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**CONSUMERS' PRODUCT KNOWLEDGE AND ATTITUDES AS
DETERMINANTS OF BUYING INTENTION OF PROCESSED SARDINE
PRODUCT: CASE OF LAKE VICTORIA BASIN**

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ABSTRACT

Purpose of the study: This paper highlights the determinants of consumers' buying behavior of processed sardine products from Lake Victoria basin by determining consumers' knowledge and attitudes in relation to buying decision towards processed sardine products.

Short introduction of problem statement: Literatures postulated that consumer behavior describes how individuals and groups select, buy, use and dispose goods, services, idea or experience to satisfy their need and wants. Consumer buying behavior is affected by uncontrollable factors that need to be considered while understanding consumers. Since the public health authorities are promoting fish consumption in order to improve public health, in addition it has been shown that the value contributions of sardine product in Lake Victoria basin is not reflecting its landings, therefore it is important to determine the consumers' knowledge and attitudes in relation to buying decision towards processed sardine products.

Method/methodology: Data was collected from 190 consumers in Mwanza, Mara and Kagera regions in Tanzania. After prior testing the data to fit the linear regression model, the multiple linear regression model using SPSS program version 24 was employed to analyze the collected data.

Results of the study: The results have indicated that consumers' product knowledge and attitudes were the main determinants of buying intentions of processed sardine products. Significant result at ($p < 0.001$) on product knowledge and attitude was obtained proving that consumer knowledge on the products creates consumers' attitudes towards the products. Consumer knowledge

predictors were able to explaining the consumer attitude variance by 68.4% and 39.2% for sardine products dried on grass and nets and dried on rocks respectively. In addition, consumers' attitudes and product knowledge in relation to buying intention was significant at ($p < 0.001$), implying that the predictors were the main determinants for purchasing of products in question. The analysis have indicated that the buying intention had significant correlation with consumers' eating habits, family preferences and consumers' attitudes.

Conclusion and policy recommendation: Strategic marketing planning of processed sardine products should focus on increasing consumers' attitudes by creating knowledge through products labelling and improve the value addition technologies. The value addition should focus on determining the nutritional content and shelf life of different processed sardine products. Processors participating in national and international exhibitions will increase subjective and objective knowledge as well as improve the consumers' attitudes towards processed sardine products.

Key words: *Attitude, product knowledge, buying intention, theory of planned behavior.*

1.1 INTRODUCTION

Consumers consider fish as healthy food due to presence of high amount of Omega (ω) 3- fatty acids belongs to long chain of polyunsaturated fatty acids (PUFAs) group whose main sources are fish oils (Rahmaniya and SekharanN, 2018), including *icosapentaenoic acid* (EPA) and *docosahexaenoic acid* (DHA) (Carlucci *et al.*, 2015). It has been found that consumption of fish species higher in ω -3 PUFAs, reduces the risk of coronary heart diseases deaths by 36% and reduced total mortality by 17% (Rahmaniya & SekharanN, 2018). The benefits of Omega 3-fatty acids have preventive role in dyslipidemia and overall cardiac health (Yahodhahra *et al.*, 2009). In Tanzania, Lake Victoria accounts for over 60% of the total national fish landings, as a source of protein, provision of direct and indirect employment to over 4 million people, wealth generation, and foreign exchange earnings (Luomba and Onyango, 2012). About 71.2% of the total landings of fish in Lake Victoria is accounted by sardine (*Rastrineobola argentea*) (CAS, 2015). Sardine products are cheaper as compared to other fish species, beef, pork and other animal protein sources in Tanzania (MALF, 2016). Sardines have an important nutritive sauce to the staple starch foods of the low-income groups and a component of the weaning foods in the region (IOC, 2012).

1.2 STATEMENT OF THE PROBLEM

It have been proven scientifically that the intake of approximately 250- 500mg of EPA and DHA per day reduces the risk for death from coronary heart diseases (FAO/WHO, 2011). In addition, the CAS (2015) reported that although sardines landings accounts for 71.2% of the total landings in Lake Victoria its value contributions was 40.40% as compared to 51.5% of value for Nile perch (*Latesniloticus*) which is 16.2% of the total landings. Schiffman and Kanuk (2002) reported that consumer behaviour has become an integral part of strategic marketing planning. Kotler and Keller (2006) postulated that consumer behavior describes how individuals and groups select, buy, use and dispose goods, services, idea or experience to satisfy their need and wants. Consumer buying behaviour is affected by uncontrollable factors that need to be considered while understanding consumer behaviour (Rahmaniya and Sekharan, 2018). Since the public health authorities are promoting fish consumption in order to improve public health, in addition it has been shown that the value contributions of sardine product is not reflecting its landings, therefore it is important to determine the consumers' knowledge and attitudes in relation to buying decision

towards processed sardine products. This study adopts the Theory of Planned Behaviour to analyses consumers' attitude towards buying intentions of processed sardines products based on product knowledge that has been acquired through prior experience, product familiarity and eating habits. The overall objective of this study was to explore consumers' product knowledge and attitude with regards to buying intentions of different processed sardine products. In particular, the paper assessed the importance of consumer product knowledge in relation to processed sardine products consumers' attitude development; assess consumer attitudes in relation to buying intention of different processed sardine products and analyze the relationship of consumers' product knowledge and buying intention.

