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Role Of Assortment And Sensory Appeal On Purchase Intention Of Organic Produce: A Serial Mediation Model

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Abstract
This research evaluates variables affecting customers' attitudes towards the purchase intention of organic produce. Through a survey questionnaire using an online data collection platform, data from 266 respondents was collected. Purposive sampling was used to select the respondents. The SPSS process macro was employed to examine the influence of assortment and sensory appeal. This is to study the relationship between attitude, defined as the independent variable, and consumer purchase intention of organic produce, defined as the dependent variable. A serial mediation effect of assortment and sensory appeal on the relationship between the predictor and outcome variable was obtained in the results. The novelty of this research lies in investigating how assortment and sensory appeal affect consumers' attitudes and purchase intentions.
Key Words: *Organic Produce, Serial Mediation, Purchase Intention*

INTRODUCTION

Organic produce is grown without antibiotics, fertilizers, genetically modified organisms, herbicides, and pesticides (Rana & Paul, 2017). Organic farming sustains the soil's health, ecosystems, and people involved. It uses processes with biodiversity in mind, which are ecological and agricultural cycles adapted to local conditions. It combines traditional knowledge, science and innovation to promote relationships with quality of life at the center for all stakeholders involved (IFOAM General Assembly, 2008). Organic farming is growing worldwide due to its ability to reduce the negative impact on the environment and human health.

Even with these benefits, the growth rate in organic produce consumption could be faster. Studies indicate that organic food production and consumption help attain responsible production and consumption (Lu & Cheng, 2023). Research on organic produce and policy interventions were taken up actively to foster demand (Eyhorn et al., 2019; Sadiq et al., 2022). In this regard, Dong et al. (2022) investigated the potential impact of certification on consumers' awareness of the food supply chain and its influence on the demand for organic produce. This is to help consumers differentiate between organic and chemical-laden produce, thereby increasing demand for the former. Bhardwaj et al. (2023) showcase that consumers' perception of organic produce quality and its distinctiveness impact their buying intentions.

Unprecedented growth in the organic food market was observed since 2020, exceeding 120 billion euros. The United States, with 49.5 billion euros, leads the market for organic produce, followed by Germany and France, with 15 billion euros and 12.7 billion euros, respectively. The number of farmers involved in organic farming also saw a steady increase from 2019 to 2020. India stood at the number one position, with 1.6 million farmers involved in organic farming. These farmers were certified in organic farming using the group certification process based on an internal control system (Willer, H. 2022). Research is needed on the consumer-related factors influencing the consumption of organic produce. In emerging countries like India, such research would provide producers with information on demand, accelerating the adoption of organic farming. Inman (2001) suggests that consumers of food products are more inclined to seek variety in sensory qualities, such as look and taste, as opposed to non-sensory features like brand. Further, Aschemann-Witzel et al. (2013) indicate that extensive product assortments encourage individuals to make healthier food choices as they can discover a healthy option from among the ones on the shelf. Based on this evidence, the following research questions are proposed.

RQ1: Does consumers' purchase intention of organic produce depend on its sensory characteristics such as appearance and product assortment?
RQ2: What is the degree to which sensory appeal and assortment mediate the linkage between customer attitude and purchase intention of organic produce?

LITERATURE BACKGROUND

Research focused on understanding factors influencing consumers' organic produce consumption. Literature looked at factors influencing the consumer's willingness to spend more on organic produce, including consumer segments, products, and the place of shopping (Katt & Meixner, 2020). It also identified internal and external factors influencing consumers' organic product purchases. Aertsens et al. (2009) studied the role of personal determinants in organic produce consumption. Molinillo et al. (2020) study on millennials' organic food purchasing habits found that product attributes and customer concerns increase millennials' awareness of health and social issues, increasing their willingness to purchase organic produce at a premium. Chakrabarti (2010) found trust in certification, health motivation, and store reputation influential in consumer purchase intention.

