How Important is Immunity? Using Goal Directed Behaviour in understanding Healthy Food Consumption

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Abstract

Introduction

The food cultivated without using chemical pesticides, herbicides or synthetic fertilizers and using renewable resources in order to conserve the soil and water quality for future generations are generally referred to as organic foods (Sobhanifard, 2018; Rahman & Noor, 2016) . Despite increased awareness of the benefits of healthy eating, the proportion of inorganic or conventional food in global food consumption basket is very high (Gupta and Ogden, 2009). Despite producing and exporting organic foods, the internal consumption of organic food in Asian countries has been reported to be extremely low as compared to the global trends (Mottalib et al., 2018; Hasimu et al., 2017). However, the ill effects and diseases caused by pesticides, non-organic fertilizers have prompted the consumers to look for safer and healthier food options (de Oliveira et al., 2014). Owing to their health-related claims, the superfoods (both organic and functional foods) are much emphasized and talked about in the food industry (Hosni et al., 2017). Based on their nutritional characteristics, food products characterized as 'light food' (low in salt, sugar and fat), 'enriched food' (Omega -3, -6, fiber), preservative free food and food supplements have caught the attention of consumers (Hosni et al., 2017).

Literature Review

Attitude and Desire

Cognition i.e. thoughts, values or beliefs and affections (emotions) shape the attitude towards products or brands (Hoyer and Maclnis, 2004). Various green marketing initiatives are increasingly making the consumers aware of the benefits associated with consumption of healthy food for their well-being (Rahman and Noor, 2016; Krishnakumarea and Niranjan, 2017; Ham et al., 2018). Desire to follow a healthy lifestyle has led to an increased consciousness and motivation towards purchasing and consuming organic food (de Oliveira et al., 2014). Having little time for physical activities and an increasingly stressful lifestyle have also been reported to lead to an increased inclination

towards healthier eating options (Husic-Mehmedovic et al., 2017). Segmentation of consumers of organic food has been carried out based on psychological and perceptual factors and on their consumption patterns (Peštek et al., 2018). Organically produced food are generally expensive and consumers opting for organic food have been found to be less price sensitive (De-Magistris and Gracia, 2016) and are more concerned about quality and the level of nutrition provided by such foods (Kesse-Guyot, et al., 2013; Sakthirama and Venkatram, 2013). However, researchers have reported that the lack of knowledge and availability of organic food, skepticism related to certifications, premium pricing and insufficient marketing have led to low adoption of these foods (Hoffman and Wivstad, 2015). Customers who are health conscious, open to novelties, believe in socially conscious behavior and are willing to try out new food have been reported to be keen on purchasing organic foods (Nasir and Karakaya, 2014; Nikolić et al., 2014; Midmore et al., 2011). The intrinsic and extrinsic quality cues of organic foods assist the customers in processing of information resulting in formation of either positive or negative predispositions towards these foods (Peštek et al., 2018) while the presence of fake organic food in the market and the distrust in the certification agencies hinders their adoption (Chen et al., 2014; Yin et al., 2010; Klein, 2009). It is therefore essential for consumers to have strong positive attitudes towards the brand or product category (Hill and Lynchehaun, 2002). Traditionally held beliefs that organic foods are luxuries for the rich and are merely marketing hype might hamper the desire to purchase them (Bai et al., 2019). The common belief is that the consumption of organic foods or functional foods would lead to good health (Ham et al., 2018). Besides the cognitive evaluations in the form of pros and cons of consumption of healthy food, the affective elements in the form of feelings and emotions also have been reported to influence the intention to purchase healthy food (Aertsens et al., 2009; Arvola, et al., 2008). Hoek et al. (2017) reported in their study that while respondents expressed emotions of being in control while having smaller portions of food or going for healthy food options, the feelings of guilt after consumption of unhealthy food and negative emotions after indulging in unhealthy calorie rich food have also been expressed by the respondents. Sensation seeking behavior has been reported for consumption of traditional food (Montmany, et al., 2004; Hsu et al., 2018). The trust and perceptions of nutritional benefits leading to enhanced immunity and better health by consuming organically grown food has also been reported to influence the customer desire to purchase healthy food (Lazaroiu et al., 2019). The research hypothesis thus framed is as follows:

