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CONSUMER BEHAVIOR AND PERCEPTIONS TOWARDS AGRO-PROCESSED FRUIT AND VEGETABLES IN NGAKA MODIRI MOLEMA DISTRICT

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ABSTRACT

The behavior of consumers with regard to agro-processed fruit and vegetables differs. This study aimed to explore the behavior of consumers and the perceptions of consumers towards agro-processed fruit and vegetables in the Ngaka Modiri Molema district of North West province. A total of 384 consumers were interviewed using a structured questionnaire. Univariate descriptive statistics was used to determine the socio-economic characteristics of consumers, indicating that the most purchased agro-processed fruit and vegetable product was juice (92%) and the least purchased agro-processed fruit and vegetable was pickle (17%). A Likert scale was used to describe the attitude of consumers towards agro-processed fruit as well as vegetables and consumers indicated positive attitudes regarding familiarity, discounts and quality assessment of agro-processed fruit and vegetables. Results of a binary logistic regression model showed that geographic region (p = 0.084), monthly household income (p = 0.014), preference for the canned product (p = 0.013), preference for grape (p = 0,002) and source of information (p = 0.078) had a positive and significant correlation with the consumers` willingness to purchase agro-processed fruit and vegetables.

Keywords: Consumer behavior, consumer perception, agro-processing, fruit, vegetables, North West.

INTRODUCTION

The agricultural sector plays a supreme role in the development of most developing countries across the globe. This sector forms backward and forward linkages with the manufacturing sector to stimulate agricultural transformation. The agricultural sector supplies resources to the manufacturing sector thereby creating a forward linkage. A backward linkage occurs when the agricultural sector demands industrial inputs from the manufacturing sector. A current emerging phenomenon known as agro-processing results from these linkages (Mhazo *et al.*,

2012). The agro-processing industry contributes to employment and income generation in developing nations (Mhazo *et al.*, 2012).

In South Africa, approximately 29% of total fruit production is processed while only 10% of total vegetable production is processed (Van Lin *et al.*, 2018). Fruit and vegetables are processed into a range of products such as jellies and jams, pickles and chutneys, juices and concentrates, canned and dehydrated products, etc. Kapoor and Kumar (2015) assert that there is a higher consumption of vegetables relative to fruits and that vegetables are purchased more regularly than fruits. Mohammad (2019) asserts that customer needs and demand change drastically as a result of increased development in various market segments, therefore knowing the customers` needs should be a priority.

Consumer valuation of food is determined by knowledge and public understanding. Consumers assess a product and make decisions based on their priorities and values by incorporating knowledge about that particular product`s characteristics and effects (Shafie and Rennie, 2012). The findings of Massaglia *et al.* (2019) show that consumers consider freshness, origin and seasonality when purchasing fruit and vegetables while on the other hand, they do not give much consideration to variety, brand and organic certification. Gunden and Thomas (2012) reveal that consumers prefer food characteristics as freshness, flavour, hygiene, nutritional content and affordability, respectively. Nonetheless, there are heterogeneous preferences for the characteristics among consumers.

Recent research proposes that it may not be adequate to utilize consumer preference for a particular feature to describe consumer choices or consumer purchasing behavior (Gunden and Thomas, 2012). Hence, a more functional approach would be to assist consumers to compare multiple features concurrently to describe consumer purchase behavior. For example, the quality, credence and economic features of agro-processed fruit and vegetables should be considered to completely explain the consumers` purchase behavior.

LITERATURE REVIEW

Consumer behavior is outlined in terms of analytical behavior, impulsive behavior and habitual behavior. The significance of certain fundamental values including price, healthiness and naturalness may vary among cultures and also have varied effects on consumer attitudes and behaviors (Siegrist and Hartmann, 2020). According to Vijayalakshmi *et al.* (2020) quality, price, flavor and availability are important determinants of consumer behavior towards a particular product. Consumer behavior is influenced both by endogenous (internal) factors and exogenous (external) factors. According to Herath (2019), endogenous factors include self-concept, attitudes, motives and needs, learning as well as personalities whilst exogenous factors include family, culture, socio-economic circumstances, and reference groups.

