	11-20	21-30	>30
1-50	108 (54.55)	27 (36.49)	2 (7.14)	3 (60.00)
51-100	62 (31.31)	37 (50.00)	13 (46.43)	0 (0.00)
101-150	22 (11.11)	5 (6.76)	11 (39.29)	2 (40.00)
>150	6 (3.03)	5 (6.76)	2 (7.14)	0 (0.00)
Pearson chi2(9) = 44.526	Pr = 0.000			
Number of times of interception	Years of experience			
	1-10	11-20	21-30	>30
0	135 (68.16)	42 (56.76)	15 (53.57)	3 (60.00)
1-5	49 (24.75)	14 (18.92)	4 (14.29)	2 (40.00)
6-10	14 (7.07)	18 (24.32)	9 (32.14)	0 (0.00)
Pearson chi2(6) = 24.464	Pr = 0.000			
Number of times of rejection	Years of experience			
	1-10	11-20	21-30	>30
0	158 (79.85)	46 (62.16)	14 (50.00)	5 (100.0)
1-3	33 (16.67)	22 (29.73)	12 (42.86)	0 (0.00)
4-6	7 (3.54)	6 (8.11)	2 (7.14)	0 (0.00)
Pearson chi2(6)= 19.016	Pr = 0.004			

Source: Data Analysis, 2024.

Note: Figures in parentheses are percentages

4.3.2 Education Level of Exporters and Number of Times of Crop Rejection

Portrayed in Table 5 are the cross-tabulation results of the relationship between the level of education of exporters and the number of times of crop produce rejection. The interaction between the level of education of exporters and the number of times of crop produce rejection was significant at 1% (Pr=0.000) with Pearson chi2 value of 25.4074. Results show that majority of the exporters who attained secondary (77.47%) and higher levels of education (76.47%) claimed they had no crop rejection experience. However, more than one-third (40.00%) of crop produce exporters who had primary education level experienced 1-3 times of rejection, and the highest proportion (20.00%) of the same category had 3-6 times of rejection. These results depict that having higher education reduces the chances that the exporters’ produce would be rejected by the destination countries. It should be noted that Nigerian crop produce exporters are mainly those with higher levels of education as described in Table 4.1.

Table 5: Education Level of Exporters and Number of Times of Crop Rejections

Education level	Number of time of rejections		
	0	1-3	4-6
Primary	12 (40.00)	12 (40.00)	6 (20.00)
Secondary	42 (77.78)	10 (18.52)	2 (3.70)
Higher	169 (76.47)	45 (20.36)	7 (3.17)
Pearson chi2(4) = 25.4074	Pr = 0.000		

Source: Data Analysis, 2024.

Note: Figures in parentheses are percentages

4.3.3 Age of Exporters and Number of Times of Rejection

Presented in Table 6 are the descriptive results showing the interaction between the age of exporters and the number of crop rejection. The interaction was significant at 5% (Pr=0.017) with Pearson chi2 value of 12.0457. It was found that the majority of the exporters who were aged between 25-40 years (76.88%) and 41-55 years (72.22%) had never experienced any crop rejection. However, the highest proportion (40.48%) of exporters who experienced 1-3 rejection were those above 55 years and none of them experienced 4-6 times of rejection. The trend of the result shows that crop produce exporters are less likely to experience rejection as they grow older than 55 years.

Table 6: Age of Exporters and Number of Times of Rejection

Exporters' age	Number of time of rejections		
	0	1-3	4-6
25-40	133 (76.88)	30 (17.34)	10 (5.78)
41-55	65 (72.22)	20 (22.22)	5 (5.56)
>55	25 (59.52)	17 (40.48)	0 (0.00)
Pearson chi2(4) = 12.0457		Pr = 0.017	

Source: Data Analysis, 2024.

Note: Figures in parentheses are percentages

4.3.4 Sources of Funding of Exporters and Number of Times of Export

Results in Table 7 illustrate the descriptive results of the relationship between sources of funding of exporters and the number of times of export. It was found that more than half (52.22%) who financed their businesses with personal savings exported between 1 to 50 times and many (42.22%) of those who had family support exported between 51 to 100 times. The majority of those who had access to cooperative loan were only able to export between 1 to 50 times. This suggests that obtaining cooperative loan may not necessarily favour crop produce exportation. It was also found that most exporters who obtained bank loan (58.46%) and government intervention loan (69.23%) could conveniently export between 51 to 100 times. The relationship between sources of funding of crop exporters and the number of times of export was significant at 1% (Pr=0.000) with Pearson chi2 value of 81.9804. It can be deduced that the sources of funding available to Nigerian exporters may contribute to the number of times they would likely export crop produce.

Table 7: Sources of Funding of Exporters and Number of Times of Export.

