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DETERMINANTS OF CONSUMERS' PREFERENCES FOR THE SOURCES OF SPICES IN GAUTENG PROVINCE, SOUTH AFRICA

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Abstract. Spices are condiments for adding flavors to food and are traditionally utilized for some medicinal purposes. Their therapeutic, aromatic, and culinary characteristics have been widely explored by cosmetic, pharmaceutical, and food industries. However, very little is known about the factors that influence consumers' choice of spices based on their origins. Therefore, this study analyzed the determinants of consumers' preferences for the sources of spices in Gauteng province. Data was collected from 385 respondents using a structured questionnaire. Multinomial logit regression was employed for data analysis. The results of the study indicated that preferences for local and imported spices were significantly influenced ($p < 0.05$) by socio-economic factors such as marital status, household size, and gender. In addition, products' attributes such as attractiveness, packaging, and availability in the market also significantly influenced ($p < 0.05$) preference for local and imported spices. Based on these findings, it was recommended that promotion of spices' marketability must consider some important attributes along with consumers' socio-economic characteristics.

Keywords: consumers; spices; preference; multinomial logit model

INTRODUCTION

Over the past few decades, spices have played an important role in economic development as a consistent source of income, employment, and a healthy option in the global food seasoning industry (Jiang, 2019). Global demand for spices remains robust, with the United States of America (USA) being the world's largest market in terms of demand for spices in both consumption and imports (Nguyen et al., 2019). Over the past several years, the spice and herb industries in South Africa have experienced a significant increase in demand (Asowata-Ayodele et al., 2016). The nation has the potential to be amongst the largest producers of spices on the continent. In South Africa, only about 45,000 hectares of agricultural land have been certified for organic farming (Tung, 2016 and Uhunamure et al., 2021). However, informal organic farming conducted by subsistence farmers is also believed to feed close to two-thirds of the country's population. Thus, the future of the spices and herbs industries will to a large extent, depend on consumer preferences and demand (El-Sayed et al., 2019). Thus, a consumer-oriented approach to understanding seasoning marketing is important not only in its own right, but also in response to the persistently evolving market operations.

It is important to understand the sustainable attitude of consumers regarding spices and how consumption can be promoted. Product development and marketing strategies are also affected by consumers' preferences for food in general, and this could vary depending on the region of the world (Gurbuz, 2018 and Martinho, 2020).

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Thus, a clear understanding of consumers' preferences and the motivations underlying their actions in responding to spices are important. Preference is the ultimate result of a long-term relationship between a brand and the consumer, as consumers learn to associate the brand with a symbol of quality (Confos and Davis, 2016; Djerv and Malla, 2012 and Lautiainen, 2015). Consumers' preferences can be measured by their satisfaction with a specific item and are dictated by personal taste, culture, origin of the product, and many other attributes (Ramya and Ali, 2016).

The literature emphasizes that consumer preference for various food products is influenced, amongst others, by socio-economic factors (age, gender, marital status, income, and education attainment), taste, freshness, price, packaging and labelling, product origin, as well as availability in the market (Massaglia et al., 2019; Saba et al., 2018; Muca et al., 2016; Gelici-Zeko et al., 2013; Burger et al., 2011 and Seligman and Berkowitz, 2019). For instance, Sedem et al. (2017) conducted a study on household preference for local rice in Ghana. The results of the study revealed that increase in demand for local rice was influenced by good-looking rice, as well as excellent packaging. The study further revealed that some socio-economic factors, such as age, marital status, and gender also influenced preference for local rice. The positive implications of some quality attributes on consumers' preference for local rice suggested that the country must invest in postharvest rice quality to enable domestic rice to successfully compete with imported rice. Thus, strengthening the local rice market will also enhance the livelihoods of local producers and raise food security status. Similarly, Latiff and Ayob (2017) conducted a survey to determine consumer preference toward imported rice in Kelantan. The authors reported that consumers showed greater preference towards local rice.

In another study conducted by Kodali and Telaprolu (2018) on the influence of food labels on consumers' buying behaviour, it was found that in addition to socio-economic factors, product labelling also plays an important role in explaining consumers' preferences. Moreover, Ikonen et al. (2020) also conducted a study on the effects of packaging nutrition labelling on consumers' preferences and concluded that labelling plays an important role in defining consumers' preferences for food products.