Consumer behavior is influenced by other psychological factors associated with self such as a sense of belongingness, self-esteem, attitude and feeling of power. Radulescu *et al.* (2021) report that the behavior and attitudes of consumers of food are affected by sociodemographic factors such as gender, education, age, employment status, economic situation, size and structure of households, etc. Factors such as average annual income, families with children and age determine consumer preference as well as consumer behavior and further determine consumers` preferred point of purchase for fruit and vegetables (Massaglia *et al.*, 2019).

A study by Massaglia *et al.* (2019) found that seasonality, origin and freshness were the factors that Italian consumers valued most when making purchase decisions whereas brand, variety and organic certification received little consideration. The purchasing behavior of consumers is determined by endogenous factors such as self-concept, learning, needs and motives, attitudes and personalities as well as exogenous factors such as reference group, socioeconomic status, culture and family (Vukasovič, 2016). In addition, Vukasovič (2016) states that not only sociocultural and sociodemographic factors influence consumers` purchase decisions but factors such as place of sale, ambience, convenience in purchasing, product quality, the nation of origin and price also have an impact on the consumers` purchase decisions.

The perception of consumers regarding a certain product depends on the features of that product. The process of consumer perception comprises three stages, namely; selection, organization and interpretation. Consumer perception can be influenced by the standard of living, the customer service given to the customer and the marketing strategy used by the product provider (Simmonds and Spence, 2017). Information about the processing of products influences consumer perception, with some processing techniques such as irradiation experiencing critical degrees of uncertainty and dislike among numerous individuals (Song *et al.*, 2022).

The benefits of processed products include extended shelf life, preservation, cheaper price than fresh products, convenience, little or no preparation for the final user, and being ready for consumption. According to Shafi *et al.* (2022), the agro-processing sub-sector of South Africa has a great potential to improve the country`s economy through international trade earnings. Additionally, Bertelsmann-Scott and Markowitz (2018) noted that the demand for fruit juice is increasing providing more opportunities for value-adding through processing, packaging, branding and labelling of agro-processed fruit in the country. Demand for less processed vegetables is rising as a result of growing consumer interest in the health and sensory features of food (such as nutritional value, naturalness and freshness) and sustainable diets (Song *et al.*, 2022).

METHODOLOGY

The study was conducted in the district of Ngaka Modiri Molema of the North West province, South Africa. This district shares an international boundary with the country of Botswana and

has a total area of 28 206 km². The agricultural sector is the main economic sector in the Ngaka Modiri Molema district (Oduniyi and Tekana, 2020). Ngaka Modiri Molema district consists of five local municipalities (Ratlou, Mafikeng, Ditsobotla, Tswaing and Ramotshere Moiloa) and fifteen towns. The main supermarkets selling agro-processed fruit and vegetables in this district include Pick `n Pay, Woolworths, SPAR, NWK Retail and Shoprite. This district`s population is primarily composed of low-income households with limited access to resources and food (Dikgole, 2022). The population of this study was 553 404 individuals who were 20+ years old residing in the Ngaka Modiri Molema district (COGTA, 2020).

SAMPLING METHODS

A simple random sampling was used to deduct a sample of 384 individuals from the study population. This type of sampling ensures that all individuals within the study population have equal chances of being chosen thus reducing biases. To avoid the bias of the sample, the questionnaire was as short and accessible as possible.
The following procedure was thus used:

$$n = \frac{z^2 \times N \times p \times q}{N \times E^2 + z^2 \times p \times q}$$

where;
n = sample size
z = confidence interval
N = population size
p = q = maximum population variability
E = sampling error

$$\frac{1.96^2 \times 553404 \times 0.5 \times 0.5}{553404 \times 0.05^2 + 1.96^2 \times 0.5 \times 0.5}$$

n = 384

TABLE 1: SAMPLE SIZE CALCULATIONS

Population size (N)	Confidence interval (z)	maximum population variability (p)	maximum population variability (q)	Sampling Error (E)	Sample size (n)
553 404	1.96	0.5	0.5	0.05	384

Source: Author`s compilation, 2023.