H1: Positive Attitude (PA) towards healthy life will have a positive influence on the desire (D) to purchase healthy food

Subjective Norms and Desire

While attitudes (desirable or undesirable) are individual assessment of behaving in a particular fashion, the subjective norms are the enforcements by society to guide acceptable or unacceptable behavior (Ajzen, 2001) and the consumer's susceptibility to perform certain behavior under social pressure (Nilsson et al., 2004). In comparison to attitudes or perceived behavioral control, subjective norms have been found to significantly influence the purchase behavior for organic foods (Ruiz de Maya et al., 2011). Countries where social interactions are high and consumers seek advice or get influenced by their reference group have strong adherence to subjective norms in comparison to countries where there are lesser social interactions (Basha and Lal, 2019). For instance Spanish consumers have been reported to rely more on individual assessments while Danish and Swedish consumers expressed concern for conforming to the opinions of their social groups related to organic food consumption (Ruiz de Maya et al., 2011). Personal norms (Thogersen and Olander, 2006; Thogersen, 2009; Thogersen et al., 2015) and identity expressiveness too have been reported to significantly influence the purchasing behavior for organic food (Bai et al., 2019). Despite reported studies confirming the positive role of subjective norms for purchasing organic foods (Pomsanam et al., 2014; Anvar and Venter, 2014; Al-Swidi et al., 2014) there are studies reporting a weak (Astrom and Rise, 2001) to no significant influence of the subjective norms while opting for organic products (Ricci et al., 2018; Ashraf et al., 2019). With the premise that Indians, as per Hofstede's model are categorized as 'collectivists' (Banerjee, 2008),

according to which their social interdependence and conformation with the group norms are high, we developed the following hypothesis:

H2: Subjective norms (SN) will have a positive influence on desire (D) to purchase healthy food

Perceived Behavior Control and Desire

Perceived behavior control is said to be a combination of internal control (involving personal judgement regarding adequacy of knowledge and capabilities to perform a particular behavior) and external control (related to the extent to which the external factors like time and availability may hinder or facilitate a particular behavior) (Ham et al., 2018). Therefore the extent to which an individual perceives that he can control his behavior towards a particular action (Al-Swidi et al., 2014) or the difficulty perceived by the individual to behave in a particular manner and the perception of the consequences of such a behavior gives rise to Perceived Behavioural Control (PBC) (Ajzen, 2011), which, in the case of organic foods has been reported to be a function of the availability, price and the willingness to pay for the organic products (Chekima et al., 2019; Liobikiene et al., 2016; Moser, 2015). Availability of financial resources and the differences in the financial capabilities of individuals might lead to differences in their purchase intentions for organic foods (Aertsens et al., 2009). Health, environmental and social benefit related information in the labelling of organic foods have been reported to increase the perceived behavioral control of consumers which in turn strengthens their desire to purchase these food (Aitken et al., 2020). In contrast to the previous studies which reported the health concerns and social motives (Brecic et al., 2014; Mai and Hoffmann, 2012) governing the purchase of organic food, Barauskaite et al. (2018) have noted that the consumption of organic or health related functional foods could also be motivated by an inner desire to show off and impress resulting in an indulgence vs. self-control behavior. Niva (2006) reported that the healthy food consumption behavior is driven more towards conforming to a particular socio-economic status as compared to consciousness towards health. With the premise that with an increase in the perceived behavioral control, the likelihood of behaving in a particular manner increases (Armitage and Conner, 1999), and assuming the same to be true for purchase of organic foods, we framed the following hypothesis

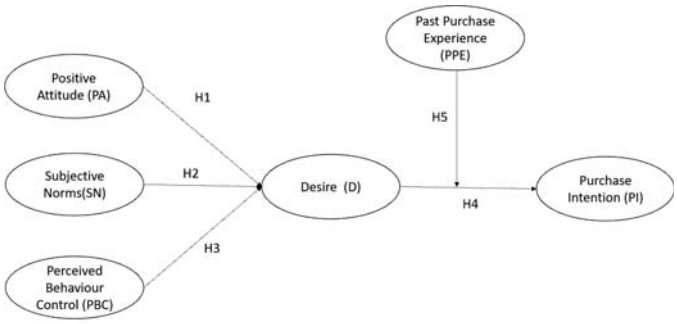
H3: Perceived Behavior Control (PBC) will have a positive influence on desire (D) for choosing healthy food

