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Teenagers Consumption within the Moderating Role of Saudis Habit through Fuzzy set Approach

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Abstract

The healthy products dedicated for young people are qualified as a solution to protect the future generation, especially taking into consideration that most commercial deals do not consider the consumer's health and environment. Therefore, it is crucial to define the antecedent of healthy purchases and to examine their impact on teenagers.

This research aims to explore the antecedents and the consequences of the consumption of Saudis teenagers. Therefore, we develop a research model in the conceptual framework and the hypotheses to test. The empirical analysis required two samples from Saudis youth consumers. The first sample was utilized in the exploratory study with SPSS software. Then, the second was employed to the confirmatory part with the Amos software, as well as the validation of the hypotheses, and model with Fuzzy Set approach.

The findings of this study have significant insights into the Saudi consumption and implications for both practitioners and researchers. Then, we have particularly strenuous on intention purchase antecedents of organic foods, and their consume habit moderation.

Keywords: Self-efficacy, Attitude, Habit , Teenagers Consumption, KSA, Fuzzy set approach.

Introduction

High living standard and per capita income in Saudi Arabia have coincided with the emergence of new consumer habits of commercial products lacking food safety. Such habits resulted in a high obesity rate that exceeds 70 percent, especially for children and youth. Diabetes has also witnessed a sharp increase among the Saudi male and female population, as KSA ranks among the ten countries with the highest prevalence of this disease and where it is expected to double by 2025 (according to the World Health Organization).

Then, the appearance of certain maladies is due to the consumption of unhealthy foods. Subsequent, this research attempts to bridge the gap among academia and practice, henceforth it strives starting from theory studies of the research constructs to validate empirically the research hypotheses and model.

Food-related self-efficacy

The motivation to have a good quality of life and to prevent illnesses lead consumers to have a healthier behavior (Serap *et al.* 2014; Michaelidou & Hassan, 2008). Yet, Squires *et al.,* (2001) showed that food-related self-efficacy differs from one country to another. Thus, Akhondan, Johnson-Carroll & Rabolt (2015), Van Doorn & Verhoef (2015) and Leong & Paim (2015) argued that food-related self-efficacy affects healthy eating intention.

Through previous studies shows included changing self-efficacy related to food to predict the popularity on health specialties. (Armitage and Conner 1999; Fila and Smith 2006; Chan et al., 2014) also highlighted (Luszczynska et al., 2008, 2007, 2016) that the Hits self-influenced food-related behavior in buying environmentally friendly products.

Self-efficacy was measured by asking participants to rate four statements on a five-point scale, such as "How certain/confident are you that you could engage in healthy eating over the next two weeks?" These items were selected and modified from Norman and Conner's (2006) study, when Alpha coefficients were 0.90 for boys and 0.90 for girls (Chan, Kara, Gerard & Yu, 2016).

Attitude towards healthy eating

Previous studies have confirmed that young people's attitude towards healthy eating affected the intention of purchasing (Chan et al., 2014, Gronhoj et al., 2012).

The consumer's attitude towards healthy products may be related to environmentally conscious consumer behavior (Taufique et al. 2016). Moreover, it supports this idea by many studies that indicated that the environmental behavior conscious consumer is one of the incentives for the positions of pro-environment and leading to healthy consumption (Kaiser et al., 1999, Khodakivska, et al. 2022 and Polonsky et al., 2012).

ZulAriff Bin Abdul Latiff et al. (2016) and Nik Abdul Rashid's (2009) suggested that the knowledge of environmental brand of eco-friendly product has a positive effect on the consumer's intention to buy it. However, some other studies suggest that despite the recognition of environmental functions of the mark by some consumers, but that does not automatically lead to the purchase of green product decisions. (Leire and Thidell, 2005).

The knowledge of environmental signs and provide appropriate and accurate information is also an important requirement to allow consumers to take healthy conscious decisions (Polonsky et al., 2012; Testa et al., 2013). To this must be for consumers to learn about the existence of healthy labeling understand the meaning and trust in the information provided (Steinhart et al., 2014, Bougherara and Combris, 2009). Also, Lai-Yeung (2010), Chan et al. (2011, 2014.2016) and Fila and Smith (2006) stressed the role of healthy eating to predict the behavior of adolescents buy those. Moreover, the self-determination and control effect statistically significant the acquisition of ecological and healthy products (Jessica et al., 2014). Also, self-determination and control structure positively associated teens to engaged in healthy eating. While teenagers to eat healthy advised them find it difficult because many of the barriers (Caroll, Neumark-Sztainer, and Story, 2001, Shepherd et al., 2006, Deciand, 1985).