LIKERT SCALE

The Likert scale was used to fulfil objective 2, which is to examine the attitude of consumers towards agro-processed fruit and vegetables. Likert scale permits the respondents to express their degree of agreement or disagreement with the statement. Categories of the degree of agreement or disagreement can be analysed as ordinal scales of the measurement level. Two measures of central tendency (mean and median) were used to analyse data from a Likert scale.

TABLE 2: VARIABLES IN THE LIKERT SCALE

Dependent variable(s)	Independent variable(s)	Prior expectation
Attitude towards agro-processed fruit and vegetables	Familiarity	+/-
	Price comparison	+/-
	Discounts	+/-
	Brand selectivity	+/-
	Quality selectivity	+/-
	Store selectivity	+/-

Source: Author`s compilation, 2023.

INFERENTIAL STATISTICS (BINARY LOGISTIC REGRESSION MODEL)

To determine the factors affecting the willingness of consumers to purchase agro-processed fruit and vegetables, the binary logistics model was used. The binary logistic regression model is applied when the outcome variable has two possible values and it permits the addition of power terms and explicit interaction (Sperandei, 2014). The binary regression model is useful in analysing data where the researcher intends to find the likelihood of a certain event occurring. This study analysed the probability of purchasing agro-processed fruit and vegetable. In this study, the logistic model was applied because of its comparative mathematical simplicity and fewer assumptions in theory. Furthermore, logistic regression analysis is more statistically robust in practice and is easier to apply and understand than other methods.

$\text{Logit}(Pi) = \text{In}\left(\frac{Pi}{1-Pi}\right) = \alpha + \beta 1X1 + \ldots + \beta kXk + Ui$

$\text{In}\left(\frac{Pi}{1-Pi}\right)$= Logit for willingness to purchase agro-processed fruits and vegetables

Pi = Probability that a farmer is willing to purchase agro-processed fruit and vegetables

1 − P = Probability that a farmer is not willing to purchase agro-processed fruit and vegetables

α and β = Estimated parameters

X = Explanatory variable

Ui = Error term

TABLE 3: VARIABLES IN THE BINARY LOGISTIC REGRESSION MODEL

Variables	Description	Unit of measurement	Prior expectation
Dependent variable			
Purchase of agro-processed fruits and vegetables	willingness to purchase=1; 0 Otherwise	Dummy	
Independent variables			
X1= Gender	Male= 1; 0 otherwise	Dummy	+/-
X2= Age	Age of farmer in years	Years	+/-
X3= Educational Level	Formal education=1; 0 otherwise	Dummy	+/-
X4= Household Size	Household size	Number	+/-
X5= Household Income	Income received by the consumer	Rands	+/-
X6= price	The price charged on a product	Rands	+/-
X7= Attitude towards product	Positive attitude=1; 0 otherwise	Dummy	+/-
X8= reference group	Consumer`s reference group	Dummy	+/-
X9= Quality of a product	Quality of a product	Dummy	+/-
X10= place of sale	Product`s place of sale	Dummy	+/-
X11= Occupation	Consumer`s occupation	Dummy	+/-

Source: Author`s compilation, 2023.

RESULTS

The table below demonstrates that 53% of females participated in this study while 47% of participants were males. Table 4 shows that 36.7% which is the majority of the consumers of agro-processed fruit and vegetables fell under the age group of 20-29 years while the minority of consumers fell under the age group of 90-99 years at 0.3%. The majority of the participants had occupations under the career field of business management, communications and administration (16.7%) and the minority of the participants had occupations under the community and social services segment (0.3%). According to the table below, the most purchased fruit was apple whereby 84% of the participants indicated that they purchase apple. On the other hand, the least purchased fruit was berry (39%). The most purchased vegetable was potato (79%) and the least purchased vegetable was pea comprising 49%. The most purchased agro-processed product in this study area was juice (92%) while the least purchased agro-processed product was pickle (17%). The table below shows that the majority of the participants (41.1%) indicated that they were the ones who made the purchasing decision in the household and the least (0.3%) was the grandfather as the purchase decider. It is shown in the

table below that 30.7% of participants purchased agro-processed fruit and vegetables sometimes and only 1.3% of participants never purchased agro-processed fruit and vegetables. The results show that the majority of participants (24.7%) obtained information from family and friends and the least (10.7%) relied on the radio as a source of information about agro-processed fruit and vegetables.