Similarly, a mixed-method study (Paul & Rana, 2012) found that availability, education, and health positively impact customers' attitudes toward organic food. Most investigations examining consumer purchase intention for organic foods have been well-studied in the European and American nations (Naspetti & Zanoli, 2009; Michaelidou & Hassan, 2008). Few researchers (Boobalan & Nachimuthu, 2020) studied the differences between American and Indian consumers consuming organic produce. Basha & Lal (2019) found that convenience, concern for the environment, health, lifestyle, price, quality of product quality, support for local farmers, and subjective norms significantly impact consumer purchase intention of organic produce. Rana and Paul (2017) examined product and consumer related factors that influence consumers' purchasing intentions of organic produce. Concern for health, supporting local farmers, animal welfare, safety of food influence consumers' attitude towards purchase intention of organic produce.

In the retail space, product assortment significantly influences consumer purchase intention. At the same time, a reduction in product assortment can lead to a substantial loss in category sales (Sloot et al., 2018; Sethuraman et al., 2022). Assortment influences consumers' perception about product by detailing the variety and choices available (van Herpen & Bosmans, 2018). Appearance, texture, fragrance, colour, and freshness are the sensory factors that motivate consumers to buy food (Imtiyaz et al., 2021). Sensory appeal has a major impact on a consumer's consumption of organic produce (Chekima et al., 2017). However, consumers interested in natural content are not concerned about sensory appeal (Hasselbach and Roosen (2015). Assortment and sensory appeal significantly affect consumers' purchase intentions of food products (Kushwah et al., 2019). Furthermore, in another research, (Ahmed et al., 2020) and (Dangi et al., 2020), it was identified that positive or negative attitudes developed among consumers based on the effect of intervening variables during the purchase decision-making process. Thus, it became imperative for the marketers to understand the relation between attitude of consumers and their intention to purchase organic produce.

This gap in literature is filled by evaluating the serial mediation effect of assortment and sensory appeal on relation between attitude of consumers and their intention to purchase organic produce. Factors influencing purchase intention and attitude toward organic produce are brought out in the study.

THEORY AND HYPOTHESIS DEVELOPMENT

This research attempted to find out the factors that affect a consumer's attitude and intention to buy organic produce. According to the Theory of Reasoned Action (TRA), behavioural intentions, primarily predicted by attitudes toward the act and subjective norms, might predict human behaviour. Numerous studies (Paul et al., 2016; Copeland & Zhao, 2020; Van der Heijden et al., 2003) examining consumer behavioural intention have supported these relationships. These studies have proved the predictive capacity of independent variables. Consumers' intention to purchase organic produce can studied using TRA and theory of planned behaviour (TPB) (Zheng et al., 2021; Yazdanpanah & Forouzani, 2015). A recent study (Gundala et al., 2022) employed TRA to study the consumer intention to purchase organic

food. The results of this study indicated that the associations between subjective norms on attitude and attitude on purchase intention are moderated by gender. In a recent systematic literature review (Wijekoon & Sabri, 2021), TRA is most commonly employed to study the relationship between attitude and behavioural intentions. Thus, the same was chosen as the underpinning theory for examining consumer attitudes regarding organic produce, owing to its widespread use and the study's emphasis on understanding consumer attitudes.

1.1.1 Consumer attitude and purchase intention

A recent study(Kotler & Keller, 2006) indicated that consumers exhibiting dark triad personality traits impact their attitude and intention to purchase organic food products (Konuk & Otterbring, 2024). However, customers with positive attitudes toward a product or brand are more likely to have a greater degree of purchase intention. Several empirical studies have examined the relationship between consumer attitudes and purchase intentions (Chen & Lobo, 2012; Punyatoya, 2015). According to (Aertsens et al., 2009), attitudes influence purchase intention. However, most consumers show a positive attitude toward organic produce and only a few buy organic produce. Favourable or unfavourable assessment of a particular action or object is determined by the attitude of an individual (Madden et al., 2016; Ajzen, 1991). Thus, examining variables that reflect the relationship between attitudes and purchase intentions is essential. In this study, consumer attitude is an individual's favourable or unfavourable opinion of organic produce.