1.3 RESEARCH OBJECTIVES

1. Determine consumers' knowledge of processed sardine products product in relation to attitude towards the product in question
2. Determine consumers' attitudes towards processed sardine products in relation to buying intentions of the product in question
3. Determine consumers' knowledge of processed sardine products product in relation to buying intentions of the product in question

2.0 RESEARCH HYPOTHESIS AND THEORETICAL REVIEW

Pieniak *et al.* (2013) argued that consumer knowledge is an important factor in the consumer decision-making process. Same authors reported that consumer knowledge has been proven to have positive influence on attitudes towards fish products. Consumer knowledge has been categorized in three dimensions which includes subjective knowledge (what consumers perceives that knows), objective knowledge (what consumer knows) and prior experience (the consumers experienced before) (Brucks, 1985; Dodd *et al.*, 2005). Two approaches has been used in measuring product familiarity; measuring how much a person knows about the product and measuring how much a person thinks they know about a product (House *et al.*, 2004). In this paper consumers product knowledge was based on subjective knowledge (product familiarity) objective knowledge (eating habits) and prior experience (Consumer experiences on the products before). The explanation leads us to the first hypothesis (H₁) for this paper;

H₁: "The prior experience, eating habits, product familiarity (Product Knowledge), the greater the attitude towards processed sardine products hence the buying intention".

Howard (1989) and Howard *et al.* (1988) argued that favorable attitude has considerable bearing on intention, which becomes greater if product knowledge is high. Furthermore the authors equated the direct and positive relationship between the attitude towards the product and the intention to buy the product in question. Fishbein and Ajzen (1975) refers intention as conative component of attitude while intention is an individual's subjective likelihood of performing a certain behavior. Based on the Theory of Planned Behavior (TPB) the purchase intention is determined by three factors and one of the factors is attitude that a person holds towards involving in the behavior which is perceived as purchase attitude (Chen, 2007). Consumer attitude has been proven to influence and predict behavior (Wilcock *et al.*, 2004). This leads to the second hypothesis (H₂) of this study;

H₂: The greater the attitudes towards processed sardine products the greater the predisposition to purchase the aforementioned product will be.

It has been proven that consumer high with knowledge (subjective and objective knowledge) on fish products increases the consumption (Pieniak *et al.*, 2013). Wilcock *et al.* (2004) argued that decision making is influenced by the available information on the products which triggers attention to achieve knowledge. This highlights the importance of assessing consumers' knowledge predictors (prior experience, product familiarity and eating habits) and buying intention of different sardine products based on hypothesis three (H₃) of this study;

H₃: Consumers product knowledge on processed sardine products creates purchase intention of the product in question.

2.2 EMPIRICAL REVIEW

Verberk and Viaene (1999) reported that the relationship between attitude and consumer behaviour has been subjected to extensive research. Tarkiainen and Sundqvist (2005) and Solomon *et al.* (2010) argued that attitude towards the behavior refer to the level of which a person has a positive or negative evaluation or assessment of the behaviour in question. The more positive the attitude is regard to a behavior, the stronger is the individual's intention to perform the behavior under consideration (Tarkiainen & Sundqvist, 2005). Chen (2007) argued that consumer attitude and preferences to the purchase of a particular product are based on consumer attitude and personal desirability of performing a behaviour. Attitude towards a certain behaviour is based on the expectations and beliefs of the consequences as a result of a particular behavior (Tarkiainen and Sundqvist, 2005; Chen, 2007).

Empirical studies has indicated three dimension hierarchy of formation of consumer behavior as cognitive (Knowledge, knowing), affective (attitude, feeling) and conative (intention and purchase, doing) (Verberk and Viaene, 1999; Barry and Howard, 1990). In order to determine consumer attitude towards the behaviour the *theory of planned behaviour* (TPB) has been empirically employed (Aertsens *et al.*, 2009). Most behavioural scientists operating in the field of cognitive psychology, has considered the best predictor of human behaviour is a person's conscious decision to perform the behaviour (Bredahl *et al.*, 1998).

2.3 CONCEPTUAL FRAMEWORK

Knowledge of consumer is categorized as subjective knowledge, objective knowledge and prior experience (Brucks, 1985, Dodd *et al.*, 2005). Subjective knowledge is what the consumers perceive or self-rated knowledge (Dodd *et al.*, 2005), is based upon expertise, as well as experience (Alba and Hutchinson, 2000). Park *et al.* (1994) argued that research shows that usage experience has stronger relationship to subjective knowledge. In this paper consumer subjective knowledge is based on the consumers' eating habit of the processed sardine products. Objective knowledge is what individual knows about the subject (House *et al.*, 2004) and it depends on expertise and accurate information stored in the memory (Alba and Hutchinson, 2000; Dodd *et al.*, 2005, Lee and Lee, 2009). Brucks (1985) suggests that objective knowledge is related to information on product attributes. In this case the objective knowledge of consumers focused on consumers' product familiarity based on colour, odour and taste on processed sardine products. Prior experience is defined as what the consumers have experienced before (Brucks, 1985, Dodd *et al.*, 2005). This construct is conceptualized as the consumers' actual purchasing and usage of the product (Dodd *et al.*, 2005). In this paper it is hypothesized that consumers' prior experience, product familiarity and eating habits may lead to consumers' product knowledge and increase attitude towards the product.

Knowledge types have been proved to influence preferences as sources of information used during purchase decision process (Bruks, 1985; Dodd *et al.*, 2005). In this paper, it is hypothesized that consumer product knowledge may lead to the behaviour intention (Fig.1). The correlation of consumer knowledge and attitude, Stobbelaar *et al.* (2007) argued that the more knowledge consumers have about food, the more positive it is in their attitude.