Table 4: CHARACTERISTICS OF THE PARTICIPANTS

	Gender	**Percentage (%)**
Minimum Category	Male	47
Maximum Category	Female	53
	Age	**Percentage (%)**
Minimum Category	90-99	0.3
Maximum Category	20-29	36.7
	Occupation	**Percentage (%)**
Minimum Category	Community and social services	0.3
Maximum Category	Business management, communications and administration	16.7
	Purchase of fruit types	**Percentage (%)**
Minimum Category	Berry	39
Maximum Category	Apple	84
	Purchase of vegetable types	**Percentage (%)**
Minimum Category	Peas	49
Maximum Category	Potato	79
	Purchase of agro-processed fruit and vegetables	**Percentage (%)**
Minimum Category	Pickle	17
Maximum Category	Juice	92
	Purchase decider	**Percentage (%)**
Minimum Category	Grandfather	0.3
Maximum Category	Myself	41.1
	Frequency of purchase	**Percentage (%)**
Minimum Category	Never	1.3
Maximum Category	Sometimes	30.7
	Source of information	**Percentage (%)**
Minimum Category	Radio	10.7
Maximum Category	Friends and family	24.7

Source: Field survey, 2023.

The findings in Table 5 indicate that 86.2% of participants in Ngaka Modiri Molema were Africans, 2.1% were Indians, 7.8% were Coloureds, and only 3.9% were Whites. According to Table 5, the majority of participants (77.6%) were single, and 14.3% were married. Results further reveal that 4.2% were divorced and 3.9% were widowed. In observation of results in Table 5, only 2.6% of the participants did not respond to income level, and the majority of the participants (41.1%) within different municipalities of the Ngaka Modiri Molema district earned below R5 000 while 16.1% of the participants earned the average income between R5 000 - R14 999.

The results of the study reveal that 8.6% of the participants earned between R15 000 - R19 999 while 14.1% of the participants earned R20 000 or more. Participants who preferred not to disclose their income bracket comprised 17.4% of the study population. The results in Table 5 indicate that 1.3% of participants did not have a source of income, more than fifty percent of participants (55.5%) relied on salary and wages, followed by 27.9% of participants depending on government grants. The study found that 12.8% of participants were self-employed and 12.6% of them relied on student allowance.

TABLE 5: CHARACTERISTICS OF THE PARTICIPANTS

Variables	**Frequency (n)**	**Percentage (%)**
Population group		
African	331	86.2
Indian	8	2.1
Coloured	30	7.8
White	15	3.9
Marital status		
Single	298	77.6
Married	55	14.3
Divorced	16	4.2
Widowed	15	3.9
Monthly household income		
No answer	10	2.6
Less than R5 000	158	41.1
R5 000 - R14 999	62	16.1
R15 000 - R19 999	33	8.6
R20 000 or more	54	14.1
Prefer not to say	67	17.4
Source of income		
None	5	1.3
Salary and wages	213	55.5
Government grant	107	27.9
Self-employment	49	12.8
Student allowance	10	2.6

Source: Field survey, 2023.

Figure 1 below shows that participants of the study had different levels of education. It can be observed that only 4.17% did not respond to educational status due to unknown reasons. The figure further illustrates that 15.89% of participants did not have basic education, 7.03% completed ABET and 11.46% had primary education. Moreover, 20.31% of the participants had secondary education and the majority of participants (41.15%) had tertiary education.

