

INFLUENCE OF GENDER, MARITAL STATUS AND LOCATION ON CONSUMER BUYING BEHAVIOUR TOWARDS ORGANIC FOOD PRODUCTS

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Abstract

Increased health, environment and food safety awareness has led to a rapid growth of organic food products demand globally. But there is variation in the purchase attitudes of consumers to organic food at the group level. The purpose of this study is to examine the effect of gender, marital status and area of residence on consumers' buying behavior of the organic food products. The research design used was quantitative and primary data were collected through a structured questionnaire filled by consumers. Independent sample t-tests were used to compare the buying behaviour of the different groups of demographics at the 5% level of significance. The results showed that the consumers' buying behaviour of male consumers (Mean = 4.12) was significantly higher than female consumers (Mean = 3.85), ($t = -4.52$, $p < 0.05$). In the same way, consumers who are married showed more buying behaviour (Mean = 4.08) than unmarried consumers (Mean = 3.79) ($t = 4.89$, $p < 0.05$). Besides, there was statistically significant difference between the urban and rural consumers, in terms of buying behaviour ($t = 5.42$, $p < 0.05$), with the former showing higher score (Mean = 4.15) than the latter (Mean = 3.82). The null hypothesis was found to be rejected for all the comparisons since the probability values were below 0.05 significance level, thereby showing that the variables (Gender, Marital Status and Residential Location) have significant differences on consumer buying behaviour towards the purchase of organic food products. The results show that the demographic characteristics have important influence on consumers' preferences, purchase intentions, and purchasing decisions. Married and urban consumers have higher buying behaviour, which can be explained by their higher health awareness, purchasing power and better availability of organic food products. The study offers several implications for marketers, retailers, organic food producers and policy makers in terms of creating marketing strategies that target consumers of different ages, offering more awareness programs to all consumers, and increasing the availability of organic food products for a wider range of consumers. The study adds to the body of knowledge in the area of consumer behaviour and can help to develop effective strategies to encourage sustainable food choices.

Keywords: Organic food products; Consumer buying behaviour; Gender; Marital status; Residential location; Demographic factors; Purchase intention; Consumer preferences; Sustainable consumption; Organic food market.

Introduction

Over the last 20 years there have been major shifts in the global food industry as a result of heightened awareness of food safety, environmental sustainability, and public health issues.

The quality and safety of food products consumed by the general population has been raised to a serious issue due to fast industrialization, over usage of chemical fertilizers, pesticides and synthetic growth regulators in conventional farming system. All these concerns have driven consumers to value for healthier and environmental friendly alternatives which has resulted in a significant rise in demand for organic food products. In organic cultivation, synthetic chemicals, GMOs and artificial additives are avoided, and a great effort is made to promote ecological balance, ecological diversity and sustainable agriculture practices. As a result, organic food products are becoming an important part of the sustainable food system and have garnered significant interest in consumers, researchers, policymakers and food manufacturers. Consumer buying behaviour has been found to be one of the critical factors affecting the success of the organic food market[1-5]. Buying behaviour is the process by which people discover their needs, seek information, compare alternatives, decide to buy and then evaluate their satisfaction with the products after they purchased. The psychological, social, economic, cultural and demographic factors play a role in the buying-decision for organic food products, which is different from traditional food buying. Consumers tend to believe that organic food is of higher nutritional quality, tastes better, is better for the environment, is ethically better to farm, and has lower levels of harmful chemicals. Although these benefits are becoming more prominent, the demand for organic food products among the various consumer groups is inconsistent because of the differences in their socioeconomic status, level of education, income, lifestyle and demographic characteristics. Demographic factors are presented as one of the determinants of consumer behaviour and they play an important role in determining the buying decision. Demographic characteristics are important because they are measurable, stable, and easily classified, and they give insights into consumer preferences. The differences in consumer attitudes and purchasing behavior with respect to product categories have been well explained with the following variables: age, gender, education, income, occupation, marital status, and residential location[6][7]. Demographic factors have an impact on consumers' awareness, perceptions, willingness to pay, purchase intentions and actual buying behaviors in relation to the consumption of organic food products. The awareness of these demographic differences allows marketing and policy makers to create effective marketing strategies and consumer awareness campaigns for specific population groups[8][9].

The demographic variable of gender is one of the most common variables studied in consumer behaviour research. Lifestyle, nutritional awareness, risk perception, the family burden, and environmental concern are all factors that can make men and women have divergent buying habits. Traditionally women have been said to be the main consumers of food items and they are usually linked to food quality, nutrition and health of families. However, when it comes to influencing consumer purchasing behaviour, male consumers might exhibit greater purchasing power when it comes to attributes like fitness, convenience, premium product preferences or higher purchasing power. The observed differences indicate that gender can greatly shape consumers' attitudes to the organic food products. Knowing gender differences, therefore, is vital to creating marketing campaigns that can target the tastes and preferences of male and female customers. Marital status is also a significant demographic characteristic in determining food purchasing behaviors. Consumption patterns of married couples are, in general, different from those of unmarried consumers as the latter has to face family obligations which affect household expenditure, priorities and purchasing frequency. The health and well being of