The market development is affected by consumers' need for access to organic products. The study (2011) indicated that shoppers prefer store brands to national brands and are less likely to purchase organic items in exclusive stores due to limited product assortment. Consumer attitude significantly influences his or her process of decision-making, and many studies have established a strong relationship between attitude and purchase behaviour concerning different product categories across online and offline channels (Chen et al., 2020; Zhang & Hanks, 2018; Hartmann & Apaolaza-Ibáñez, 2012). A study examined the perceived value of green food product purchasing behaviour on attitude and discovered that attitude further influences green food product purchase intention (Woo & Kim, 2019). Thus, this study proposes the following hypotheses:

H1: Consumers' attitudes significantly impact their purchase intention toward organic produce.

1.1.2 Assortment

The quantity and variety of a retailer's assortment may considerably influence consumers' shopping experiences and purchase intentions (Simonson, 1999). Retailers' product assortment may assist customers in selecting various family members' preferences and particular objectives. In addition, various goods may increase the pleasure of shopping and satisfy the urge to discover new items (Oppewal & Koelemeijer, 2005). The assortment is the total number of distinct options available to a consumer at a retail store when deciding on a purchase within a product category (Sethuraman et al., 2022). Assortment in this study is defined as the range and variety of organic food products, brands, and price options a store offers. An earlier study found that organic products have more elasticity to long-term strategies, such as assortment and frequent pricing policies, than non-organic products (Broniarczyk et al., 2018). Assortment may also affect a retailer's perceived value; a more significant assortment may deliver better value to consumers (Borle et al., 2005). A consumer's assortment of demands may significantly influence their attitude toward a product or service. (Eagly and Chaiken, 1993). Hübner (2017) found that consumers with positive attitudes toward a product category, such as organic products, have higher assortment needs.

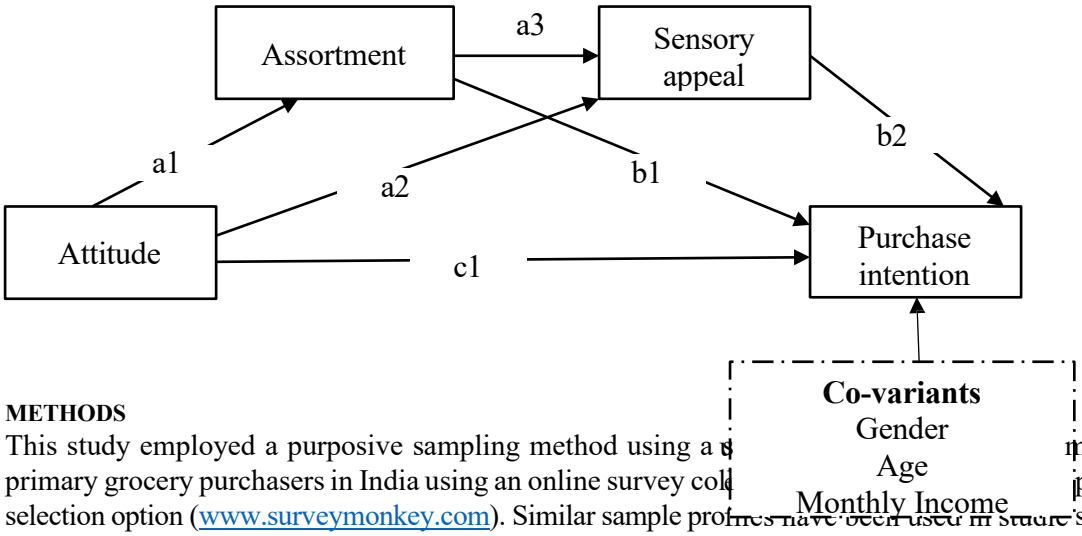
Better-informed and demanding customers seek healthy and nutritious food products, which drives the need for food product assortment (Deliza et al., 2003). Most studies on assortment have examined strategies for product assortment and their optimization (Yücel et al., 2009; Draganska et al., 2009). Hong et al. (2016) examined whether an assortment of products in one category would influence a consumer's decision to purchase from another category displayed alongside it. They found that consumers are less likely to buy from a category with a smaller assortment when presented with another category with a more extensive assortment, such as packaged food products. Product assortment and change in prices have excellent elasticity for organic produce when compared to conventional commodities (Bezawada &

Pauwels, 2013). Few studies have been conducted on how customers expect retailers to offer organic products and whether there are perceived gaps in the range of variety. Although several researchers have examined customer perceptions toward organic products, the perception of assortment has received little attention (Schleenbecker & Hamm, 2013). This study fills this gap by proposing the hypothesis:
H2: Assortment mediates the relationship between Attitude and Purchase Intention.