The moderating role of consumer habit

Consumer habits also emerged as a significant barrier to healthy consumption. Padel and Foster (2005) and Vermeir and Verbeke (2006) stated that the consumer habits affect negatively the organic and healthy consumption. Moreover, the none existence of a well-built brand image established to be a major barrier to consume healthy and organic products (Young et al., 2010).

The moderating role of habit is defined as "learned sequences of acts that have become automatic responses to specific situations, which maybe functional in obtaining certain goals or end states" Verplanken et al. (1997. p.539). Khalifa and Liu (2007) and Chiu et al. (2012) mentioned that habit is a behavioral tendency that results from previous experience and the cumulate past experience connection between the shopping behaviour and satisfactory results" Hsu et al. (2015.p.49). therefore, Hsu et al. (2015) and Agag and El-Masry (2016) affirmed that habit moderates the effects of trust and satisfaction on intention to purchase.

Moreover, Limbu et al., (2012) and Chiu et al. (2012) explored the moderating role of habit on the relationship between trust and repeat purchase intention. The results indicate that value, satisfaction, and familiarity are important to habit formation.

The Hypotheses and the research model

Based on the previous studies, we propose the following hypotheses to assert the role of the Saudi young's consumption behavior towards organic and healthy products.

Hypothesis 1: H1. Food-related self-efficacy impacts positively on the Healthy eating intention.

Hypothesis 2: H2. Attitude towards healthy eating impact positively on the Healthy eating intention.

Hypothesis 3: H3.Consume habit moderates the relation between the Food-related self-efficacy and the Healthy eating intention.

Hypothesis 4: H4. Consume habit moderates the relation between the Attitude towards healthy eating and the Healthy eating intention.

Thus, the conceptual model can be designed as follows: (see Figure 1).

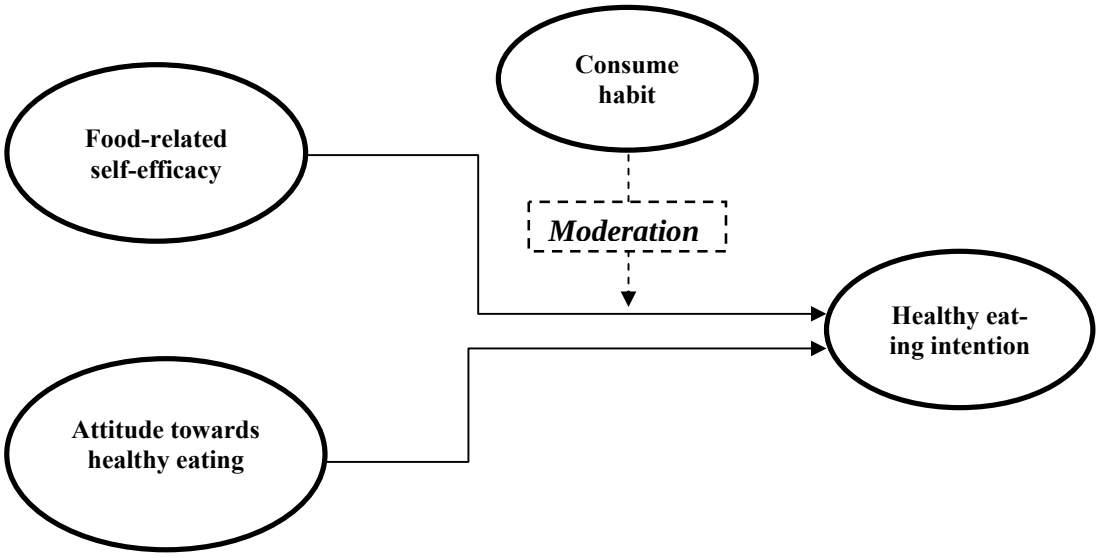

Figure 1. Research Model

Methodology

Data collection

The data were collect from students in Northern Border University (NBU) in Saudi Arabia, through the convenience and self-administered survey. The scales have been translated from English to Arabic using the back translation process. The administration mode is the randomly process to give every student the chance to be incorporated in the sample. The constructs items were measured on a 7-point Likert scale and were pre-tested on 30 students at the university.