Past Purchase Experience as Moderator

Researchers have noted that past experiences of the customers significantly influence their continued purchase behavior (Sharma, 2021). Changes in the consumption pattern resulting from experimentation with organic food are also reported in literature (Hansmann , Baur , & Binder, 2020). We argue that a negative purchase experience might deter the consumer from selecting healthy food options. With an assumption that consumers who have a higher frequency of choosing healthy food options will have motivation to choose healthy food options in the future as well, led us to formulate following hypothesis:

H6: Past purchase experience (PPE) will moderate the relationship between the desire to Purchase (DP) and purchase intention (PI) for healthy food

Figure 1: Conceptual Model



Research methodology

We followed an exploratory study using a convenience sampling method for this study. 254 respondents were served the research instrument (survey questionnaire) out of which 250 responses were used for the data analysis and 4 were discarded due to incomplete forms. We used established scales to measure the constructs of our study. Six items to study attitude were taken from the scale of Saba and Messina (2003); six items to study subjective norms were taken from Chen M. (2007). Five items to study

perceived behavioral control were taken from the scale developed by Ajzen (2001). Four items to study the desire (D) to consume healthy food and three items to study purchase behavior (PB) were taken from (Gracia Royo and de-Magistris, 2007). Data analysis was done using SPSS 17.0.

Data Analysis

Discussion of Results

The demographic details of the respondents are represented in Table 1

Table 1: Demographic Details of the Respondents

Gender	Age	Marital Status
Males (52.5%)	Less than 20 (12%)	Married (42%)
Females (47.5%)	21-30 (32%)	Unmarried (58%)
	31-40 (24%)	
	41-50 (21%)	
	More than 50 (11%)	

Exploratory Factor Analysis

Exploratory factor analysis was carried out for all the statements used in this study for checking the loadings of statements under different factors. The overall Cronbach's alpha value of 0.80 established the reliability of the scale. The KMO value of 0.706 established sampling adequacy while the Bartlett's test of sphericity with a significance value of 0.001 which is less than 0.05 led to the null hypothesis that "none of the variables are correlated" not being accepted. Since there is correlation indicated among the variables, the factor reduction test was conducted which resulted in five factors explaining 81.682% of the variance (refer to Table 2).

Table 2: Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.104	24.303	24.303	5.104	24.303	24.303	4.872	23.201	23.201
2	4.447	21.177	45.480	4.447	21.177	45.480	4.482	21.341	44.542
3	3.794	18.065	63.545	3.794	18.065	63.545	3.892	18.535	63.077
4	2.919	13.899	77.444	2.919	13.899	77.444	3.017	14.367	77.444
5	1.890	4.238	81.682	1.890	4.238	81.682	1.901	4.238	81.682
6	.717	3.413	85.096						
7	.536	2.554	87.650						
8	.414	1.973	89.623						
9	.355	1.691	91.314						
10	.295	1.405	92.719						
11	.261	1.242	93.960						
12	.242	1.152	95.113						
13	.216	1.027	96.139						

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
14	.186	.886	97.026						
15	.165	.788	97.814						
16	.146	.694	98.508						
17	.138	.656	99.164						
18	.094	.446	99.610						
19	.056	.268	99.878						
20	.024	.113	99.991						
21	.022	.004	99.995						
22	.021	.002	99.997						
23	.020	.002	99.999						
24	.011	.001	100.00						
Extraction Method: Principal Component Analysis.									