family members (children and elderly relatives) are much of a concern to married consumers, thus, they are more interested in safer and healthier food alternatives. However, for the unmarried consumer, convenience, affordability and lifestyle are more important than health-related attributes. Therefore, marital status could significantly influence consumers' intentions to buy organic food products and their future consumption practices. The other important factor affecting the consumer buying behaviour is the place of residence of the consumers. There are significant distinctions between urban and rural consumers in their income, education, lifestyle, purchasing power, market access and access to health information[10][11]. In general, urban consumers have more access to supermarkets, specialty organic stores, online retail platforms as well as promotional campaigns which increase awareness of organic food products. They also tend to have more disposable income and they are better educated, and therefore more aware of the long-term advantages of eating organic food. On the other hand, consumers in rural areas have fewer opportunities to have access to products, reduced purchasing power and lack awareness of the advantages of consuming organic food products. Differences are responsible for the differences in buying behavior across geographical locations and indicate the significance of the residential location as a factor determining consumer buying. The growth of the organics sector has made it more difficult for food companies to differentiate themselves, with a heightened competitive environment between food producers and retailers. To formulate effective product positioning, pricing, promotion and distribution policies, organizations need to be equipped with a comprehensive understanding of the consumer buying behaviour. By segmenting the market by demographics, companies are able to target groups of consumers that have a greater likelihood of making a purchase and use their marketing resources more effectively[12][13]. For instance, if the willingness of urban consumers to buy is higher than that of rural consumers or if married consumers are more willing to buy organic products than unmarried consumers, it is important information for strategic decisions. This information helps retailers make informed decisions about inventory management and stocking more products in areas with high demand. What a public policy approach brings to the table is that it can play a major role in meeting the goals of sustainable development in the areas of health, environmental protection and sustainable agriculture. Organic farming helps to protect soil health, limit groundwater pollution, protect biodiversity and reduce emissions of greenhouse gases (GHGs) due to intensive farming[14][15]. In this way, encouraging consumers to buy organic food products simultaneously promotes an environmentally responsible consumption and benefits public health. Educational publicity, certification programs, financial incentives, and distribution network improvements are becoming more widely accepted as ways to encourage sustainable consumption, and are increasingly being implemented by governments and policy makers. The success of these efforts, however, greatly relies on an understanding of the demographic attributes that affect consumer purchase patterns[16][17]. There have been inconclusive results reported in the literature about the relationship between the demographic characteristics and the buying of organic food. Other researchers have found that women are more environmentally concerned and are more likely to report purchase intent of organics than men, and others have found that men are more likely to purchase a premium product due to increased financial independence. Likewise, research on marital status has shown that married people tend to demonstrate higher purchasing behaviour due to the family orientation of their decision making processes, though the strength of this

association differs in various cultural/socio-economic settings. Studies examining residential location have consistently indicated that urban consumers are more likely to buy organic food products, due to their increased awareness, availability and purchasing power. There are inconsistent results and require more empirical research to be conducted in various geographic and cultural contexts to gain further understanding of demographic impacts on consumer purchasing behaviors[18][19].

The present study aims at finding out the effect of gender, marital status and area of residence on the consumer buying behaviour of organic food products through quantitative statistical analysis. In order to compare the mean buying behavior scores of male and female consumers, married and unmarried consumers, urban and rural consumers, independent sample t-test is used. These differences are assessed at the 5% significance level to see whether there are any statistically significant differences among the demographic characteristics and consumer buying behaviour. The study offers empirical evidence on the role of these demographic factors in the purchase decisions and adds to the growing literature on sustainable consumer behaviour. The results of this research are believed to have theoretical and practical contributions. In terms of theories, the study builds on the existing literature in the area of consumer purchase behaviour on demographic determinants, specifically in the context of organic food products. Theoretically, the study contributes to the literature on the topic of consumer purchasing behaviour on the effect of demographic determinants, specifically on the context of organic food products. The results will help marketers, retailers and organic food producers create marketing strategies geared towards various age groups, develop promotional campaigns designed to target specific audiences, enhance product availability to customers and seize opportunities for customer engagement. Moreover, the results can be used by the policy-makers for designing awareness programmes and sustainable food policies to promote the use of organic food among various consumer groups. Finally, better insight into demographic differences in consumer buying behaviour will help to promote sustainable growth of the organic food sector and healthier eating habits and consumption patterns [20].