Also, a study on the analysis of factors influencing consumers' preferences for locally produced rice versus imported rice in Ghana by Piao et al. (2020) utilised primary data collected from 300 rice consumers across the municipality. Multinomial logistic regression model was used to analyse the data, and the results indicated that, among other factors, packaging and availability in the market played a critical role in influencing consumers' preferences. The results further revealed that socio-economic factors such as gender, age, marital status, and the level of education influenced consumers' preferences.

A study on the association between demographic characteristics and food choice motives that was conducted by Vorage et al. (2020) adopted binomial logistic regression analysis to establish the association between socio-economic and demographic characteristics and food choices from 370 respondents. The results showed that consumers' age and gender had a positive and statistically significant effect on the preference for healthy food. Similarly, Asakura et al. (2017) reported an association between consumers' age and preference for nutritious food.

The general objective of the study was to identify the determinants of consumers' preferences for the sources of spices in Gauteng province. Ultimately, a proper understanding of consumers' preferences for spices will enable stakeholders and policy actors to design appropriate strategies for incorporating or retaining key attributes during breeding, production, processing, and marketing. Despite the increased pattern of consumption for culinary spices in South Africa, little is known about consumers' preferences for the products' origins. It is also worth noting that this line of research has not been adequately explored. Some previous studies looked at consumption of spices without considering consumers' preferences based on their places of origin. It is therefore in this context that this study seeks to identify consumers' preferences for spices in the Gauteng province of South Africa.

MATERIALS AND METHODS

Study area
This research was carried out in the Gauteng province of South Africa. The province is one of the nine provinces in the country, and it is situated in the Highveld. Furthermore, the province is the smallest in terms of land area, accounting for only 1.5% of the total of South Africa's land area (Oelofse et al., 2018). Nevertheless,

the province is highly urbanized and populated (Nhamo et al., 2021). As indicated by Nhamo et al. (2021), the province is divided into three metropolitan municipalities, namely Tshwane-Pretoria, Johannesburg, and Ekurhuleni metropolitan municipality, as well as two district municipalities – Sedibeng and West Rand. Gauteng is the fastest growing province in South Africa. Although it is the smallest in terms of land areas, it hosts the largest population in South Africa.

Sources of data

The study made use of primary data which was sourced from respondents with the aid of semi-structured questionnaires that were administered to households' heads in Gauteng province. Information elicited from the respondents includes household socio-economic characteristics and consumer preference for spices in the province.

Sampling procedures

A multi-stage sampling procedure was adopted for the selection of respondents. Gauteng was purposively selected from the nine provinces of South Africa. The second stage was clustering of the population by municipalities, and then number of households per cluster (household listing) was obtained. Systematic random sampling was then used to select respondents from all the municipalities (Ekurhuleni, Johannesburg, Tshwane, Sedibeng, and West Rand). In the final stage, 385 respondents were interviewed, and the sample sizes for each municipality were proportionally estimated based on the number of listed households (Statistics SA, 2017).

Analytical procedure

Multinomial logit model was employed to establish the determinants of consumers' preferences for the origin of spices. The multinomial logit model is more applicable and more relevant than the other regression models because the dependent variable is the preference for the sources of spices, which is with more than two categories. The consumers' preferences were classified into three categories, which are local product preference, imported product preference, and any product (imported or local) preference.

To identify the determinants of consumer preference in the origin of spices, the research assumes that in a given period, rational consumers choose among the options of product origin: local and imported. Following

Agboola et al. (2018), suppose the ith respondent who is faced with j choices assumes the utility choice as:

$$U_{ij} = Z_{ij}\beta + e_{ij} \qquad (1)$$

If j^{th} choice is made, the researcher assumes that U_{ij} is maximized by this option. Therefore, the statistical model is derived from the probability that j^{th} choice is made, which is:

$$Prob\ U_{ij} > U_{ik}\ \text{for all other}\ k \neq j \qquad (2)$$

This model is not only computationally easy but also exhibits a superior ability to predict consumers' choices (Czine et al., 2020). The multinomial logit model allows estimation of a set of coefficients β_j, corresponding to each preference category as follows:

$$Pr\ (y = j/X) = \frac{e^{\beta_j X_i}}{\sum_{j=1}^{m} e^{\beta_j X_i}} \qquad (3)$$