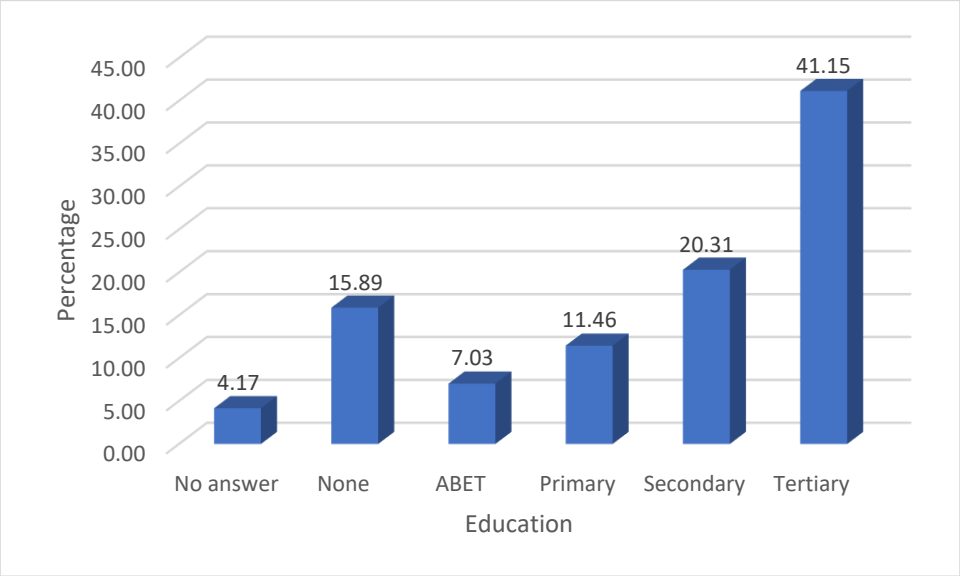

Figure 1: Distribution by the level of education.

Source: Field survey, 2023.

Accounting for employment status, the results show that only 0.52% of participants did not respond to employment status, 51.56% of the participants were full-time workers, 11.46% were part-time workers and 36.46% of study participants were unemployed (Figure 2).

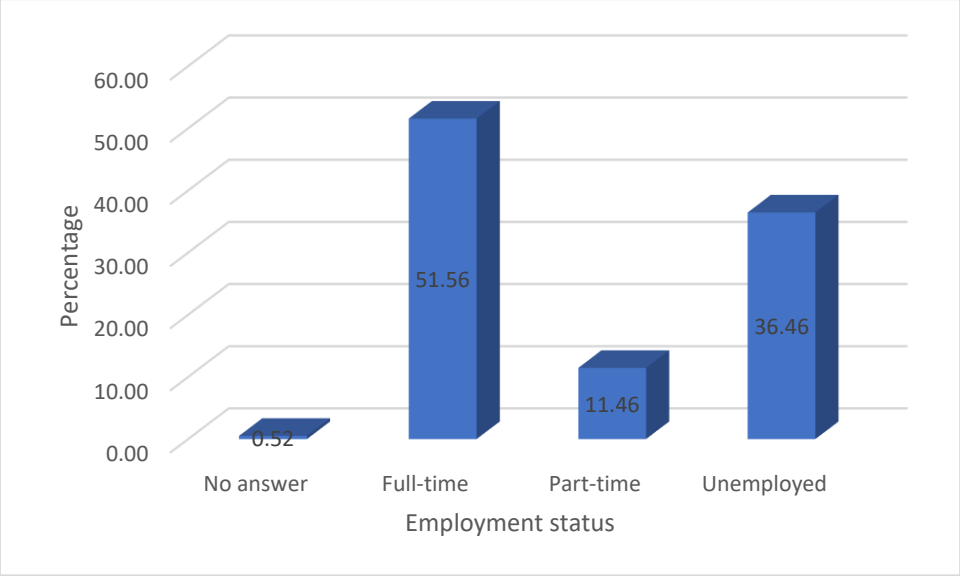

Figure 2: Distribution by employment status.

Source: Field survey, 2023.

The table below shows that the mean of the household was 5.61 while the standard deviation thereof was 2.45. The highest household size was a household with 15 family members and the lowest household size was a household with only 1 member. The proportion of fruit and vegetables purchased by households and compliance with dietary recommendations both decline as family sizes rise (Sobhani and Babashahi, 2020).