The five factors extracted were Positive Attitude (PA), Subjective Norms (SN), Perceived Behaviour Control (PBC), Desire for choosing healthy food (D) and Purchase Behavior (PB). The Eigen value and total variance explained by each factor is given in Table 3

Table 3: Statements for Constructs

S.No	Code	Statements	Eigen Value	Total Variance
Positive Attitude (PA)				
1	PA1	I think that consuming healthy food to increase my immunity is useful	5.104	24.303
2	PA2	I think that consuming healthy food to increase my immunity is effective		
3	PA3	I think that consuming healthy food to increase my immunity is advantageous		
4	PA4	I think that consuming healthy food to increase my immunity is rewarding		
5	PA5	I think that consuming healthy food to increase my immunity is enjoyable		
6	PA6	I think that consuming healthy food to increase my immunity is wise		
Subjective Norms (SN)				
1	SN1	People who are important to me think I should consume healthy food to try to increase my immunity	4.447	21.177
2	SN2	People who are important to me would approve of my consuming healthy food to try to increase my immunity		
3	SN3	People who are important to me want me to consume healthy food to try to increase my immunity.		
4	SN4	People who are important to me also consume healthy food		
5	SN5	People who are important to me appreciate healthy food habits		
6	SN6	People who are important to me discuss about healthy living		

S.No	Code	Statements	Eigen Value	Total Variance
Perceived Behaviour Control (PBC)				
1	PBC1	I have control over consuming food to increase my immunity	3.794	18.065
2	PBC2	For me consuming healthy food in order to increase my immunity is easy		
3	PBC3	If I wanted to, it would be easy for me to consume healthy food to increase my immunity		
4	PBC4	Whether I consume healthy food to increase my immunity is entirely up to me		
5	PBC5	I am confident that I could consume healthy food to increase my immunity if I wanted to		
Desire to consume healthy food (D)				
1	D1	I want to consume healthy food to try to increase my immunity	2.919	13.899
2	D2	I will expend effort to consume healthy food in order to increase my immunity		
3	D3	I would be prepared to invest a lot of effort to consume healthy food in order to increase my immunity		
4	D4	I have made plans about how to consume healthy food to try to increase my immunity		
Purchase Behaviour (PB)				
1	PB1	I have started including healthy food options in my diet	1.89	4.238
2	PB2	While purchasing food, I look at labels to identify the ingredients		
3	PB3	I usually purchase organic products		

Confirmatory Factor Analysis

Confirmatory factor analysis was further carried out to identify if the items listed under a particular factor had low weights such that their contribution to the factor was not much. All the six items i.e. PA1 to PA6 under the Positive Attitude factor were retained. Two items SN2 (People who are important to me would approve of my consuming healthy food to try to increase my immunity) and SN5 (People who are important to me appreciate healthy food habits) were dropped from the items explaining Amenities. Therefore, the number of items under the factor Subjective Norms got reduced from initial 6 to 4 post the CFA. The item number PBC2 (For me consuming healthy food in order to increase my immunity is easy) was dropped during the Confirmatory Factor Analysis as the same was better covered by remaining four items under the factor Perceived Behaviour Control. All the items under the factor Desire to choose healthy food and Purchase Behaviour were retained post the conduct of CFA. The goodness of fit summary for each factor is mentioned in Table 4.

Table 4: Confirmatory Factor Analysis Results

Indices	Positive Attitude (PA)	Subjective Norms (SN)	Perceived Behaviour Control (PBC)	Desire to choose healthy food (D)	Purchase Behaviour (PB)	Suggested value
Number of Statements Before CFA	6	6	5	4	3	
Chi-Square Value	13.871	0	7.689	.706	1.651	-
DF	8	1	2	2	2	-

Indices	Positive Attitude (PA)	Subjective Norms (SN)	Perceived Behaviour Control (PBC)	Desire to choose healthy food (D)	Purchase Behaviour (PB)	Suggested value
P Value	.085	.984	.021	.702	.231	>0.05 (Hair et al., 1998)
Chi-Square value/DF	1.734	0	3.844	.353	1.240	< 5.00 (Hair et al., 1998)
GFI	.986	1	.989	.999	.895	>.90 (Hu and Bentler, 1999)
AGFI	.962	1	.943	.994	.891	>.90 (Hair et al., 2006)
NFI	.993	1	.991	1	.91	>.90 (Hu and Bentler, 1999)
CFI	.997	1	.993	1	.905	>.90 (Daire et al., 2008)
RMSEA	.048	0	.095	0	0	<.08 (Hair et al., 2006)
Number of Statements After CFA	6	4	4	4	3	

DF: Degree of Freedom; GFI: Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; NFI: Normed Fit Index; CFI: Comparative Fit Index; RMR: Root Mean Square Residuals; RMSEA: Root Mean Square Error of Approximation

Measurement Model

As depicted in Table 5 all the values obtained for the measurement model are indicative towards a good fit of the model.