1.1.3 Sensory Appeal

Customers tend to buy organic food with a significant sensory appeal, such as appealing packaging, aromas, and textures (Chekima et al., 2017). This study operationalizes sensory appeal as the degree to which participants agree or disagree with the importance of sensory attributes such as visual appearance and the touch sensation of organic produce. (Sadiq et al. (2021) highlighted that customers place a high value on hedonistic food benefits and seek characteristics that engage all their senses and promote a more profound attachment to the product. The sensory appeal of organic food products catalyzes favourable attitudes toward the product, increasing buying intent (Mueller & Szolnoki, 2010). For example, if a product has a solid appeal to the senses, the consumer's attitude toward an organic food product may shift in a way that makes them more likely to purchase it. Meyer and Simons (2021) found that sustainability traits like healthy eating habits, favourable attitudes toward organic food products, and sustainable consumption behaviour are dominating on an abstract level but tend to be inferior for actual choice, especially when contending with taste, price, and other household members' preferences. In light of these arguments, we put forward the following hypothesis:
H3: Sensory appeal mediates the relationship between attitude and purchase intention.
Appleton et al. (2019) found that adolescents with healthier eating habits and greater interest in eating for sensory reasons preferred vegetables with more appealing sensory properties. Research indicates that the wide assortment of products, notably how they are exhibited and grouped, may influence customer impressions of sensory attributes, such as flavour and texture (Papies et al., 2020; Harker et al., 2010). For instance, a retailer with a wide range of visually appealing food products may more effectively attract customers and enhance their sensory appeal than a restricted selection of visibly fewer appealing products. More interstitial space affects overall sales, purchase probability, and taste impressions (Sevilla & Townsend, 2016). Based on the aforementioned points, it can be argued that assortment and sensory appeal may influence the relationship between a consumer's attitude and his or her purchase intention of organic produce. Keeping this in mind, this study proposes the underlying hypothesis:
H4: Assortment and sensory appeal serially mediate the relationship between Purchase intention and attitude toward organic food produce.

Figure 1: Hypothesized Research Model



METHODS

This study employed a purposive sampling method using a s mple of 266 primary grocery purchasers in India using an online survey col population selection option (www.surveymonkey.com). Similar sample pro s to explore the consumption of organic produce (Batte et al., 2007; Singh & Verma, 2017). To check

for confounding effects, the survey research included socio-demographic data on gender, age, and monthly income as control variables. This information was analyzed to identify the demographic profile of the respondents. Other variables included Attitude (ATT), Assortment (AST), Sensory Appeal (SA), and Purchase Intention (PI) toward organic produce. This study adopted the items of all four variables from established research (Tandon et al., 2020); (Mohan et al., 2012); (Melovic et al., 2020) (Chen & Lobo, 2012). Five-point Likert scale from strongly agree (1) to strongly disagree (5) was used to assess research variables. Here This research investigated the purchasing intent for all organic products without restricting it to only specific produce categories.

DATA ANALYSIS AND RESULTS

Table **1** shows the demographic profile of the study sample, and Table 2 shows the inter-correlations between the study variables and mean values and standard deviations. Significant positive correlations have been evidenced between the study variables supporting the hypotheses.