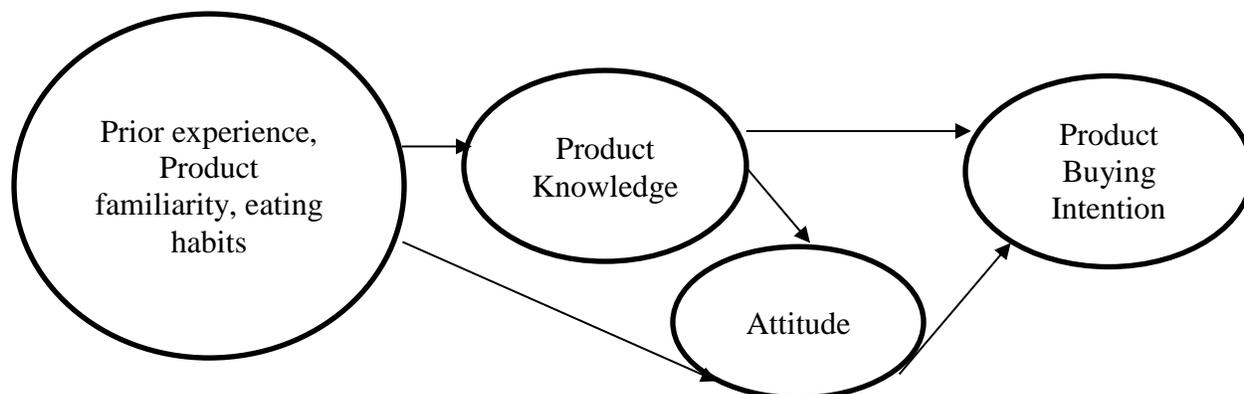


Figure 1: Conceptual Framework

The product knowledge has direct relationship with the consumers' attitudes towards the processed sardine products (Fig.1). It has been discovered that attitude is a crucial predictor towards intention of eating fruits and vegetables (Thøgersen, 2009). Also attitude has been proved to have positive relationship of intention to buy organic food Tarkiainen and Sundqvist (2005). In this papers it has been hypothesized that consumers' attitude predictors has positive correlation with the buying intention as indicated in Fig.1.

3.0 RESEARCH METHODOLOGY

3.1 Data Sources and Research Design

The data used in this study was collected from selected consumers from Ilemela, Musoma rural and Muleba district in Mwanza, Mara and Kagera regions respectively in Tanzania. Through purposive and random sampling, a total of 190 consumers were interviewed where by 84 consumers were from Ilemela district, 56 from Musoma rural district and 50 from Muleba district. The districts and wards from the three regions were purposively selected based on the availability of the processed sardine products. The selection was done in collaboration with district fisheries officers followed by the random selection of the villages and consumers. Two popular processed sardine products were selected to test the consumers' knowledge and attitude, consumer attitude and buying intention and consumers' knowledge and buying intention. The processed sardines included sardines dried on rocks and sardines dried on grass and nets. The primary data was collected in order to increase the credibility of the research findings based on the research objectives and hypotheses.

Despite the fact that business research is classified in qualitative and quantitative approaches (Bryman and Bell, 2007), this study adopted quantitative research and focus on deductive approach where by all hypotheses were developed based on the theory of planned behaviour, and then designing a research strategy to test those hypotheses as supported by Wilson (2010) ; Bryman and Bell (2007). This approach supports the assessment of the relationship between consumers'

product knowledge, attitude towards the products and buying intention of different processed sardine products as the ultimate goal of this paper. Therefore, previous studies and models derived from existing theories; as a result hypotheses were developed hence deductive approach was appropriate. In this study, quantitative research was chosen with the purpose to test hypotheses adapted from theoretical and empirically tested model.

3.2 Constructs Measures

3.2.1 Prior experience, Eating habits and Product Familiarity

Three- 7 point scales (not informed at all/very informed; not familiar at all /very familiar; never at all/very frequent) was used to measure, prior experience, product familiarity and eating habits. The consumers were asked on the eating habits, familiarity and prior experience they had on processed sardine products which creates product knowledge in order to make an informed judgement on the products. Prior experience was based on the exposure and use of the product, while familiarity was based on colour, taste and smell and this was acquired through involvement in the process of product production, processing and distribution. In addition the eating habits was part on understanding the product quality (taste, colour and smell). The three factors were inter related but different consumers can have different level of exposure and involvement with the regard to the product in question.

3.2.2 Measures of Attitude towards Sardine Products

Attitude towards certain behavior is the degree to which the relevant person has a positive or negative assessment of the behavior under consideration. This study hence considers sardine products buying intention of the respondents as the target behavior therefore the attitude was evaluative judgment and affective judgment about the sardine products. Attitudes towards sardine products was measured with two items adopted from Laroche *et al.* (1996) and Acebrón *et al.* (2001). “How well your family likes processed sardine products” what is your level of attitude when evaluating processed sardine products” All items measured by seven (7) point Likert-scale (Don’t like it/like it very much and Unfavourable/very favourable). In addition in order to create attitude on the product the consumers were asked show their eating habits, prior experiences and level of product familiarity on the processed product was measure based on Acebrón *et al.* (2001). Consumers were asked the following questions “How often your family eats processed sardine products?”, “What is your degree of familiarity on processed sardine products?” and “How informed do you considered yourself on processed sardine products?” all the items were measured by seven point Likert-scale. Therefore the attitude construct were measured by five items in general.

3.2.3 Measures of Sardine products Buying Intention

Buying intention is a measure of the strength of a decision maker drive to execute buying of a certain product in future (Liang and Lim, 2011). It is a measure of the readiness of a person to perform specific product’s buying (Fishbein and Ajzen, 1975; Ajzen 2000, Liang and Lim, 2011). Consumers were asked how many times in a week they consume certain processed sardines products. This measure has been used in the literature by Juster (1966). For the purpose of this study, sardine products buying intention refers to likelihood of family to engage in sardines buying behaviour (Liang and Lim, 2011). Measure of the sardines buying intention was adopted from Ajzen and Fishbein, (1980) consist of 1 item on 7 point Likert scale ranging from “Extremely

unlikely” to “Extremely likely”. Item included “I will buy sardine products in the near future”. The variable of sardines buying intention was built by accumulating and taking average of one question item measuring intention.