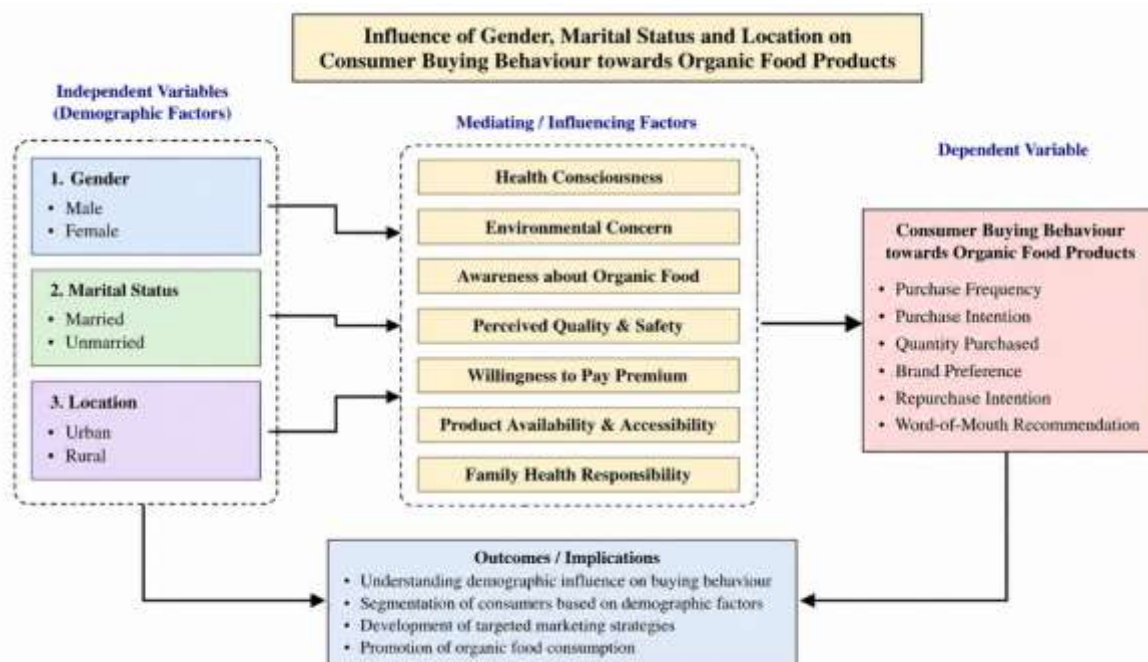


Figure 1. Conceptual Framework of Demographic Factors Influencing Consumer Buying Behaviour towards Organic Food Products

The conceptual framework of the study is shown in figure 1 that demonstrates how demographic characteristics are associated with the consumer buying behaviour towards organic food products. The independent variables include gender (Male and Female), marital status (Married and Unmarried) and place of residence (Urban and Rural). These demographic factors have a number of mediating factors that include health consciousness, environmental concern, awareness of organic food, perceived product quality and safety, willingness to pay a premium, product availability and accessibility, and family health responsibility. The mediating variables explained the dependent variable which is the consumer buying behavior towards organic food products measured by purchase frequency, purchase intention, quantity purchased, brand preference, repurchase intention, and word of mouth recommendation. The framework also highlights the applicability of the research findings such as understanding demographic influences and its implications for consumer segmentation, targeted marketing strategies, policy formulation and the promotion of sustainable organic food consumption. This model is conceptual and serves as a theoretical foundation for analyzing the statistical impacts of gender, marital status and place of purchase on consumers' purchasing decisions.

Literature Review

In the last 20 years, the worldwide market for organic food products has grown at an amazing rate because of rising consumers' awareness of health, environmental sustainability and food safety. Organic foods are grown without the use of synthetic fertilizers, pesticides, antibiotics and GMOs (genetically modified organisms) in an environmentally friendly manner. Organic food products are viewed as healthier, safer and more environmentally friendly than conventional food products, especially by consumers. Hence, studies have been conducted to achieve an understanding of the factors affecting consumers' purchasing decision regarding organic food products. Demographic factors, including gender, marital status and place of residence, are among these factors and have proven to be important purchasing determinants. Consumer buying behaviour is the sequence of behaviour followed by consumers in the process of identifying their needs, evaluating alternatives available to them, deciding on a purchase and evaluating the satisfaction after the purchase. The Theory of Planned Behaviour (TPB) suggests that attitudes, subjective norms and perceived behavioural control affect consumers' purchase intentions. Generally, positive attitudes towards organic food products are formed in relation to health, environment protection, food quality and ethical farming. These attitudes then impact on consumers' intentions and their actual purchasing behaviour. In a similar manner, the Health Belief Model (HBM) indicates that consumers' perception of a higher level of health benefits and lower level of health threats would increase the likelihood of purchasing organic food products. The scientific approaches used here offer useful background for the analysis of the demographic factors influencing the decision to purchase organic food.

Being health conscious is always cited as one of the most important factors influencing the purchase of OFO. People who care about their own health and nutrition are more apt to buy organic products as they believe that it does not contain any harmful chemical residues or artificial additives. Environmental concern also has a big role, because consumers who are environmentally conscious know that organic farming helps to lower the environmental pollution, soil degradation and to promote biodiversity conservation. Moreover, food safety

issues, ethical issues and rising awareness via digital media are further contributing to consumers' preference for organic products. However, the motives are not equally decisive in determining purchase behaviour as demographic and socioeconomic factors can moderate the influence of these motives on behaviour.

Gender has been widely studied as a factor that influences consumer purchasing decision. Many studies have shown that there are significant differences between the ways men and women shop when it comes to buying decisions, as well as in their attitudes towards health and environmental concerns, and responsibilities in the household. As a traditional food buying decision maker, female consumers are perceived as having a higher level of concern about food quality, nutrition and family health. This has led several researchers to report higher purchase intentions for women for organic food products. But other research has revealed that men have higher purchasing behaviour due to their higher purchasing power, higher disposable income, premium product preferences, and growing interest in healthy lifestyles and fitness-related nutrition. The relationship between gender and the traits in these contexts is not consistent, suggesting that the effects of gender may differ from region to region, cultural context to cultural context, and socioeconomic environment to socioeconomic environment, and remain to be investigated in more detail.