TABLE 6: HOUSEHOLD SIZE OF THE PARTICIPANTS.

Mean	Standard deviation	Maximum	Minimum
5.61	2.450	15	1

Source: Field survey, 2023.

CONSUMERS` ATTITUDES TOWARDS AGRO-PROCESSED FRUIT AND VEGETABLES

A Likert scale was used to fulfil objective 2 of the study which was to examine consumers` attitudes towards agro-processed fruits and vegetables in Ngaka Modiri Molema district. A Likert scale allows individuals to express their degree of agreement or disagreement with the statement. Categories of the degree of agreement or disagreement were analysed as ordinal scales of the measurement level. Since this is a five-point Likert scale, the mean value from 1 to 1.8 means strongly disagree. From 1.81 to 2.60 means disagree. Neutral is indicated by a mean value from 2.61 to 3.40 while agree is indicated by a mean value from 3.41 to 4.20. The mean value from 4.21 to 5 means strongly agree.

TABLE 7: ATTITUDES OF PARTICIPANTS TOWARDS AGRO-PROCESSED FRUIT AND VEGETABLES ON A LIKERT SCALE.

Variables	N	Minimum	Maximum	Mean	Std. deviation
Familiar with agro-processed fruit and vegetables	384	1	5	3.91	0.911
Compare prices before purchasing agro-processed fruit and vegetables	384	1	5	3.60	1.288
Take advantage of special offers or discounts of agro-processed fruit and vegetables	384	1	5	4.01	1.035
Search for a certain brand of agro-processed fruit and vegetable before purchasing	384	1	5	3.25	1.283
Search for a certain quality of agro-processed fruit and vegetables before purchasing	384	1	5	3.69	1.159
Selective about the store where agro-processed fruit and vegetables are purchased	384	1	5	3.16	1.264

NB: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.
Source: Author`s compilation, 2023.

Table 7 reveals that participants who indicated that they were familiar with agro-processed fruit and vegetables in the Ngaka Modiri Molema district indicated that they agreed, whereby L = 3.91. This indicates a positive attitude and it means that the majority of the participants were familiar with the agro-processed fruit and vegetables. These findings are similar to a study by Sabbe *et al.* (2008) that investigated the familiarity and purchasing intention of consumers for fresh and processed tropical fruit products.

Based on the results of Table 7, participants who indicated that they compare prices of agro-processed fruit and vegetables before purchasing indicated that they were neutral (L = 3.60). This indicates that the majority of the respondents had a neutral attitude when it came to the comparison of prices of the agro-processed fruit and vegetables. Nicolae and Corina (2011) revealed that decisions made by consumers on fruit and vegetables were influenced by cognitive factors such as the best price.

Table 7 reveals that participants who indicated that they take advantage of discounts for the agro-processed fruit and vegetables indicated that they agreed (L = 4.01). This indicates a positive attitude towards discounts of the agro-processed fruits and vegetables. Additionally, it means that the majority of the participants took advantage of discounts of the agro-processed fruit and vegetables. This is similar to the results of Waterlander *et al.* (2012), which concluded that lowering the price of fruits and vegetables stimulates the purchase of fruit and vegetables.

The above Table 7 indicates that L = 3.25 for participants who looked for a certain brand of the agro-processed fruit and vegetables before purchasing. Moreover, this indicates a neutral attitude. It means that the majority of the participants were indifferent concerning brands of the agro-processed fruit and vegetables. These findings are not consistent with a study conducted by Bulsara and Trivedi (2016), which asserted that consumers are selective and specific regarding brand preference when purchasing perishable goods.

According to the results in Table 7, the majority of the participants agreed that they searched for a certain quality of agro-processed fruit and vegetables (L = 3.69). This indicates a positive attitude towards quality selectivity of the agro-processed fruit and vegetables. This is in line with the results of Janssen (2018), which concluded that a higher quality perception leads to a higher purchase intention.