3.3 Statistical Data Analysis

In order to test the hypotheses developed; the generalized linear regression model and hierarchical multiple regression model was employed to examine the main direct relationship between consumer knowledge and attitudes in relation to sardine products purchase intention. Multiple regression models using the Statistical Package for Social Sciences version 24 (SPSS version 24) was used. Preliminary checks were conducted for the regression model analysis to be valid. These included, check for the missing data, descriptive statistics of variables, zero order correlation, uni-dimensionality, normality, homogeneity of variance, homoscedasticity, and multicollinearity test (Garson, 2012).

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Statistics analysis

Descriptive statistical analysis was carried out to describe the structure of the data and to understand each variable in this objective in a better way. For better understanding of the variables, means and standard deviation were calculated. Arithmetic means and standard deviations for all variables are indicated in Table 1. The arithmetic means of the consumers buying decision factors variables were compared with their scales on criteria of (High >4, Neutral = 4 and Low < 4). Results in Table 1 revealed that respondent’s opinion for all variables was greater than the agreement point (>4).

Table 1: Descriptive Statistics of the Study Variable

Items	Mean	Std. Deviation	Items	Mean	Std. Deviation
Family preference for sardines dried on grass and nets	5.1579	1.19360	Information sardines dried on rocks	6.3158	1.03651
Product familiarity for sardines dried on grass and nets	5.2789	1.21763	Attitude towards sardines dried on rocks	5.7368	1.47078
Attitude towards sardines dried on grass and nets	6.1895	1.42015	Prior experience for sardines dries on rocks	6.2211	.79254
Prior experience for sardines dries on grass and nets	5.4158	1.36888	Eat habits for sardines dried on rocks	5.5789	1.20034
Eat habits for sardines dried on grass and nets	6.0316	1.59332	Family preference for sardines dried on rocks	6.1684	.90446
Intention to buy sardines dried on rocks	6.1895	1.42015	Intention to buy sardines dried on grass and nets	5.7368	1.47078

Higher mean value reported in Table 1 for sardine dried on rocks, (Mean= 6) followed by sardines dried on grass and net (mean> 5) indicated that respondent intentions to buy the product in question was high. Mean value of 6 and >5 for processed sardine products buying intention on the Likert scale of 1 to 7 indicated that respondents had positive intention towards sardine products and it was most likely that they would purchase the products in the near future. Attitude for sardines rocks and grass and nets of household decision maker towards the products, who make sardines buying decision also shown (Mean > 5) agreement for positive attitude towards the products in question. To understand the spread of the individual scores of respondents from their arithmetic average, standard deviations of the variables were calculated. All standard deviations values were low and thus indicated the precision of a measurement.

4.2 Test of Reliability, Validity and Uni-dimensionality of Variables

The study also carried out the analysis of reliability in order to ensure the stability and internal consistency of the instrument and measures of the different variables of the study as recommended by Garson (2012). The Cronbach α (alpha) for processed sardine products knowledge was 0.718; Cronbach α for attitude towards processed sardine products was 0.866, and Cronbach α for processed sardine products buying intention was 0.765 as indicated in Table 2. According to the rule of thumb provided by George and Mallery (2003), the Cronbach α value for this study variables falls within the good and accepted range. Garson (2012) noted that value of Cronbach's α from 0.6 to 0.8 is suitable for generalized linear regression model.

Table 2: Summary of Reliability Analysis of Variables

Research Variables	Sardine Products	Number of Items	Cronbach's Alpha Reliability
Product Knowledge		6	0.718
	Sardines dried on rocks	3	0.710
	Sardines dried on nets and grass	3	0.830
Attitudes towards product		10	0.866
	Sardines dried on rocks	5	0.718
	Sardines dried on nets and grass	5	0.848
Buying Intention of sardine products	All products	3	0.765

Garson (2012) stated that the common method of testing un-dimensionality of constructs is Cronbach's alpha (α) and is the measure of the inter-correlations of the items. The same author pointed out that if alpha (α) is greater than or equal to 0.80 then the items are considered uni-dimensional for confirmatory purposes, however, for explanatory purposes some researchers use the less cutoff of 0.60 of Cronbach's alpha (α).

Table 3: Correlation Analysis of Variables

	Product familiarity	Prior Experience	Eating Habits	Family Preference	Attitude	Buying Intention
Sardines Dried on Grass and Nets						
Product familiarity	1.000					
Prior Experience	0.714***	1.000				
Eating Habits	0.301***	0.273***	1.000			
Family Preference	0.761***	0.708**	0.223***	1.000		
Attitude	0.777***	0.727***	0.388***	0.728***	1.000	
Buying Intention	.133	.089	0.302***	0.202**	0.255***	1.000
Sardines Dried on Rocks						
Product familiarity	1.000					
Prior Experience	0.559***	1.000				
Eating Habits	-.029	.020	1.000			
Family Preference	0.541***	0.546***	.114	1.000		
Attitude	0.530***	0.527***	0.180**	0.678***	1.000	
Buying Intention	.063	.019	0.652***	0.140*	0.255***	1.000

*p<0.05, **p<0.01, ***p<0.001

Aaker *et al.* (2011) and Bryman and Bell (2007) reported that construct validity is a measure of how well an operation definition is able to measure a concept. Malhotra and Birks (2003) argued that the standard is achieved by the assessment of Pearson’s correlation. Bryman and Bell (2007) pointed out that if the value is greater than 0.8, it indicates a very strong correlation between the two variables. Convergent validity was measured through the correlation matrix of items of constructs for different sardine products. The correlation of most items was found significant and under 0.8, therefore, validity is ensured as indicated in Table 3.

4.3 Test of Multicollinearity of Variables

Multicollinearity were diagnosed in the light of the values of variance inflation factors (VIFs) and Tolerance. Variance inflation factors (VIFs) and Tolerances were calculated for each of the predictor variables for sardine product intention to buy. The recommended value for VIF for the absence of multicollinearity is $VIF \geq 5$ and $Tolerance > 0.2$ (Garson, 2012). Results of VIF and Tolerance were summarized in Table 4. It is apparent from the results that all VIFs and Tolerance values meet the recommended threshold values.