Table 1: Sample Demographic Characteristics

Variable	Frequency	% (sample size of 266)
Gender		
Female	110	41.4
Male	156	58.6
Age		
18-24	46	17.3
25-34	97	36.5
35-44	81	30.5
45-54	25	9.4
55-64	15	5.6
65+	2	0.8
Monthly Income (INR)		
Less than 25000	33	12.4
25000-39000	46	17.3
40000-54000	34	12.8
55000-79000	35	13.2
80000-94000	24	9.0
95000+	94	35.3
Marital status		
Single	74	27.8
Married	188	70.7
Others – Did not specify	4	1.5

To assess discriminant validity, the constructs' square root of average variance extracted (AVE) values must be larger than the inter-correlation (Fornell & Larcker, 1981). It can be seen from **Error! Reference source not found.** that all latent variables passed the discriminant validity test.

Table 2: Inter-correlations

Sl. No.	Variables	Mean	S.D.	1	2	3	4
1	Attitude	1.5013	0.54272	(0.719)			
2	Purchase Intention	1.6704	0.57076	.422**	(0.747)		
3	Assortment	1.7168	0.66477	.315**	.366**	(0.767)	
4	Sensory Appeal	1.9837	0.77063	.258**	.359**	.403**	(0.817)

Note: **Correlation is significant at 0.01 level (2-tailed); the square root of the average variance (AVE) of the corresponding constructs is shown in the figures in brackets; Off-diagonal elements show correlations between constructions; S.D. stands for Standard Deviation.

The four-factor model was tested using a confirmatory factor analysis (CFA) before testing the hypotheses (Attitude, Assortment, Sensory Appeal, and Purchase Intention). The measurement model's CFA yielded an excellent model fit following the literature recommendations. The four-factor model showed an acceptable fit ($x^2/df = 2.938$, CFI = 0.92, TLI = 0.901, RMSEA = 0.08) compared to the three-factor and single-factor models (see Table 3).

Table 3: Confirmatory Factor Analysis

Model	x^2/df	CFI	TLI	RMSEA
Four factor	2.938	0.92	0.901	0.08
Three factor	7.214	0.754	0.682	0.153
Two factor	8.994	0.772	0.591	0.174

Notes: x^2/df is chi-square per degree of freedom; CFI - Comparative Fit Index; TLI -Tucker-Lewis Index; RMSEA - Root Mean Square Error of Approximation

All constructs' composite reliability (CR) values were larger than 0.7 and were deemed highly consistent and reliable (Bagozzi & Yi, 2012). The AVE values of the constructs were more than the threshold value of 0.50 (see The four-factor model was tested using a confirmatory factor analysis (CFA) before testing the hypotheses (Attitude, Assortment, Sensory Appeal, and Purchase Intention). The measurement model's CFA yielded an excellent model fit following the literature recommendations. The four-factor model showed an acceptable fit (x2/df = 2.938, CFI = 0.92, TLI = 0.901, RMSEA = 0.08) compared to the three-factor and single-factor models (see Table 3).

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), and all factor loadings were significant at 0.001, confirming the convergent validity (Hair et al., 2010). Therefore, the measurement of all constructs is valid and reliable. Additionally, multi-collinearity was absent as the variance inflation factor (VIF) values varied from 1.275 to 1.736 (below 10).

Table 4: Reliability

Construct	AVE	MSV	CR
Attitude	0.5171	0.2970	0.761
Purchase Intention	0.5586	0.2970	0.789
Assortment	0.5887	0.1714	0.808
Sensory Appeal	0.6668	0.1714	0.856

Notes: AVE - Average Variance Extracted; MSV - Maximum Shared Variance; CR - Composite Reliability

Hayes' Model 6 of the SPSS process macro was used to test the serial mediation model between attitude and purchase intention. Using ordinary least squares, this approach examines direct and indirect effects. The effect size of indirect interactions was determined using a bootstrap confidence interval. Age, sex, and monthly income were included as covariates in this model.
Figure 2 shows the process model with all path coefficients. Table 5 lists the total, direct, and indirect effects. In the total-effect model, attitude positively affects customer purchase intention ($c1 = 0.51$, $p < 0.001$); hence, H1 was supported. Nevertheless, the influence of attitude on purchase intention decreased ($c1 = 0.32$, $p=0.001$) when assortment and sensory appeal were included in the direct effect model. This decrease in attitude's influence on purchase intention without a reduction in significance level shows partial mediation. Indirect effects were examined to corroborate the partial mediation impact of assortment and sensory appeal.