Table 7 identified that participants were neutral regarding store selectivity of agro-processed fruit and vegetables (L = 3.16). Additionally, this indicates that the majority of the participants had a neutral attitude when it came to selecting the store of agro-processed fruit and vegetables. These findings contradict the conclusions of Marques *et al.* (2021) that posited that consumers have different store choices.

FACTORS INFLUENCING CONSUMERS` WILLINGNESS TO PURCHASE AGRO-PROCESSED FRUIT AND VEGETABLES

Table 8: BINARY LOGISTIC REGRESSION RESULTS

	B	Sig.	Exp (B) (IRR)	95% C.I For EXP (B)	
				Upper	Lower
Variables					
Municipality	1.412	0.084***	4.104	0.829	20.320
Population group	0.355	0.786	1.426	0.110	18.567
Educational level	-1.617	0.241	0.198	0.013	2.960
Monthly household income	2.001	0.014**	7.393	1.504	36.331
Familiar with agro-processed Products	-0.157	0.885	0.855	0.101	7.217
Store selectivity	-3.257	0.013**	0.039	0.003	0.504
Peach	-0.629	0.042**	0.533	0.162	1.748
Beans	-0.903	0.013**	0.405	0.123	1.336
Jelly	-0.252	0.036**	0.777	0.220	2.750
Chutney	-0.111	0.035**	0.895	0.240	3.331
Canned product	0.405	0.013**	1.499	0.473	4.752
Source of information	1.988	0.078***	7.298	0.803	66.336
Grape	2.051	0.002**	7.774	2.113	28.596

*NB. RC = Reference category. IRR = Odds ratio. Significant level using 5% confidence interval and 10% interval. P-values = P <0.05** and P <0.010****

Source: Field survey, 2023.

The municipality has a positive relationship with the willingness to purchase agro-processed fruit and vegetables and it is significant at 10 percent level. The odds ratio indicated that for every one unit increase on the municipality, the odds of expressing the willingness to purchase agro-processed fruit and vegetables increased by a factor of 4.104. This can be attributed to the argument that consumers from different geographical regions have different preferences regarding the purchase of products. These findings are in line with the results of Djeri *et al.* (2014) that indicated that place of residence has a strong impact on the purchase-making process of consumers.

Monthly household income had a positive correlation with the willingness to purchase agro-processed fruit and vegetables and it was significant at 5 percent level. The odds ratio indicated that for every one unit increase on monthly household income, the odds of expressing the willingness to purchase agro-processed fruit and vegetables increased by a factor of 7.393. The results of Wekeza and Sibanda (2019) also revealed that household income per month was statistically significant and it positively affected the purchase behavior of consumers.

Store selectivity had a negative relationship with the willingness to purchase agro-processed fruit and vegetables and it was significant at 5 percent level. Participants who responded that they strongly disagree regarding store selectivity were less likely (IRR=0.039) to purchase agro-processed fruit and vegetables compared to participants who indicated that they strongly agree. According to Vukasovič (2015), place of sale influences the purchase decisions of consumers.

Peach had a negative correlation with the purchase of agro-processed fruit and vegetables and it was significant at 5 percent level. Participants who indicated that they did not prefer peach were less likely (IRR=0.533) to purchase agro-processed fruit and vegetables compared to participants who indicated that they preferred peach. This can infer that participants in the study area did not prefer peaches. A study by Kelley *et al.* (2016) reported the frequent consumption of peaches as well as the interest of consumers in peach value-added products.

Beans had a negative relationship with the willingness to purchase agro-processed fruit and vegetables and it was significant at 5 percent level. Participants who indicated that they did not prefer beans were less likely (IRR = 0.405) to purchase agro-processed fruit and vegetables compared to those who indicated that they prefer beans. This can imply that the type of vegetable determined the purchase of that particular agro-processed vegetable thereof. This contradicts the findings of Byarugaba *et al.* (2020), which found out that consumers' preference for processed beans was significant and positive.

Jelly had a negative relationship with the willingness to purchase agro-processed fruit and vegetables and it was significant at 5 percent level. Participants who indicated that they did not prefer jelly were less likely (IRR = 0.777) to purchase agro-processed fruit and vegetables compared to those who indicated that they prefer jelly**.** This is in contrast with the findings of Cano-Lamadrid *et al.* (2020) that reported an increased consumption of jelly due to its health benefits.