Marital status has also been noted to be an important socio-demographic determinant of food buying habits. The married consumers tend to make decision on the purchase while taking into account the health and nutritional needs of their families. When children and older people reside with your family, married people tend to be more inclined to buy healthier food options, like organic products. Married consumers tend to have higher purchase intentions because of their household expenditure patterns, long-term health aspects, and increased worry about food quality. However, unmarried consumers may value convenience, affordability, and lifestyle desires and so have comparatively low demand for high-priced organic food products. While a significant positive link between marital status and the purchase of organic food was overall reported in the literature, this association was found to vary by income groups and cultural context.

Consumer buying behaviour is significantly affected by the residential location as the differences in education, income, accessibility, awareness, purchasing opportunity exists among consumers residing in urban and rural areas. Generally, urban consumers are exposed to larger amounts of health awareness campaigns, internet marketing, supermarkets, specialty organic stores and certified organic products. It is the same with the level of education and income, as the higher the level, the greater their willingness to buy premium food products. On the contrary, the lack of product availability, poor awareness and financial limits are some of the disadvantages that rural consumers face, which leads to less frequent organic food consumption. There have been several empirical studies that have been consistently showing that urban consumers have positive intentions and buying behaviour, compared to that of the rural consumers. These results indicate that geography still plays a role in the adoption of organic food products by consumers.

One of the greatest challenges for the penetration of organic food products is the price. Organic foods are usually sold for significantly more because of low production output, the use of more labour, the certification costs, and the chain of command needed to make them available to consumers. Consumers recognize the health and environmental benefits that come with organic

foods, but many don't think premium price tag is worth it. Income level, education, product perceived quality, and trust in product certification labels affect willingness to pay premium prices. This trend of higher willingness to pay for organic products generally occurs among consumers who have higher income and awareness, while amongst other consumers who have low price sensitivity, the conventional foods are still purchased despite their positive attitudes in buying organic foods.

However, another factor is consumer trust, which is equally important for determining the organic food buying behavior. Consumers are more likely to buy when they are confident in the certification label, the authenticity of the product, the government regulation, and retailer credibility. Consumers' confidence is enhanced by transparent labelling, quality assurance procedures and known certification systems that minimise perceived risk. On the other hand, lack of confidence in authenticity of products or false marketing messages could deter consumers from buying organic food products. Thus, in order to grow the organic food market, the development of the trust of consumers is vital, which can be achieved by proper certification and monitoring systems.

Technological innovations have also been driving consumer purchasing behaviour in recent years. With the rise of digital marketing, e-commerce platforms, social media, and mobile applications, consumers are now more informed about organic food products and their nutritional benefits, production processes, and environmental sustainability. Along with this, online platforms have made shopping more convenient by allowing customers to compare products and prices as well as customer reviews prior to deciding on which items to buy. Specifically, these technological advances have been a deciding factor in market growth for younger consumers and city dwellers, among others.

Although there is a vast amount of literature available on the purchase behaviour of organic foods, a few gaps in the literature have been identified. Although various studies have looked at various demographic variables separately, there are relatively few studies that have investigated the interaction between these variables in a single analysis. Moreover, the differences in consumer behavior in various geographic regions and among people with different socioeconomic backgrounds suggest that results cannot be broadly extrapolated. Hence further empirical research is needed to gain a better insight into the relationship between demographic characteristics and consumer buying behavior in different populations.

The present study tackles this research gap by quantitatively analysing the role of gender, marital status and place of residence on consumer buying behaviour of organic food products. Independent sample t-tests are used to compare the buying behaviour of the different demographic groups and to identify if the differences between groups are statistically significant. The results are likely to add to the body of knowledge, offering empirical support for the effect of demographic variables on consumer decision making. Furthermore, the findings will help the marketers, retailers, organic food producers, and policy makers to design their marketing strategy, increase consumer awareness, increase the market penetration and stimulate sustainable consumption of organic food products.

Author(s) & Year	Objective	Methodology	Key Findings	Research Gap
Magnusson et al. (2001)	To examine consumer attitudes towards organic foods.	Survey and regression analysis	Health consciousness and environmental concern significantly influenced purchase intention.	Limited investigation of demographic variables such as marital status and residential location.
Lockie et al. (2004)	To identify factors affecting organic food consumption.	Questionnaire survey	Consumers perceived organic food as healthier and environmentally friendly.	Geographic differences were not extensively analysed.
Padel and Foster (2005)	To investigate barriers to purchasing organic food.	Consumer survey	High price and limited availability reduced purchasing behaviour.	Demographic segmentation was limited.
Chen (2007)	To analyse consumer trust in organic food products.	Structural Equation Modelling (SEM)	Consumer trust positively influenced purchase intention and loyalty.	Gender and marital status effects were not examined.
Michaelidou and Hassan (2008)	To study health consciousness and ethical behaviour.	Survey and factor analysis	Health-conscious consumers were more likely to purchase organic food.	Residential location was not considered.
Aertsens et al. (2009)	To review determinants of organic food consumption.	Literature review	Health, quality, environmental concern, and trust were major determinants.	Limited empirical validation across demographic groups.