Table 4: Test of Multicollinearity of Variable

	Toleranc e	VIF		Tolerance	VIF
Sardines Dried on Rocks			Sardines Dried on Grass and Nets		
Product familiarity	.576	1.736	Product familiarity	.294	3.402
Prior Experience	.570	1.754	Prior Experience	.378	2.643
Eating Habit	.942	1.062	Eating Habit	.826	1.211
Family Preference	.460	2.173	Family Preference	.369	2.707
Attitude	.226	4.418	Attitude	.255	3.927

4.4 Test for Normality, Linearity and Homoscedasticity

One of the essential assumptions of regression analysis is that the data must maintain a normal distribution Garson (2012). This study used graphical methods in assessing normality and homoscedasticity. The assumption of normal distribution was checked with histogram of residuals and P-P plots as indicated in Fig 2. In addition, the homoscedasticity was checked by using scatter plots diagram of standardized predicted dependent variable against standard residuals as asserted by Garson (2012) that if the residuals in the scatterplot forms pattern less cloud of dots then homoscedasticity assumption of regression is met.

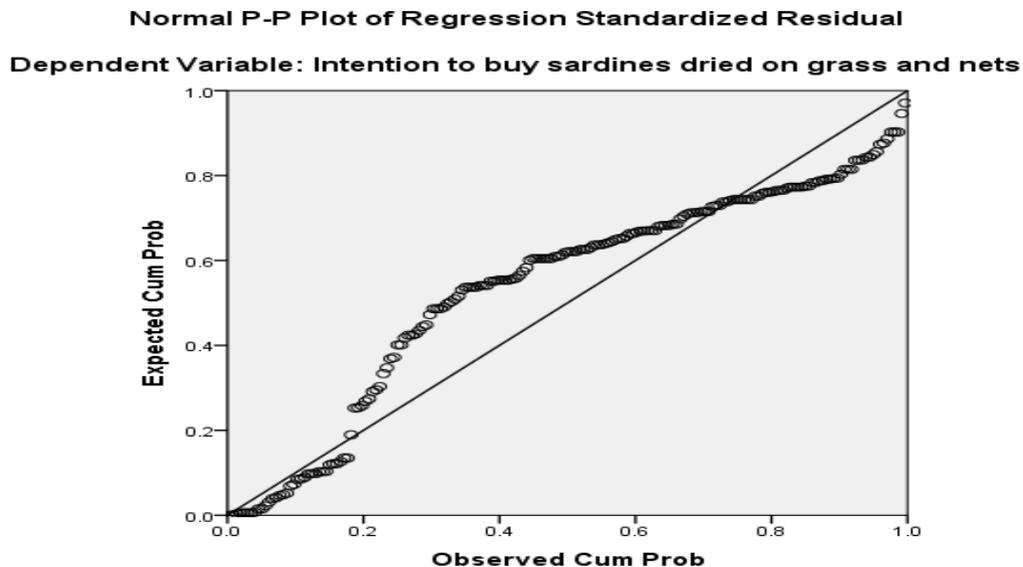


Figure 2: P-P Plot

4.5 Hypothesis Testing

4.5.1 Consumers Knowledge and Attitude towards Processed Sardine Products

Acebrón *et al.* (2001), argued that empirical research on food products had revealed that prior experience, habits and level of information were very important in product knowledge. The same authors argued that habits, prior experience and information level have direct influence of formation of attitude towards the products and had a bearing to evaluation of the product in question. Yin *et al.* (2010) claimed that consumer attitude could be influenced by the knowledge they had, such as consumer previous experiences.

A statistically significant regression model was originated $F(3,186) = 39.957, p < 0.001$, the knowledge predictors were able to explain by 39.2% of the variance of consumers favourable attitudes towards sardines dried on rocks (product familiarity $\beta = 0.354, p < 0.001$, prior experience $\beta = 0.325, p < 0.001$ and eating habits $\beta = 0.183, p < 0.001$). Product familiarity, prior experience and eating habits increased consumer favourable attitudes and the buying intention of the product by 0.354, 0.325 and 0.183 units of sardines dried on rocks respectively. This could be explained well by the fact that the study was conducted along the Lake Victoria and the lake was blessed with rocks and most people were using it for drying purposed.

A statistically significant regression model was created, $F(3,186) = 134.135$, $p < 0.001$, the consumers knowledge predictors were able to explain by 68.4% of the variance of consumer attitude towards sardine dried on grass and nets (product familiarity $\beta = 0.495$, $p < 0.001$, prior experience $\beta = 0.333$, $p < 0.001$ and eating habits $\beta = 0.148$, $p < 0.001$). Product familiarity, prior experience and eating habits increased consumer attitude and hence the buying intention of the product by 0.495, 0.333 and 0.148 units of sardines dried on grass and net respectively. Apart from using rocks for drying sardines in the study area, most people also use grass and net. This proves the positive relations of consumers' knowledge predictors towards favourable attitude of sardine dried on grass and nets.

Table 5: Consumer Product Knowledge and Attitude

	R²	β	T-value	F-value
Sardines Dried on Rocks	0.392			39.957***
Product familiarity		.354***	5.125	
Prior Experience		.325***	4.715	
Eating Habits		.183***	3.198	
Sardines Dried on grass and nets	0.684			134.135***
Product familiarity		.495***	8.293	
Prior Experience		.333***	5.636	
Eating Habits		.148***	3.413	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The findings was consistent to Acebrón et al. (2001), Saba and Di Natale (1999) who reported the significant and positive impact of habit and past experience on attitude and the buying intention. The hypothesis was tested using multiple regression model and the findings was presented in Table 5. The results were positive and statistically significant, this leads to acceptance of hypothesis H_1 which say “*The more previous experience, eating habits and product familiarity (Product Knowledge) the greater the attitude towards sardines products and hence the buying intention*”.