Figure 2: Estimations of Parameters for the Serial Mediation Effect Model

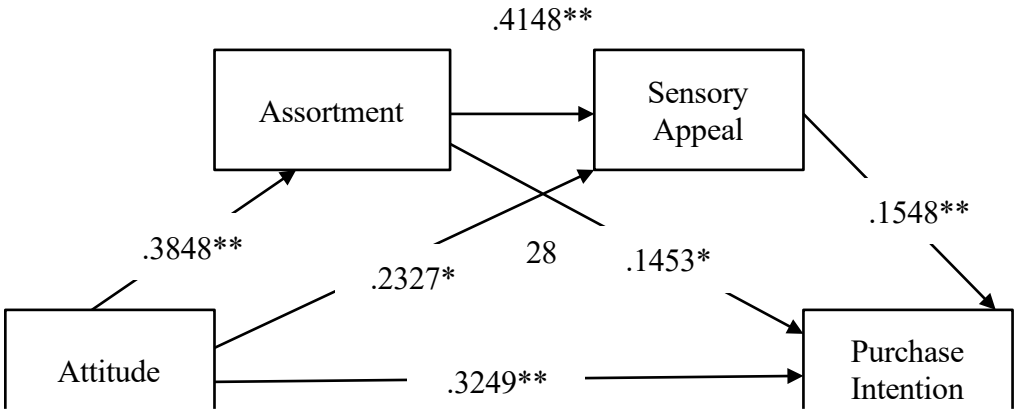

Table 5: Total, Direct and Indirect Effects of Attitude on Purchase Intention

Indirect effect	Estimate	SE	Bias Corrected 95% CI	Hypothesis	Result
ATT-AST-PI	0.0559	0.0304	0.0044 -.1231	H2	Accepted
ATT-SA-PI	0.036	0.02	.0049 - .0830	H3	Accepted
ATT-AST-SA-PI	0.0247	0.0103	.0074 - .0477		
Direct effect					
ATT-PI	0.3249	0.0595	.2078- .4421	H1	Accepted
Total effect					
ATT-PI	0.4416	0.0586	.3262- .5570	H4	Accepted

Notes: SE-Standard Error; CI-Confidence interval

Error! Reference source not found. shows that indirect effects indicate that the effect of attitude on purchase intention via assortment is significant [a2b2 = 0.0559; CI (0.0044 -.1231)]. The indirect impact via sensory appeal was also statistically significant [a1b1 = 0.036; CI (.0049 -.0830)]. Furthermore, the indirect effect of attitude on purchase intention via the serial effect of Assortment and Sensory appeal was significant [a1a3b2 = 0.0247; CI (.0074-.0477]. This adds credence to the proposed model and confirms that assortment and sensory appeal serially mediate the relation between attitude of consumers and their intention to purchase organic produce.

DISCUSSION AND CONCLUSION

Businesses need to understand the factors deciding a consumer's purchase of organic products. This will help maximize the economic potential of the organic food industry. Earlier research explains consumer behaviour when purchasing organic food for health, environmental concerns, attitudes, and pricing (Rana & Paul, 2017; Ladwein & Sánchez Romero, 2021). According to a recent study (Tandon et al., 2020; Roh et al., 2022), attitude was an insignificant predictor of consumer buying behaviour for organic produce. This indicated that additional factors may influence the relationship between attitude and purchase behaviour. The current research fills this gap and examines how commercial factors, such as product assortment and sensory appeal, influence customers' purchase intention for organic food in stores, treating it similarly to other commercial goods. The results clarifies that the combined effect of assortment and sensory appeal substantially impacts the relation between attitude of consumers and their intention to purchase organic produce.

The study's hypotheses test results show that all four proposed hypotheses are accepted. H1 asserts that consumers' attitudes affect their intentions to purchase organic produce, as supported by previous findings (Chekima et al., 2017; Han et al., 2022). This finding implies that consumers with positive attitudes for several reasons, positively influence purchase intention. This includes the perceived health benefits of organic products, environmental concerns, ethical food consumption or a preference for whole, unprocessed foods. In contrast, factors such as premium price or lack of trust influence consumers with unfavourable attitudes, and scarcity negatively influences purchase intention (Kushwah et al., 2019;

Morais et al., 2024). Our results support H2 and H3, proposing an individual mediating effect of assortment and sensory appeal on the relationship between buying intention and attitude.