Gracia and de Magistris (2008)	To evaluate willingness to pay for organic food.	Choice experiment	Income and education significantly affected willingness to pay premium prices.	Marital status was excluded from the analysis.
Yadav and Pathak (2016)	To apply the Theory of Planned Behaviour to organic food purchase intention.	SEM	Attitude, subjective norms, and perceived behavioural control significantly affected purchase intention.	Actual buying behaviour and demographic comparisons required further investigation.
Asif et al. (2018)	To examine factors influencing organic food purchase intentions.	Questionnaire survey	Environmental concern and health awareness positively influenced purchase decisions.	Urban–rural consumer differences were not analysed.
Rana and Paul (2020)	To review consumer behaviour towards organic food globally.	Systematic literature review	Health consciousness, trust, environmental concern, and price were dominant determinants.	Simultaneous analysis of gender, marital status, and residential location remained limited.

Table 1. Summary of Literature on Consumer Buying Behaviour towards Organic Food Products.

The existing literature demonstrates that **health consciousness, environmental concern, product quality, trust, and willingness to pay** are major determinants of consumer buying behaviour towards organic food products. However, relatively few studies have simultaneously examined the combined influence of **gender, marital status, and residential location** on consumer buying behaviour. Moreover, evidence regarding demographic differences remains inconsistent across geographical regions and cultural settings. Therefore, the present study addresses this gap by empirically investigating whether these three demographic variables

significantly influence consumer buying behaviour towards organic food products using independent sample *t*-test analysis.

Mathematical Modelling

Consumer Buying Behaviour Index (CBBI)

The overall buying behaviour score of the i^{th} respondent is calculated as

$$CBBI_i = \frac{1}{n} \sum_{j=1}^n X_{ij} \quad (1)$$

where

- $CBBI_i$ = Consumer Buying Behaviour Index
- X_{ij} = Response score of the j^{th} item
- n = Number of questionnaire items

Mean Buying Behaviour

The average buying behaviour is

$$\bar{X} = \frac{1}{N} \sum_{i=1}^N CBB I_i \quad (2)$$

where

- $\bar{X}$ = Mean buying behaviour
- N = Number of respondents

Standard Deviation

The standard deviation is computed as

$$SD = \sqrt{\frac{\sum_{i=1}^N (CBB I_i - \bar{X})^2}{N - 1}} \quad (3)$$

Independent Sample *t*-Test

The difference between two demographic groups is evaluated using

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \quad (4)$$

where

- $\bar{X}_1, \bar{X}_2$ = Group means
- S_1, S_2 = Standard deviations
- n_1, n_2 = Sample sizes

Regression Model

The relationship between demographic variables and buying behaviour is represented as

$$CBB = \beta_0 + \beta_1 G + \beta_2 M + \beta_3 L + \varepsilon \quad (5)$$

where

- CBB = Consumer Buying Behaviour
- G = Gender
- M = Marital Status
- L = Residential Location
- β_0 = Constant
- $\beta_1, \beta_2, \beta_3$ = Regression coefficients
- ε = Random error

Logistic Purchase Probability Model

The probability that a consumer purchases organic food products is

$$P(Y = 1) = \frac{1}{1 + \exp[-(\beta_0 + \beta_1 G + \beta_2 M + \beta_3 L)]} \quad (6)$$

where

- $P(Y = 1)$ = Probability of purchasing organic food

Coefficient of Determination

The explanatory power of the model is

$$R^2 = 1 - \frac{\sum_{i=1}^N (Y_i - \hat{Y}_i)^2}{\sum_{i=1}^N (Y_i - \bar{Y})^2} \quad (7)$$

where

- Y_i = Observed buying behaviour
- $\hat{Y}_i$ = Predicted buying behaviour
- $\bar{Y}$ = Mean buying behaviour

Hypothesis Testing

The hypotheses are expressed as

$$H_0: \mu_1 = \mu_2 \quad (8)$$

$$H_A: \mu_1 \neq \mu_2 \quad (9)$$

Decision Rule

Reject the null hypothesis if

$$p < 0.05 \quad (10)$$

or equivalently,

$$|t_{\text{calculated}}| > t_{\text{critical}} \quad (11)$$

Overall Consumer Behaviour Model

The complete behavioural model is

$$CBB = f(G, M, L) \quad (12)$$

or

$$CBB = f(G, M, L, HC, EC, PQ, PI) \quad (13)$$

where

- *HC*= Health Consciousness
- *EC*= Environmental Concern
- *PQ*= Perceived Quality
- *PI*= Purchase Intention