4.5.2 Consumer Attitudes and Buying Intentions

Birch and Lawley (2012) reported a positive relationship of consumer's attitude on seafood as they consider was an important part of a healthy and balanced diet. Howard *et al.* (1988) showed the direct and positive relationship of predictors of attitude towards the brand buying intention and hence the purchase of the product. Ajzen (2000) said that attitude forms behavioral intention that determines readiness of the decision maker to perform the behaviour. The predictors of attitude towards processed sardine products in this case the family preference towards the product and degree of favourability of the product was regressed against the intention to buy, the results are presented in Table 6.

Table 6. Predictors of Product Attitude towards Buying Intentions

	R ²	β	T- value	F- value
Sardine dried on Rocks	0.067			6.688***
Family Preference		-0.061	-0.630	
Degree of favourability		0.296***	3.076	
Sardine dried on grass and nets	0.065			6.536***
Family Preference		0.035	0.336	
Degree of favourability		0.229*	2.223	

*p<0.05, **p<0.01, ***p<0.001

A statistically significant regression model was originated $F(2,187) = 6.688$, $p < 0.001$, the predictors of attitude were able to explain by 6.7% of the variance the intention to buy of sardines dried on rocks (family preference $\beta = -0.061$, and degree of favorability $\beta = 0.296$, $p < 0.05$). Product degree of favorability increased buying intention of the product by 0.296 units of sardines dried on rocks. However the family preference predictor on attitude towards the product was not statistically significant and had a negative relationship. Based on the survey results consumers believed that the sardines dried on rocks could be contaminated by animal and human excretions as the rocks are on open spaces.

A statistically significant regression model was created, $F(2,187) = 6.536$, $p < 0.001$, the predictors of attitude were able to explain by 6.5% of the variance in intention to buy sardines dried on grass (Family preference $\beta = 0.035$ and degree of favorability $\beta = 0.229$, $p < 0.05$). The product family preference and degree of favorability increased the buying intention of the product by 0.035 and 0.229 units, but the family preference predictor were not statistically significant. The statistical insignificance of family preference could be explained by the eating habits as only consumers from Kagera and Mara regions reported being using sardines dried on grass and nets.

Favorable attitude towards the product has been empirically endorsed by numerous studies as significant predictor of buying intention; Olsen *et al.* (2008) validated significant relationship of attitude ($\beta = 0.21$) with intention to consumer new fish products; Zagata (2012) proved that attitude was the main determinant of intention to purchase organic food with $\beta = 0.32$. Smith and Paladino (2010) found a positive and statistically significant $p < 0.001$ relationship between attitude and intention to buy organic vegetables. The findings were statistically significant, this led to the acceptance of hypothesis H₂ which said “*The greater the attitudes towards processed sardine products the greater the predisposition to buy the aforementioned product would be*”.

4.5.3 Consumer Product Knowledge and Buying Intention

Laroche *et al.* (2001) argued that knowledge was recognized in consumer research as a characteristic that influences all phases in the decision process and was important as it was regarded as having an influence on the consumer decision making process. Acebrón *et al.* (2001) argued that empirical research for food products has revealed that prior experience and habits were very important information source in the case of buying food products. Ashraf *et al.* (2014) argued that consumer past experience can offer better prediction of buying intention. The consumers’ Knowledge acquired through product prior experience, product familiarity and eating habits were hypothesized to have direct and positive relationship with consumers buying intention. The results of the model tested based on processed sardine product are presented in Table 7.

Table 7: Product Knowledge Predictors and Buying Intention

	R	Beta	t- Value	F- value
Sardines Dried on Rocks	0.435			47.656***
Product familiarity		.115	1.728	
Prior Experience		-.059	-.889	
Eating Habits		.657***	11.896	
Sardines Dried on Grass and nets	0.094			6.43***
Product familiarity		.079	.780	
Prior Experience		-.047	-.467	
Eating Habits		.291***	3.957	

*p< 0.05, **p< 0.01, ***p<0.001

A statistically significant regression model was originated $F(3,186) = 47.656$, $p < 0.001$, the knowledge predictors were able to explain by 43.2% of the variance in consumers intention to buy sardines dried on rocks (product familiarity $\beta = 0.115$, prior experience $\beta = -0.059$, and eating habits $\beta = 0.657$, $p < 0.001$). Product familiarity and eating habits increase buying intention of the product by 0.115 and 0.657 units of sardines dried on rocks respectively. However, product familiarity predictor on buying intention was not statistically significant. In addition the prior experience on the product has negative relationship with consumers buying intention. This could be explained by respondent's originality. The respondents from Mwanza and few from Mara regions reported being frequent user of products dried on rocks. None of respondents from Kagera region reported having familiarity on sardines dried on rocks.

A statistically significant regression model was created, $F(3,186) = 6.43$, $p < 0.001$, the knowledge predictors were able to explain by 9.4% of the variance in consumers intention to buy sardines dried on grass and net (product familiarity $\beta = 0.079$, prior experience $\beta = -0.047$ and eating habits $\beta = 0.291$, $p < 0.001$). Product familiarity and eating habits increased buying intention of the product by 0.079 and 0.291 units of sardines dried on grass and net respectively. Apart from using rocks for drying sardines in the study area, most people also use grass and net, and this was most reported by respondents from Mara and Kagera regions. The results proves the positive relations of predictors on increased buying intention. The findings was in line with Verbeke and Vicker (2005), Price and Gislason (2001) and Saba *et al.* (2000) who reported the role of habit in fish consumption had highly significant positive impact on buying intention. The regression results presented in Table 7 on the consumer knowledge predictors and consumers buying intention, hence the acceptance of the hypothesis (H_3) which says *Consumers product knowledge on processed sardine products creates purchase intention of the product in question.*

5.0 CONCLUSION

This research provides some important insights concerning the relationships between consumers' subjective knowledge (eating habit), objective knowledge (product familiarity) and prior experiences in relation to consumers' attitude and buying intentions of processed sardine products in Lake Victoria basin. It highlights the important of consumers' product knowledge sources, the creation of consumers favourable attitudes and hence the buying intentions. Consumers' knowledge and attitude towards processed sardine products have been empirically proven that are important factors that leads to buying intentions.