The results indicate that stores with assorted organic produce (varieties in the same category/different categories of products) further increase consumers' purchase intention for organic produce because they enhance their positive attitude. Similarly, customers who have a favourable attitude toward organic produce also consider the sensory appeal of the produce. This happens when they are making purchase decisions, which is in congruence with existing evidence (Melovic et al., 2020; Sethuraman et al., 2022). The obtained results may be explained by consumers purchasing food products, for various reasons. This includes personal taste, dietary requirements, and health benefits, as well as to meet the needs of others, which can influence the demand for an assortment of organic products. The availability of a diverse range of such products can influence consumers' likelihood of purchasing. In addition, consumers perceive and value specific characteristics of food products (taste, freshness, and healthiness) based on sensory appeal, which affects purchase intention (Almquist et al., 2016). According to the supported results of hypothesis H4, assortment and sensory appeal can influence consumer attitude in a way that both directly and indirectly influences consumer purchase intention. This finding supports the conclusions of earlier studies that only examined the direct consequences of these components in different contexts. Our findings extend the work of Chekima et al. (2017) by examining the serial mediating effect of assortment and sensory appeal using a single model.

THEORETICAL AND MANAGERIAL IMPLICATIONS

By providing insights about the consumer purchase behaviour of organic produce, this study makes a significant contribution to the literature. Previous research has concentrated on the factors that influence green product purchasing behaviour when studying organic food purchasing behaviour, which is also a commercial product (Kushwah et al., 2019; Basha & Lal, 2019; Tandon et al., 2020). Our study attempted to address this gap by describing the commercial components of organic food production based on consumers' decision-making processes. This study focused on commercial components such as assortment and sensory appeal. This conceptual focus is novel and distinctive in the context of customer purchasing behaviour toward green products such as organic produce. Our research found that assortment and sensory appeal combined impacted the relationship between attitude and purchase intention of green items, such as organic produce, irrespective of age, gender, and monthly income. The study has shown that organic produce purchase intention can be increased with varieties in the same or different categories of organic produce with attractive sensory qualities.

Research results indicate towards producers and retailers of organic produce to consider how assortment and sensory appeal affect customer buying behaviour. For instance, providing a wide assortment of organic products and appealing goods will enhance the probability that customers will make purchases. The mediation analysis results indicate that a store's sensory appeal may increase if it displays an extensive range of items. In stores with fewer assorted products, even if the produce is individually appealing, the fruit or vegetable may seem less attractive or fresh, which might not enhance the purchase intention of organic produce. Thus, assortment and sensory appeal are critical success factors in the organic food market. Producers and retailers of organic produce can continue to analyze the impact of these characteristics on purchase behaviour of consumers. Academicians and policymakers may use these findings to guide policies for encouraging organic food production marketing.

LIMITATIONS AND FUTURE RESEARCH

Three limitations must be considered when evaluating this study’s findings. First, the data are self-reported and measure only purchase intention, not actual purchase. Previous research has shown that intention to act is positively associated with actual behaviour, which could have been influenced by social acceptability bias. However, the relatively substantial sample size and appropriate effort to obtain unbiased responses relieve issues in findings regarding the reliability and validity. The research focussed on the intent to purchase organic food produce, which may be categorized as green or sustainable products, among Indian consumers only. Hence, the finding may only be generalizable to some sustainable products. Third, the proposed model considers only the effect of commercial elements, such as assortment and sensory appeal, on purchase intention.

Future research may consider the interaction effect of variables such as sustainable consumption behaviour, health consciousness, and online purchase intention to determine the effects of commercial elements of organic produce. Since food consumption is a phenomenon tied to tradition, location, and the market, future studies on organic food purchase behaviour should involve qualitative research to capture these distinctions in depth.

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