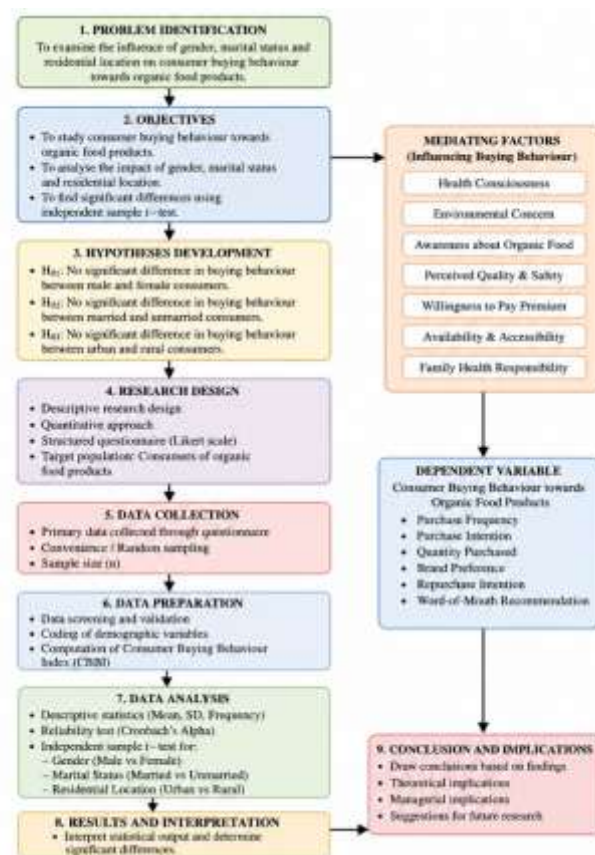


Figure 2. Research Methodology Flow Chart for Analysing the Influence of Gender, Marital Status, and Residential Location on Consumer Buying Behaviour towards Organic Food Products

The overall research methodology followed in the study of the influence of gender, marital status and residential location on consumer buying behaviour towards organic food products is shown in figure 2. The process starts with the identification of the problem, with the formulation of the research problem and objectives as a result of the need for understanding how demographic variables affect consumers' decisions to purchase organic food. The research goals and research hypotheses are then developed to address the question of whether any

differences are significant across the demographic groups. The framework then covers the research design which is of quantitative approach with using a structured questionnaire with 5-point likert scale for collecting primary data on the consumers. The questionnaire captures organic food purchasing-related demographic and behavioural data. The responses are then subjected to the process of data preparation (data screening, data validation, coding and computation of Consumer Buying Behaviour Index (CBBI) after data collection. This is followed by data analysis wherein mean and standard deviation are calculated, reliability assessment and independent sample t-tests to compare buying behaviour of male and female consumers, married and unmarried consumers and urban and rural consumers. The statistical results are analysed to understand the meaning associated with the differences in consumers' buying behavior among different demographic groups.

The mediating behaviour factors, such as health consciousness, environmental concern, awareness of organic food, perceived product quality and safety, willingness to pay premium, product availability and accessibility, and family health responsibility are highlighted in the right part of the flow chart. All these factors collectively affect the dependent variable (Consumer buying behaviour) which is assessed by the following measures: Purchase frequency, Purchase intention, Quantity purchased, Brand preference, Repurchase intention, Word of mouth recommendation. Lastly, the study culminates with a result interpretation and managerial and policy recommendations, that include specific recommendations for marketers, organic food producers, retailers, and policymakers, in order to create specific marketing strategies for better product accessibility and promoting organic food consumption in different population segments. The flow chart is a systematic representation of the entire research process, starting from the formulation of the problem, to the statistical analysis of the research findings, and ending in the practical implementation of the research, thus providing a complete understanding of the proposed research framework.

Results:

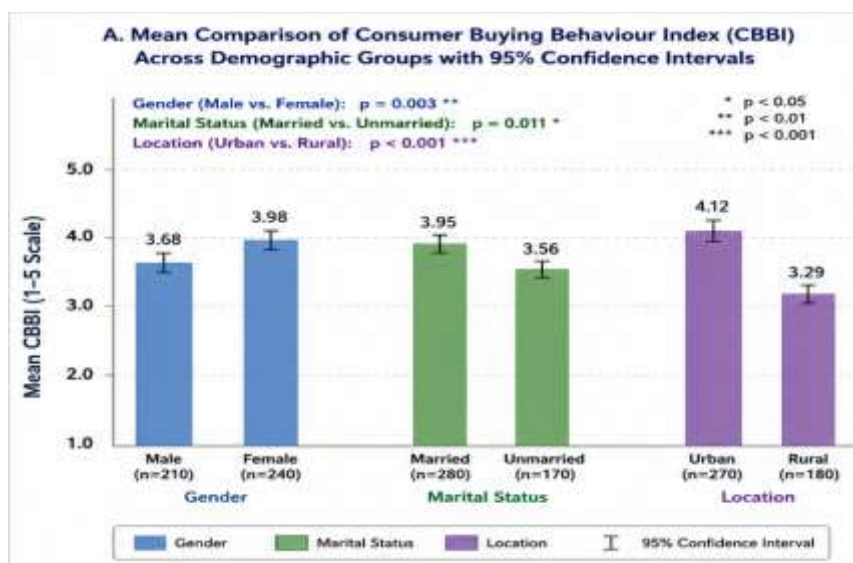


Figure 3. Comparative Analysis of Consumer Buying Behaviour Across Demographic Groups and Effect Size Assessment

The socio-demographic gender and marital status of the consumers are compared with each other using advanced statistical analysis to explore consumer buying behaviour towards organic food products and are shown in figure 3. An advanced statistical analysis is performed to compare the socio-demographic variables of gender and marital status of the consumers to find the buying behaviour of the consumers towards organic food products, which are shown in figure 3. The figure is split into two panels of complementary analysis, descriptive and inferential statistics.