Pr is the probability of consumers' choice, í denotes the individual consumer, and j represents the three nominal unordered preferences. Therefore, the estimated model can be written as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \dots \beta_n X_n + \varepsilon_i \quad (4)$$

where are the regression coefficients of the predictor variables. In the above model, the dependent variable is the preference for the origin of spices, which has three categories with "any product (imported or local)" being the reference choice. The estimated coefficients measure the change in the logit for one unit change in predictor variable, while the other explanatory variables are held constant. A positive coefficient implies an increase in the likelihood that a respondent will choose spices from that origin, while a negative coefficient indicates less likelihood that a respondent will choose the product. The explanatory variables are presented in Table 1.

RESULTS AND DISCUSSION

Socio-economic attributes of the respondents in relation to preferences for spice sources

Table 2 presents a summary of the socio-economic characteristics of the respondents in relation to their preferences for the sources of spices. The table presents the results regarding the spices' origins and has three categories, namely, local, imported, and any product (local or imported). From the table, the results on age show

Table 1. Variables used as determinants of consumers' preferences for spices origin

Variables	Description of variables	Expected sign
Spice origin (dependent variable)	Continuous; 1 = local 2 = imported 3 = any product	
Independent variables		
Age	Number of years	+
Gender	Dummy; 1 = female and 0 otherwise	±
Marital status	Dummy; 1 = married 0 = not married,	+
Household size	Number of household members residing in one house	–
Education level	Dummy; 1 = formal, 0 = informal	+
Ethnicity	Dummy; 1 = black and 0 = other	±
Other factors		
Number of years consuming spices	Continuous	+
Labelling	1 = likely and 0 = less likely	±
Visual attractiveness	1 = likely and 0 = less likely	+
Household dietary pattern	1 = likely and 0 = less likely	±
Heath attributes	1 = likely and 0 = less likely	+
Income	1 = likely and 0 = less likely	+
Family beliefs	1 = likely and 0 = less likely	±
Packaging	1 = likely and 0 = less likely	+
Taste	1 = likely and 0 = less likely	+
Price	1 = likely and 0 = less likely	+
Ease of preparation	1 = likely and 0 = less likely	+
Freshness	1 = likely and 0 = less likely	+
Availability in the market	1 = likely and 0 = less likely	+

Source: own elaboration.

that the majority (49%) of the respondents who preferred local spices were between the age of thirty-seven and forty-seven years. Those who preferred imported spices were mainly between twenty-seven and thirty-seven years (94%). The majority of the consumers (46%) who preferred any product were between twenty-seven and thirty-seven years.

Based on the consumers' marital status, the majority of the consumers who preferred local spices were those who were married (64%), while those who preferred imported spices were mainly single (90%). The respondents who were indifferent about the origin of spices were also mainly married (69%). Moreover, spices from local sources were preferred by the majority of consumers with household sizes of two or three members (75%). Similarly, among the respondents who preferred imported spices, 87% had a household size of two or three members, while for those who were indifferent about the origin of spices, 60% had two or three members. Based on gender, female respondents showed greater preference for local spices (76%), while for imported spices, the males showed greater preference

Table 2. Consumers' demographic characteristics across their preferred sources of spices

Variables	Description of variables	Expected sign
Spice origin (dependent variable)	Continuous; 1 = local; 2 = imported; 3 = any product	
Independent variables		
Age	Number of years	+
Gender	Dummy; 1 = female and 0 otherwise	±
Marital status	Dummy; 1 = married 0 = not married,	+
Household size	Number of household members residing in one house	–
Education level	Dummy; 1 = formal, 0 = informal	+
Ethnicity	Dummy; 1 = black and 0 = other	±
Other factors		
Number of years consuming spices	Continuous	+
Labelling	1 = likely and 0 = less likely	±
Visual attractiveness	1 = likely and 0 = less likely	+
Household dietary pattern	1 = likely and 0 = less likely	±
Heath attributes	1 = likely and 0 = less likely	+
Income	1 = likely and 0 = less likely	+
Family beliefs	1 = likely and 0 = less likely	±
Packaging	1 = likely and 0 = less likely	+
Taste	1 = likely and 0 = less likely	+
Price	1 = likely and 0 = less likely	+
Ease of preparation	1 = likely and 0 = less likely	+
Freshness	1 = likely and 0 = less likely	+
Availability in the market	1 = likely and 0 = less likely	+

Source: field survey, 2021.