Table 5: Model Fit Summary Structural Equation Model

Indices	Value	Suggested value
Chi-Square Value	.316	-
DF	1	-
P Value	0.574	>0.05 (Hair et al., 1998)
Chi-Square value/DF	0.316	< 5.00 (Hair et al., 1998)
GFI	1.0	>.90 (Hu and Bentler, 1999)
AGFI	0.994	>.90 (Hair et al., 2006)
NFI	0.994	>.90 (Hu and Bentler, 1999)
CFI	1	>.90 (Daire et al., 2008)
RMR	.010	<.08 (Hair et al., 2006)
RMSEA	0	<.08 (Hair et al., 2006)

Validity & Reliability

In order to ascertain that the scale items are measuring the theoretical construct, the construct validity was tested which required testing of convergent validity as well as discriminant validity (Campbell and Fiske, 1959; Ahmad et al., 2016; Fornell and Larcker, 1981) and this condition is satisfied as depicted in calculated in Table 6. In order to achieve the construct reliability, a values of CR were examined and all were greater than 0.6 (Ahmad et al., 2016).

Table 6: Calculation of AVE and CR

S.No.	Construct	Number of Items	Factor Loading Range	Cronbach's Alpha	Average Variance Extracted (AVE)	Construct Reliability (CR)
1	**Positive Attitude**	6	0.843 - 0.930	0.951	4.632	0.953
2	**Subjective Norms**	4	0.685 - 0.975	0.905	2.674	0.885
3	**Perceived Behaviour Control**	4	0.694 - 0.975	0.913	2.782	0.900
4	**Desire to Purchase**	4	0.750 - 0.997	0.869	2.833	0.897
5	**Purchase Behaviour**	3	0.701- 0.805	0.785	2.765	0.801

The condition for discriminant validity is that the square root of AVE for the construct should be higher than the correlation between the respective constructs (Ahmad et al., 2016). The diagonal values in bold in Table 7 are the square roots of AVE for the constructs while other values are the correlations between the constructs. Since all the diagonal values in bold in table 7 are higher than the values in its row and column, therefore the discriminant validity was achieved.

Table 7: Discriminant Validity

	Positive Attitude	Subjective Norms	Perceived Behaviour Control	Desire	Purchase Behaviour
Positive Attitude	**2.152**				
Subjective Norms	0.000	**1.635**			
Perceived Behaviour Control	0.002	0.004	**1.668**		
Desire	0.011	0.001	0.000	**1.683**	
Purchase Behaviour	0.021	0.011	0.010	0.111	**1.595**

Hence, the results fully support the reliability and validity of the constructs used in the study. The measurement and structural model demonstrate a good model fit, reliability, convergent and discriminant validity.

Structural Model

Potential multi-collinearity concerns were checked using variance inflation factor (VIF) test. As all VIF values were below the threshold of 3 (all VIF < 1.110), suggesting that the multi-collinearity effect was not present among independent variables (Refer to table 8). The multiple R value obtained is .380 and the R square value obtained is .144 which indicates that 14.4% of the variance of the dependent variable is explained by the independent variables. The constant value obtained through multiple regression was 2.750. The regression equation thus framed is as follows:

$$Y = 2.750 + 0.205\,X_1 + .267\,X_2 + .203\,X_3$$

Where Y= Desire to consumer healthy food

X_1= Positive attitude towards healthy food

X_2= Subjective norms

X_3= Perceived behaviour control

Table 8 presents the results of the regression analysis and decision on hypothesis arrived upon running the Structural Equation Model.