6.0 RECOMMENDATIONS

Therefore, strategic marketing planning and implementation should focus on consumers' product knowledge by investing much on product labeling, processing, processors participating in national, regional and international product exhibitions in order to improve consumers knowledge and attitudes towards processed sardine products. In addition, processors should be trained to produce sardine products based on consumers' preferences. Value addition technologist should focus on supporting the labeling process by providing the nutrition contents and shelf life of processed sardine products in order to improve the objective knowledge of the processed sardine products.

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REFERENCES

- Aaker, D.A., Kumar, V., Day, G.S. and Leone, R.P. (2011). "*Marketing Research*", 10th ed, New Jersey: John Wiley & Sons
- Acebrón, L. B., Mangin, J.-P.L., and Dopico, D. C. (2001). A proposal of the buying model for fresh food products: The case of fresh mussels. *Journal of International Food and Agribusiness Marketing*. **11**(3): 75–96. https://doi.org/10.1300/J047v11n03_04
- Aertsens, J., Verbeke, W., Mondelaers, K. and Van Huylenbroeck, G. (2009). Personal determinants of organic food consumption: a review. *British Food Journal*, 111 (10): 1140-1167. <https://doi.org/10.1108/00070700910992961>
- Ajzen, I. (2000). Constructing a TPB questionnaire: Conceptual and methodological considerations. <https://pdfs.semanticscholar.org/0574/b20bd58130dd5a961f1a2db10fd1fcbae95d.pdf>(Accessed 20 October 2017)
- Ajzen, I., and Fishbein, M. (1980). "*Understanding attitudes and predicting social behavior*". Englewood Cliffs, NJ: Prentice-Hall. 278p
- Alba, J.W. and Hutchinson, J.W. (2000). Knowledge calibration: what consumers know and what they think they know. *Journal of Consumer Research*, **27**(2):123-56. <https://doi.org/10.1086/314317>
- Ashraf M. G., Rizwan. M., Iqbal. A, and Khan M. A (2014). The Promotional Tools and Situational Factors' Impact on Consumer Buying Behaviour and Sales Promotion. *Journal of Public Administration and Governance*. **4** (2):179-201. <https://doi.org/10.5296/jpag.v4i2.5844>.
- Barry, T., and Howard, D.J. (1990). A review and critique of the hierarchy of effects in advertising. *International Journal of Advertising*, **9**(2): 121-135, <https://doi.org/10.1080/02650487.1990.11107130>

- Birch. D., and Lawley. M (2012). Buying seafood: Understanding barriers to purchase across consumption segments. *Food Quality and Preference*. **26** (1): 12–21. <https://doi.org/10.1016/j.foodqual.2012.03.004>
- Bredahl, L., Grunert, K. and Frewer, L. (1998). Consumer Attitudes and Decision Making with regards to Genetically Engineered Food Products – a Review of the Literature and a Presentation of Models for Future Research. *Journal of Consumer Policy*, 21 (3): 251–277. <https://link.springer.com/article/10.1023%2FA%3A1006940724167> (Accessed 29 November 2018).
- Brucks, M. (1985). The effects of product class knowledge on information search behavior”, *Journal of Consumer Research*, **12** (1): 1-16. <https://www.jstor.org/stable/pdf/2489377.pdf> (Accessed 29 November 2018).
- Bryman, A. and Bell, A. (2007). “*Business Research Methods*”, 2nd ed, New York: Oxford university press.
- Carlucci. D., Nocella. G., De Devitiis. B., Viscecchia. R., Bimbo. B., and Nordone. G. (2015). Consumer purchasing behaviour towards fish and seafood products. Patterns and insights from a sample of international studies. *Appetite*. **84**(1):212-227. <https://doi.org/10.1016/j.appet.2014.10.008>
- Chen, M., F., (2007). Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: moderating effects of food-related personality traits, *Food Quality and Preference*. **18** (7): 1008-1021. <https://doi.org/10.1016/j.foodqual.2007.04.004>.
- Dodd, T.H., Laverie, D.A., Wilcox, J.F. and Duhan, D.F. (2005). Differential Effects of Experience, Subjective Knowledge and Objective Knowledge on Sources of Information used in Consumer Wine Purchasing. *Journal of Hospitality & Tourism Research*, 29(1): 3-19. <https://doi.org/10.1177/1096348004267518>
- Fishbein, M., and Ajzen, I. (1975). “*Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research Reading*”. MA: Addison-Wesley 573p. <http://people.umass.edu/aizen/f&a1975.html>. (Accessed 3 October 2016).
- Garson, G. D. (2012). “*Testing statistical assumptios*”. Asheboro, NC: Statistical Associates Publishing. <http://www.statisticalassociates.com/assumptions.pdf> (accessed 13 August, 2017)
- George, D. and Mallery, P. (2003). “*SPSS for Windows Step by Step: A Simple Guide and Reference*”, 11.0 Update. 4th Edition, Allyn & Bacon, Boston
- House, L., Lusk, J., Jaeger, S., Traill, W.B., Moore, M., Valli, C., Morrow, B. and Yee, W.M.S. (2004). Objective and Subjective Knowledge: Impacts on Consumer Demand for Genetically Modified Foods in the United States and the European Union. *The Journal of Agrobiotechnology Management & Economics*, **7** (3): 113-123. <http://hdl.handle.net/10355/156> (accessed 10 December, 2018)
- Howard, J.A., Shay, R.P. and Green, C.A. (1988). Measuring the effect of marketing information on buying intentions. *Journal of Consumer Marketing*, **5**(3):5–14. <https://doi.org/10.1108/eb008227>
- Juster, F.T (1966). Consumer Buying Intentions and Purchase Probability: An Experiment in Survey Design. *Journal of the American Statistical Association*, **61**: 659-696.