Chutney had a negative relationship with the willingness to purchase agro-processed fruit and vegetables and it was significant at 5 percent level. Participants who indicated that they do not prefer chutney were less likely (IRR = 0.895) to purchase agro-processed fruits and vegetables compared to those who expressed that they prefer chutney. Joshi *et al.* (2017) argued that individuals like chutney developed from different varieties of guava.

Canned products had a positive relationship with the willingness to purchase agro-processed fruit and vegetables and it was also significant at 5 percent level. Participants who indicated that they do not prefer canned products were more likely (IRR = 1.499) to purchase agro-processed fruit and vegetables compared to those who indicated that they prefer canned products. This is consistent with the findings of HoraÈ *et al.* (2016) that reported a rising consumption of canned and preserved fruit and vegetables due to seasonality and other factors.

Source of information had a positive relationship with the willingness to purchase agro-processed fruit and vegetables and it was also significant at 10 percent level. The odds ratio indicated that for every one unit increase on the source of information, the odds of expressing the willingness to purchase agro-processed fruit and vegetables increased by a factor of 7.298. These findings are similar to the findings of Chen (2016), which discovered that sources of information positively affect consumers` attitudes and purchase intentions.

Grape had a positive relationship with the willingness to purchase agro-processed fruit and vegetables and it was also significant at 5 percent level. Participants who indicated that they do not prefer grapes were 7 times likely to purchase agro-processed fruit and vegetables compared to those who indicated that they prefer grapes. These findings are similar to the conclusions of a study by Seccia *et al.* (2019), which indicated that table grapes are purchased at a high rate.

CONCLUSION

Descriptive statistics provided results about the socio-economic characteristics of consumers in the study. A total of 384 individuals were interviewed whereby 53% were males and 47% were females. The majority of the consumers of agro-processed fruit and vegetables were young adults (20-29years) while the minority of the consumers were elderly/old adults (90-99years). Most of the consumers in this study area were Africans and also majority of the participants in this study area were single. The majority of the consumers of the agro-processed fruit and vegetables indicated that they had an income bracket of less than R5000 while the minority did not provide their income bracket at all.

Consumers indicated positive attitudes regarding familiarity, discounts and quality assessment of agro-processed fruit and vegetables. On the other hand, consumers of agro-processed fruit and vegetables indicated a neutral attitude regarding price comparison, brand selectivity and store selectivity. No negative attitude towards agro-processed fruit and vegetables was indicated by consumers. Preferences for peach, beans, jelly, chutney, grape and canned products were found to be statistically significant with the willingness of consumers to purchase agro-processed fruit and vegetables. Other factors such as municipality, monthly household income, store selectivity and source of information indicated a significant relationship with the willingness to purchase agro-processed fruit and vegetables.

POLICY RECOMMENDATIONS

The information from this study can assist marketers to apprehend trends of agro-processed fruit and vegetables and hence modify their marketing segmentation strategies accordingly. From the findings of this study, geographic region, selection of stores and source of information were found to be significant in association with the purchase of agro-processed fruit and vegetables. Since this is the case, marketers can carry out market analysis by taking into account the geographic regions of the targeted consumers.

Producers and suppliers of agro-processed fruit and vegetables will have to consider making different stores or points of purchase available for consumers. Additionally, the availability of different sources that will convey information about the agro-processed fruit and vegetables should be taken into consideration. According to this study, most of the consumers of agro-processed fruit and vegetables are younger therefore some if not most of the sources of information that will be utilized should be aligned with the age group of younger people.

Grassroots action or campaigns to increase the purchase frequency of agro-processed fruit and vegetables should be considered. Another way to effectively increase the purchase of agro-processed fruit and vegetables can be fulfilled by increasing consumers` knowledge about these products. This study provides the latest insights about agro-processed fruit and vegetables. The findings of this study could be utilized for adjusting and reinforcing marketing strategies for these types of products or planning innovative strategies for their expanded consumption, production and future development.

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