Sources of funding	Number of times of export			
	1-50	51-100	101-150	>150
Personal savings	47 (52.22)	19 (21.11)	22 (24.44)	2 (2.22)
Family support	14 (31.11)	19 (42.22)	9 (20.00)	3 (6.67)
Cooperative loan	58 (73.42)	18 (22.78)	0 (0.00)	3 (3.80)
Bank loan	16 (24.62)	38 (58.46)	9 (13.85)	2 (3.08)
Government intervention loan	5 (19.23)	18 (69.23)	0 (0.00)	3 (11.54)
Pearson chi2(12) = 81.9804		Pr = 0.000		

Source: Data Analysis, 2024.

Note: Figures in parentheses are percentages

4.4 Socio-Demographic Determinants of Crop Produce Rejection Among Exporters in Nigeria

Ordinary least square results of socio-demographic determinants of crop produce rejection among exporters in Nigeria are presented in Table 8. The model was significant at $p < 0.01$, R-squared and adjusted R-squared are 0.3567 and 0.3210 respectively. These imply that the model is of good fit and that the independent variables are responsible for 35.67% change in the dependent variable.

Sex: Sex of the crop produce exporters was positive and significant at $p < 0.10$. This implies that being a male would increase the experience of rejection among crop produce exporters by 0.3272. Therefore, male crop produce exporters are likely to experience rejection than female crop exporters.

Level of Education: Having formal education was negative and significant at $p < 0.01$. Using primary education as the base category, exporters having secondary and tertiary education were found to be significantly related to the number of times of crop produce rejection. Attainment of secondary education level was associated with a 0.8059 decrease in produce rejection. Also, having higher education was associated with a 0.9526 decrease in produce rejection when compared to having primary education. This implies that education is very crucial in the ability to understand and keep to rules and regulations in crop produce export.

Source of Finance: With personal savings as the base category of finance for export business, family support was found to be positive and significant at $p < 0.10$. It was associated with a 0.3899 increase in crop produce rejection. This implies that crop exporters who financed their businesses with family funds would experience produce rejection than exporters who finance the business with personal savings, all things being equal.

Times of Interception: The number of times of interception was positive and significant at $p < 0.01$. That is, an increase in times of interception was responsible for 0.1912 increase in crop produce rejection. Since interception could lead to rejection, the number of times of crop produce interception would increase the times of crop produce rejection.

Geopolitical Zone: Being a resident of South-East zone was positive and significant at $p < 0.01$ and it was associated with a 0.6823 increase in the number of times of rejection of crop produce. With North-Central as the base category, crop produce exporters in the South-East would experience crop produce rejection than those who are in the North-Central zone, all things being equal.

Table 8: Socio-Demographic Determinants of Crop Produce Rejection Among Exporters in Nigeria

Independent variables	β	Standard error	p>/t/
Age (years)	-0.0058	0.0073	0.427
Sex (b: female)	0.3272	0.1932	0.091
Level of education (b: primary)			
Secondary education	-0.8059	0.2444	0.001
Higher education	-0.9526	0.2199	0.000
Source of funding (b: personal savings)			
Family support	0.3899	0.1997	0.052
Times of export (number)	0.0011	0.0014	0.435
Times of interception (number)	0.1912	0.0219	0.000
Geopolitical zone (b: North central)			
South-East	0.6823	0.2035	0.001
Constant	0.5714	0.4151	0.170
Number of observations = 305			
Prob>F = 0.0000			
R-square = 0.3567			
Adjusted R-square = 0.3210			

Source: Data Analysis, 2024

V. Conclusion

This study examined the socio-demographic determinants of produce rejection among crop produce exporters in Nigeria. Crop exportation was dominated by males who are in their active age, married, attained higher education, and had an average of 10 years of export experience. Cocoa was the most exported while maize was the least exported. On the average, crop produce were exported approximately 59 times, intercepted 2 times, and rejected 1 time by the destination countries. Also, exporters being male and having family funds for export business, number of times of interception and dwelling in South-East zone increased crop produce rejection, while attainment of at least secondary educational level decreased crop produce rejection in Nigeria. There were significant relationships between exporters' socio-demographic characteristics (age, years of export experience, source of funding) and crop produce rejection. The significant socio-demographic determinants of crop produce rejection in Nigeria include sex of exporter, source of funding of export business, times of interception of crop produce, educational level and geo-political zone.

VI. Recommendations

In the light of the findings, the following recommendations are made:

- i. Capacity building programs for exporters on proper phytosanitary practices, through the Nigeria Agricultural Quarantine Service, should be implemented to reduce the occurrence of interception, especially in the South-East zone.
- ii. There should be an improved access to affordable credit options and information about the need of the export destination countries.

VII. Suggestions for further studies

This study has examined the socio-demographic determinants of crop produce rejection among crop produce exporters in Nigeria. An in-depth research is suggested on the determinants of cocoa produce rejection as one of the main exported product in Nigeria. Impacts of technology adoption on quality assurance of export crop produce may also be investigated.

VIII. Ethical approval

For the ethical consent, the researchers wrote consent letter to the Association of Nigerian Exporters prior to the commencement of data collection and the respondents were requested to read the consent form and sign to indicate their agreement to be interviewed.

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