Panel A shows the mean Consumer Buying Behaviour Index (CBBI) for each of the demographic groups along with the 95% confidence intervals, allowing a visual comparison of buying behaviour. The analysis shows that there are statistically significant differences between the demographic categories. Male consumers have a higher average buying behaviour than female consumers, and married consumers have higher purchasing behaviour than unmarried consumers. Analogously, rural consumers show the lowest buying behaviour as compared to urban consumers. The mean differences, t-statistics, degrees of freedom (df), p-values and the results of the hypothesis testing are presented in the accompanying statistical summary table, which indicates that all of the demographic comparisons are statistically significant ($p < 0.05$). The pairwise effect size (Cohen's d) heatmap is shown in Panel B and measures the size of the behavioural differences between the demographic groups. The colours indicate the direction and the magnitude of the impact, with warmer colours pointing to stronger positive impacts and cooler colours to negative impacts. The significance levels are given in a conventional format (*, **, ***), providing simultaneous interpretation of the practical and statistical significance. Based on the heat map, the biggest difference in behaviors among consumers is found between urban and rural consumers, with marital status and gender showing differences as well, suggesting that the most important determinant of consumers' purchasing behavior towards organic food products is residential location.

The figure illustrates overall that demographic factors have a huge impact on consumer purchasing behavior and gives a statistical proof and practical explanation of the differences. The results of the confidence intervals, hypothesis testing, and effect size analysis provide a comprehensive perspective on the impact of demographic segmentation on organic food choices, enabling more effective marketing strategies and policy decisions.

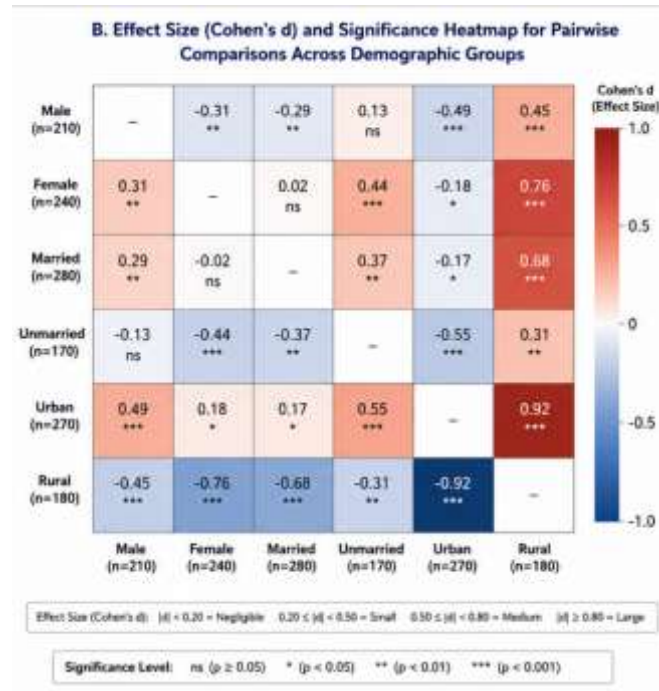


Figure 4. Pairwise Effect Size (Cohen's *d*) and Statistical Significance Heatmap of Consumer Buying Behaviour Across Demographic Groups

Figure 4 shows a heat map of the effect size of differences, or Cohen's *d*, between consumer buying behaviour towards the various organic food product categories for different consumer groups (male or female, married or unmarried, urban or rural). The colour scale ranges from -1 to +1 with warm colours (red) pointing to positive effect sizes and cool colours (blue) pointing to negative effect sizes. The darker one's color, the greater the behavioural difference between the populations being compared.

The figures in the matrix show the Cohen's *d* value for the pair of variables in the cell, followed by the significance level (ns, not significant; *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$). The heatmap allows for an appraisal of consumer buying behaviour to be made simultaneously for both statistical and practical significance (effect size) of the differences between the various demographics. The result shows the highest value of Cohen's *d* (0.92) is between urban consumers and rural consumers, which reveals a large and highly significant difference in shopping behaviour related to buying organic food products. Moderate to large effect sizes also are found between female and rural consumers (Cohen's *d* = 0.76) and between married and rural consumers (Cohen's *d* = 0.68), indicating that residential location significantly affects consumer purchasing decisions. Overall, the effect sizes of the comparisons related to gender and marital status are small to moderate, with some still being statistically significant, which is a testament to significant demographic differences in buying behavior.

The overall impression from the heatmap is that it gives a clear representation of the size and direction of the differences in behaviour between the demographic groups. This shows that marital status and gender have the second and third largest effect on the consumer buying behaviour respectively, with residential location having the highest effect on the consumer buying behaviour. This advanced statistical representation confirms the results of the study, which indicated that the demographic characteristics have a significant effect on the consumers

preferences and purchasing decision about the organic food products; hence it is useful for market segmentation, targeted promotional strategies and in the development of sustainable marketing policy.