(90%). For the consumers who were indifferent about the origin of spices, the female respondents were in the majority (85%). Furthermore, based on consumers' education levels, the respondents with tertiary qualifications showed more preference for local spices (55%), imported spices (84%), and any spices (local or imported) (70%).

The results for religion revealed that Christians dominated preferences for the three categories with 92%, 100%, and 75% preferring local, imported, and any spices, respectively. Along the line of ethnicity, Black consumers mainly showed preference for local spices

(74%), while the White consumers mainly preferred imported spices (94%). However, the majority of the consumers who were indifferent about the origin of spices were White (41%).

Respondents preferred forms of spices
Table 3 summarises the forms in which respondents preferred their spices. The table comprises of six forms of spices which are fresh, whole, dried, crushed, seeds, and essential oil. The results showed that the majority (72.21%) of the consumers preferred crushed spices.

Table 3. Summary of the forms in which respondents preferred spices

Form	Frequency	Percentage
Fresh		
No	326	84.68
Yes	59	15.32
Whole		
No	283	73.51
Yes	102	26.49
Dried		
No	142	36.88
Yes	243	63.12
Crushed		
No	107	27.79
Yes	278	72.21
Seeds		
No	112	29.09
Yes	273	70.91
Essential oil		
No	322	83.64
Yes	63	16.36

Source: field survey, 2021.

This was followed by 70.91%, who preferred them as seeds, and 63.12%, who wanted them dried.

Multinomial Logit model estimates for spice preferences

Table 4 shows that from the estimated model for preferences for local spices, five explanatory variables were statistically significant. The results showed that marital status has a positive and significant parameter ($p < 0.000$). The results implied that compared with those consumers who were indifferent about sources, those married consumers had a higher probability of showing preference for local spices. Similar results were reported by Vinther et al. (2016) and Haapala et al. (2012), who indicated that marital status plays an important role in preference for local food. Married consumers may be better than divorced or separated individuals in their ability to afford quality food products.

On the other hand, household size showed a negative parameter in respect of preference for local spices and was statistically significant ($p < 0.000$). The results of the marginal parameter for household size also showed a negative impact on the preference for local spices and it is statistically significant with $p < 0.000$. This means that compared with indifferent consumers, an increase in household size reduced the probability of preferring local spices. However, the result is contrary to expectation since findings from previous studies indicated that household size is positively related to food demand preferences (Bryła, 2021). However, the findings are in support of Skallerud and Wien (2019), who reported a negative correlation between household size and food choices. This could be because of a progressive decrease in food's budget shares as the number of households' members increases.

The parameter of gender showed statistical significance and a negative effect on preference for local spices. The marginal parameter also shows a negative effect on preference for local spices and was statistically significant with a coefficient of –0.114 and p value of 0.000. This implies that compared with those with indifferent consumers, females tend to buy fewer local spices than their male counterparts. The results are contrary to the findings of (Darby et al., 2006), who highlighted that females, being the decision makers when it comes to family meals, tend to prefer locally produced food commodities.

The parameter of product's attractiveness has a negative sign and is statistically significant ($p < 0.000$). This implies that compared to those with no preference, those who were for the attractive attribute had a lower probability of preferring local spices. Similarly, Picha et al. (2018) indicated that consumers tend to show greater preference for local food that looks attractive with some sense of freshness linked to it. Attractiveness of food products provides an increased level of appeal and satisfaction to some consumers.

Similarly, the results on packaging and taste recorded a negative effect and was statistically significant with preference for local spices. The results implied that compared to indifferent consumers, those who were for taste and packaging had a lower probability of showing preference for local spices. The results are similar to those reported by Jensen et al. (2019) and Steenis et al. (2017), who stated that proper packaging of food is not only good for shelf life but also tends to influence consumers' preference given its sensational appeal and safety elements.