Table 8: Hypotheses Results

Hypothesis			Unstandardised Coefficient (B)	S.E. of B	Standardised coefficient Beta	t value	P value	VIF	Decision on Hypothesis
Constant			2.750	0.365		7.541	0.000		
PA	->	D	0.205	0.05	0.215	4.130	<.001**	1.008	Supported
SN	->	D	0.267	0.059	0.237	4.548	<.001**	1.011	Supported
PBC	->	D	0.203	0.057	0.184	3.532	<.001**	1.004	Supported
D	->	PB	0.152	0.051	0.053	1.018	0.030	1.002	Supported

Note:** denotes significant at 1% level

PA: Positive Attitude; SN: Subjective Norms;

PBC: Perceived Behaviour Control; D: Desire to consume healthy food

For the first hypothesis (H1) which intends to examine whether positive attitude about healthy food options will have a positive influence on the desire to purchase healthy food, the p-value obtained is significant (<.001) indicating that H1 is supported. The unstandardized coefficient of 0.205 for X1 represents the partial effect of positive attitude towards healthy food on the desire to consume healthy food. Since the coefficient is positive, it can be interpreted that higher if the attitude towards consumption of healthy food is positive then higher would be the desire to purchase healthy food.

For the second hypothesis (H2) which intends to examine whether subjective norms has a positive relationship with the desire to purchase healthy food, the p-value obtained is significant (<.001) indicating that H2 is supported. The unstandardized coefficient of 0.267 for X2 represents the partial effect of subjective norms on the desire to purchase.

For the third hypothesis (H3) which intends to examine whether perceived behaviour control impacted the desire to purchase healthy food, the p-value obtained is significant (<.001) indicating that H3 is supported. The unstandardized coefficient of 0.203 for X3 represents the partial effect of perceived behavioral control on the desire to purchase healthy food.

For the fourth hypothesis (H4) which intends to examine whether the desire to purchase healthy food impacts the purchase behavior, the p-value obtained is significant (<.05) indicating that H4 is accepted.

Moderation Test

The R square value of 0.541 obtained implies that 54% of the variance in the purchase behavior is explained by the desire to purchase healthy food and the previous purchase experience and the interaction between these two variables. As depicted in table 9, the lower limit and upper limit values (LLCI = 0.045 and ULCI= 0.804) indicate that past purchase experience acts as a moderator between the desire to purchase healthy food options and the purchase behaviour.

Table 9: Moderating effect of Previous Purchase Experience

Model	Unstandardised Coefficient (B)	S.E. of B	t value	P value	LLCI	ULCI
Constant	2.386	0.66	36.327	0	2.256	2.516
Desire	0.915	0.082	11.163	0	0.753	1.078
Past Purchase Experience	0.157	0.139	1.128	0.261	-0.118	0.432
Int_1	0.424	0.192	2.212	0.029	0.045	0.804

Furthermore as depicted in Table 10, the beta value (0.712) at lower level of previous purchase behaviour (-.480) increases to 1.119 as the previous purchase experience increases to 0.480.(i.e +1 SD) which clearly indicates towards the moderation effect of previous purchase experience of buying healthy food.

Table 10: Conditional effect of the desire to purchase healthy food at values of the previous purchase experience

Previous Purchase Experience (PPE)	Unstandardised Coefficient (B)	S.E. of B	t value	P value	LLCI	ULCI
-0.480	0.712	0.131	5.414	0.000	0.452	0.972
0.000	0.915	0.082	11.163	0.000	0.753	1.078
0.480	1.119	0.114	9.774	0.000	0.892	1.345

Implications

Theoretical Implications

This study contributes to the theoretical understanding of consumer behavior in the context of healthy food purchasing. By confirming the significant roles of attitude, subjective norms, and perceived behavioral control, it reinforces the applicability of the theory of planned behavior in the domain of healthy food choices. It provides empirical evidence supporting the integration of past purchase experience as a moderating factor, which adds a nuanced dimension to existing theoretical models by illustrating how historical behaviors can alter future intentions and behaviors.

Managerial Implications

For practitioners, these findings offer valuable insights for designing marketing strategies. By emphasizing the development of positive attitudes toward healthy foods through targeted marketing and educational campaigns, businesses can amplify consumer desires to purchase these products. Furthermore, leveraging social influence through endorsements or community-based initiatives can capitalize on subjective norms to enhance purchasing intentions. Additionally, supporting consumers in perceiving greater behavioral control, perhaps through easier access and availability of healthy options, can further stimulate purchase desires. Lastly, encouraging trial purchases and nurturing positive past experiences can enhance repeat buying behavior, demonstrating the importance of customer satisfaction and retention programs in sustaining demand for healthy foods

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