- Laroche, M., Kim, C. and Zhou, L. (1996). Brand familiarity and confidence as determinants of purchase intention: an empirical test in a multiple brand context. *Journal of Business Research*, **37**: 115–120. [https://doi.org/10.1016/0148-2963\(96\)00056-2](https://doi.org/10.1016/0148-2963(96)00056-2).
- Laroche, M., Teng, L., and Kalamas, M (2001). Consumer evaluation of net utility: Effects of competition on consumer brand selection processes. *Japanese Psychological Research*. **43**(4):168–182 Special Issue: *Consumer behavior* <http://onlinelibrary.wiley.com/doi/10.1111/1468-5884.00175/pdf>.
- Lee, J.K. and Lee, W. (2009). Country-of-origin effects on consumer product evaluation and purchase intention: The role of objective versus subjective knowledge. *Journal of International Consumer Marketing*, **21**(2):137-151. <https://doi.org/10.1080/08961530802153722>
- Liang, A. R.D, and Lim, W. M. (2011). Exploring the online buying behavior of specialty food shoppers. *International Journal of Hospitality Management*, **30**(4): 855-865. <https://doi.org/10.1016/j.ijhm.2011.01.006>.
- Olsen, S. O., Heide, M., Dopico, D. C., and Toften, K. (2008). Explaining intention to consume a new fish product: A cross-generational and cross-cultural comparison. *Food quality and preference*. **19** (7): 618-627. <https://doi.org/10.1016/j.foodqual.2008.04.007>.
- Park, C. W., Mothersbaugh, D., and Feick, L. (1994). Consumer knowledge assessment. *Journal of Consumer Research*, **21**(1): 71-82. <https://www.jstor.org/stable/2489741>
- Pieniak, Z., Vanhonacker, F., and Verbeke, W. (2013). Consumer knowledge and use of information about fish and aquaculture. *Food Policy*, **40**:25-30, <https://doi.org/10.1016/j.foodpol.2013.01.005>
- Price, D. W., and Gislason, C. (2001). Identification of habit in Japanese food consumption. *Agricultural Economics*. **24**:289–295. <http://dx.doi.org/10.1111/j.1574-0862.2001.tb00030.x>.
- Rahmaniya, N. and Sekharan, M. (2018). Consumer Behaviour towards Seafood and Seafood Safety - A Review Paper. *International Journal of Current Advanced Research*, **7** (1):8727-8736. <http://dx.doi.org/10.24327/ijcar.2018.8736.1417>
- Saba, A., and Di Natale, R. (1999). A study on the mediating role of intention in the impact of habit and attitude on meat consumption. *Food Quality and Preference*, **10** (1): 69–77. [https://doi.org/10.1016/S0950-3293\(98\)00039-1](https://doi.org/10.1016/S0950-3293(98)00039-1)
- Saba, A., Vassallo, M., and Turrini, A. (2000). The role of attitudes, intentions and habit in predicting actual consumption of fat containing foods in Italy. *European Journal of Clinical Nutrition*, **54** (7): 540–545. <https://doi.org/10.1038/sj.ejcn.1601051>
- Smith, S and Paladino, A (2010). Eating clean and green? Investigating consumer motivations towards the purchase of organic food. *Australasian Marketing Journal (AMJ)*. **18**(2): 93-104. <https://doi.org/10.1016/j.ausmj.2010.01.001>
- Solomon, M. R., Bamossy G., Askegaard, S. and Hogg, M. K. (2010). “*Consumer behaviour: a European perspective*”, 4th ed., New York: Prentice Hall/Financial Times.700p
- Stobbelaar, D.J., Casimir, G., Borghuis, J., Marks, I., Meijer, L. and Zebeda, S. (2007). Adolescents’ attitudes towards organic food: a survey of 15- to 16-year old school

- children. *International Journal of Consumer Studies*, 31(4): 349-356. <https://doi.org/10.1111/j.1470-6431.2006.00560.x>
- Tarkiainen, A. and Sundqvist, S., (2005). Subjective norms, attitudes and intentions of Finnish consumers in buying organic food. *British Food Journal*, **107**(11): 808-822. <https://doi-org.ep.fjernadgang.kb.dk/10.1108/00070700510629760>.
- Thøgersen, J. (2009). Consumer decision making with regard to organic food products. In T. D. N. Vaz, P. Nijkamp, & J-L. Rastoin (Eds.), *Traditional Food Production and Rural Sustainable Development: A European Challenge* Farnham: Ashgate. 173-192.
- Verbeke, W., and Vackier, I. (2005). Individual determinants of fish consumption: application of the theory of planned behaviour. *Appetite*, **44** (1): 67-82. <https://doi.org/10.1016/j.appet.2004.08.006>
- Wilcock, A., Pun, M., Khanona, J., and Aung, M. (2004). Consumer attitudes, knowledge and behaviour: A review of food safety issues. *Trends in Food Science and Technology*, **15**(2): 56-66, <https://doi.org/10.1016/j.tifs.2003.08.004>
- Yashodhara, B. M., Umakanth, S., Pappachan, J. M., Bhat, S. K., Kamath, R., B H and Choo, B.H (2009). Omega-3 fatty acids: a comprehensive review of their role in health and disease. *Postgrad Med J*, **85**: 84–90. <http://dx.doi.org/10.1136/pgmj.2008.073338>
- Zagata, L. (2012). Consumers' beliefs and behavioural intentions towards organic food. Evidence from the Czech Republic. *Appetite*, **59**(1): 81-89. <https://doi.org/10.1016/j.appet.2012.03.023>