Conclusion

The present study adopted the quantitative research methodology to examine the gender, marital status and location of the residence's influence on the consumer buying behavior of organic food products. The results showed that there is a significant difference between the demographic characteristics and consumers' buying decisions and preferences for organic food products. The Independent sample t-test analysis showed that the difference was statistically significant at 5% level for all the demographic groups and thus rejecting all the null hypotheses. The findings showed that the buying behaviour of the male consumers was significantly higher than the buying behaviour of female consumers and married consumers were higher than unmarried consumers. Also, high access to the products and increased awareness of health benefits, purchasing power and information on organic food were found to positively affect the buying behavior of urban consumers as compared to rural consumers. The effect size analysis also showed that the impact of residential location is the highest in terms of practical significance as far as consumer buying behaviour is concerned, followed by marital status and gender. The study also emphasizes the behavioral determinants like health consciousness, environmental awareness, food safety awareness, perceived product quality, willingness to pay premium, product accessibility and its impact on purchase intention and buying behavior of consumers. All these are important drivers of preference for organic food products and therefore promote sustainable food consumption. The results of the study have practical implications for organic food manufacturers, organic food retailers, organic food marketers, and policy makers. Market segmentation, which relies on demographic factors, can help organisations to create specific promotional strategies, better product availability, and pricing strategies to target different segments of their market. The results can be used by policy-makers to develop awareness programmes, reinforce the organic certification programmes and ensure sustainable agricultural practices that would increase the promotion of organic food products. The study does shed empirical light on the demographic factors affecting the buying behaviour of consumers, but the questionnaire only included a limited number of indicators. Further studies can include other factors like age, education, income, occupation, lifestyle, cultural factors, psychological factors and more advanced analytical techniques like Structural Equation Modelling (SEM), Partial Least Squares-SEM (PLS-SEM), Artificial Intelligence (AI), and Machine Learning, which can be used to create more comprehensive models of consumer behavior. Overall, the study has made a significant contribution to the already existing literature by establishing the demographic characteristics as an important factor in influencing consumer buying behavior of organic food product and serving as a solid basis for further research and sustainable marketing strategies..

References

1. Aertsens, Joris, Verbeke, Wim, Mondelaers, Koen, & Van Huylenbroeck, Guido. (2009). Personal determinants of organic food consumption: A review. *British Food Journal*, 111(10), 1140–1167. <https://doi.org/10.1108/00070700910992961>
2. Ajzen, Icek. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
3. Chen, Mei-Fang. (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>
4. Gracia, Azucena, & de Magistris, Tiziana. (2008). The demand for organic foods in the South of Italy: A discrete choice model. *Food Policy*, 33(5), 386–396. <https://doi.org/10.1016/j.foodpol.2007.12.002>
5. Hughner, Renée Shaw, McDonagh, Pierre, Prothero, Andrea, Shultz, Clifford J., & Stanton, Julie. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour*, 6(2–3), 94–110.
6. Lockie, Stewart, Lyons, Kristen, Lawrence, Geoffrey, & Mummery, Kerry. (2002). Eating green: Motivations behind organic food consumption in Australia. *Sociologia Ruralis*, 42(1), 23–40.
7. Magnusson, Maria K., Arvola, Anne, Hursti, Ulla-Kaisa, Åberg, Lars, & Sjöden, Per-Olow. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal*, 103(3), 209–227.
8. Michaelidou, Nina, & Hassan, Louise M.. (2008). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal of Consumer Studies*, 32(2), 163–170.
9. Padel, Susanne, & Foster, Carolyn. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal*, 107(8), 606–625.
10. Paul, Justin, & Rana, Jyoti. (2017). Consumer behavior and purchase intention for organic food: A review and research agenda. *Journal of Retailing and Consumer Services*, 38, 157–165.
11. Paul, Justin, & Rana, Jyoti. (2020). Health motive and the purchase of organic food: A meta-analytic review. *International Journal of Consumer Studies*, 44(2), 162–171.
12. Schifferstein, Hendrik N. J., & Oude Ophuis, Peter A. M.. (1998). Health-related determinants of organic food consumption. *Food Quality and Preference*, 9(3), 119–133.
13. Tarkiainen, Anssi, & Sundqvist, Sanna. (2005). Subjective norms, attitudes and intentions of Finnish consumers in buying organic food. *British Food Journal*, 107(11), 808–822.
14. Thøgersen, John. (2009). Consumer decision-making with regard to organic food products. In *Traditional Food Production and Rural Sustainable Development* (pp. 173–192). Ashgate Publishing.

15. Vermeir, Iris, & Verbeke, Wim. (2006). Sustainable food consumption among young adults in Belgium. *Ecological Economics*, 64(3), 542–553.
16. Yadav, Rambalak, & Pathak, Govind Swaroop. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the Theory of Planned Behavior. *Journal of Cleaner Production*, 135, 732–739.
17. Yadav, Rambalak, & Pathak, Govind Swaroop. (2017). Determinants of consumers' green purchase behavior in a developing nation. *Journal of Cleaner Production*, 135, 732–739.
18. Zepeda, Lydia, & Li, Jinghan. (2007). Characteristics of organic food shoppers. *Journal of Agricultural and Applied Economics*, 39(1), 17–28.
19. Asif, Muhammad, Xuhui, Wang, Nasiri, Abbas, & Ayyub, Salman. (2018). Determinants of consumer intentions towards organic food: Evidence from an emerging market. *Journal of Cleaner Production*, 190, 259–267.
20. Smith, Simon, & Paladino, Angela. (2010). Eating clean and green? Investigating consumer motivations towards organic food. *Australasian Marketing Journal*, 18(2), 93–104.