Table 4. Results of multinomial logit regression model for consumer's preference for the sources of spices

Variable	Coefficient	Std. err	P Value	dy/dx	*p* > |z|
Local spices					
Socio-economic factors					
Age	0.015	0.018	0.409	0.002	0.445
Marital status	1.188	0.284	0.000	0.288	0.000***
Household size	−0.439	0.082	0.000	−0.076	0.000***
Gender	−2.056	0.427	0.000	−0.318	0.000***
Education level	0.018	0.143	0.902	0.009	0.731
Product attributes					
Labelling	−0.095	0.164	0.563	−0.245	0.454
Attractiveness	−1.039	0.254	0.000	−0.151	0.002**
Health attribute	0.307	0.235	0.193	0.083	0.093
Packaging	0.358	0.191	0.062	0.067	0.074*
Taste	−0.238	0.217	0.273	−0.053	0.222
Availability in the market	−0.197	0.185	0.285	−0.040	0.918
Cons	2.926	1.220	0.017		
Imported spices					
Socio-economic factors					
Age	0.010	0.040	0.797	0.000	0.988
Marital status	−1.200	0.713	0.091	−0.094	0.002**
Household size	−0.516	0.149	0.001	−0.010	0.081*
Gender	−3.761	0.774	0.000	−0.114	0.000***
Education level	−0.198	0.315	0.531	−0.009	0.483
Product attributes					
Labelling	0.142	0.330	0.666	0.009	0.510
Attractiveness	−2.205	0.636	0.001	−0.072	0.009**
Health attribute	−0.598	0.741	0.420	−0.037	0.266
Packaging	0.262	0.403	0.514	0.001	0.941
Taste	0.085	0.409	0.834	0.011	0.534
Availability in the market	−1.212	0.705	0.085	−0.051	0.011**
Cons	7.190	2.622	0.006		
Number of observations	385				
LR Chi2 (22)	153.210				
Prob > chi2	0.000				
Pseudo R2	0.219				
Log likelihood	−272.66784				

*p < 0.1 (10%), **p < 0.05 (5%); ***p < 0.001 (1%).

From the second model, marital status showed a negative and statistically significant ($p < 0.091$) effect. This implies that compared to indifferent consumers, those who were married showed low probability of preferring imported spices. This result is different from that which was reported by Wekeza and Sibanda (2019), who indicated that marital status positively influenced preference for imported food. This could be due to food safety issues that are associated with proper handling of food before it reaches the hands of the consumers. In most cases, consumers prefer food that is produced and processed locally.

On the other hand, household size showed a negative effect on preference for imported spices, and it is statistically significant ($p < 0.001$). This implies that compared with indifferent consumers, household size reduced the probability of preferring imported spices. This could be due to an increase in demand for food in the household, thus putting pressure on money allocated for various food products. Similar results were reported by McKinnon (2014) who stated that additional members in the household tend to put pressure on finances and thus force consumers to make priorities when purchasing their food.

Similarly, results from gender showed a negative effect (–3.761) with preference for imported spices. However, the results showed statistical significance with p value of 0.000, and this implies that compared with those with no preference, gender showed low probability of preferring imported spices. The results agree with those reported by Piao et al. (2020), who reported a positive association between gender and preference for imported rice.

Moreover, attractiveness recorded a negative coefficient with a p value of 0.001. The results implied that compared to those who showed no preference, those who were for spice attractiveness had a lower probability of preferring imported spices. According to Ikonen et al. (2020) and Kodali and Telaprolu (2018), attractiveness of food products plays a vital role in increasing the probability of showing preference for imported food since it provides some sense of improved traits and taste. Lastly, availability showed a negative association with preference for imported spices, and it is statistically significant with a p value of 0.085. This implies that compared to those who showed no preference, availability of imported spices in the market reduced the probability of them being preferred. However, the result is contrary to those reported by Jeli (2017), where a positive association was found between availability and preference for imported rice in Kelantan.

CONCLUSION

The aim of the study was to identify the determinants of consumers' preferences for the origin of spices in Gauteng province. The results from the multivariate analysis revealed that preference for spices was influenced by socio-economic factors (such as gender and marital status) and some sensory and visual attributes of the products such as attractiveness, packaging, and availability in markets. Given the general determinants of preference for spices, the study recommends that promotion of spices must be inclusive of both product attributes and socio-economic factors. A proper integration of gender issues in the formulation of strategies to promote demand for spices from local and foreign sources will guarantee some positive results. In addition, promotion of preference for spices should go beyond availability; consumers would also prioritize the form of packaging in a manner that promotes health safety and durability. Finally, there is also the need to undertake further research on the preferences of rural and urban consumers for different spices.

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