In the exploratory study, we interrogated 300 students in order to purify the measurements by using the SPSS system and Amos software. The second step is based on the confirmatory analysis by addressing the second sample, which gathered 750 students on the Kingdom of data in order to verify hypotheses and confirm the search form. Amos will be used and new technology Fussy Set.

Measurements

The literature review allowed us to determine the contracts measurements. Thus, we have chosen of the scales mentioned in the following table (see Table 1) because their reliability and suitability to our research context.

Table 1. The selected scales to measure constructs

Constructs	Items	Authors
Food-related self-efficacy	How certain are you that you could engage in healthy eating over the next two weeks? How confident are you that you could engage in healthy eating over the next two weeks? For me, engaging in healthy eating over the next two weeks would be easy If I wanted to, I could easily engage in healthy eating over the next two weeks	Chan, Kara, Gerard & Yu (2016)
Attitude towards healthy eating	Very interesting --- Very boring Very useful --- Very useless Very enjoyable --- Very un-enjoyable Very worthy --- Very unworthy Very good --- Very bad Very beneficial --- very harmful	Chan, Kara, Gerard & Yu (2016)
Habit	Please rate each of the following statements using the scale provided. [1 = "strongly disagree" to 7 = "strongly agree"] Eating healthy has become automatic to me Eating healthy is natural to me When I want to interact with friends and relatives, Eating healthy is an obvious choice for me	Turel, O. (2015).
Healthy eating intention	Do you intend to engage in healthy eating over the next week? How likely is it that you will engage in healthy eating over the next week?	Chan, Kara, Gerard P. Prendergast, and Yu-Leung Ng. (2016).

Results

Exploratory study and confirmatory study

First, the explorative factor analysis used varimax rotation and principal component analysis to determine the principal factors with high loading indicators. Thus, we eliminated items with low factor loadings that have λ less than 0.50. Moreover, the Eigen-value surpassed 1, the Inertia exceeded 70% and Cronbach's alpha (α) were more than 0.7 for all constructs integrated in the research model after the elimination of the items that did not significantly contribute in the creation of factors (Roussel *et al.,* 2002). This study allowed us to purify our measurements. Then, we deduced the one-dimensional and internal consistency of all variables of our research model.

Second, the confirmative analysis determined the Jöreskog's rho (ρ) that are more than 0.7 for all constructs (Toukabri, 2022, 2021, 2019). Also, all pairs of concepts met the conditions of the Fornell & Larcker's (1981) test of discriminate validity (see table 2).

Table 2. The purification and confirmation of the constructs

Constructs	Eigen- value	Explained variance	Item eliminated (factor loading < 0.50)	Cronbach's alpha (α)	Jöreskog's rho (ρ)
Food related Self-efficacy	1.56	76%		0.75	0.78
Attitude towards healthy eating	1.89	78%	* My classmates think I should engage in healthy eating.	0.77	0.80
Consume habit	1.98	77%		0.78	0.81
Healthy eating intention	3.34	88%		0.80	0.83

*Low factor loading

The structural model

The model was tested using the AMOS software, with the maximum likelihood method. Moreover, our research model presented a good fit as the fit index (see Table 3) respected the threshold levels. Tabachnik & Fidell (2007) and Kline (2005) stated that the relative χ2 (χ2/df) equal to Khi2/degrees of freedom is less than 2 or 3 with the probability of an exact fit under 0.05. The goodness of fit index, comparative fit index, incremental fit index and parsimony-adjusted normed fit index exceeds 0.95 which confirms the good model fit. The standardized root mean square residual is acceptable because it is below 0.08 (Hu and Bentler, 1999). The root mean square error of approximation is equal to 0.048, that is less than 0.7 as recommended by (Steiger, 2007). These values indicate a good model fit to the data set (Toukabri, M. and Ettis, S. (2021) ; Toukabri, M. and Ghali, Z. (2017, 2020) ; Toukabri, M. and Ibrahim, H. (2016) ; Bentler, 2008, 2009, 2010 and Yuan, 2005).

Table 3. Model fit

Fit index	[1](χ2 /df)	[2]P	[3]GFI	[4]CFI	[5]SRMR	[6]IFI	[7]PNFI	[8]RMSEA
Value	2.314	0.002	0.96	0.95	0.068	0.97	0.96	0.048

[1]Relative χ2 :(Adjusts for sample size): Khi2/degrees of freedom,
[2]Probability of an exact fit,
[3]Goodness of fit index,
[4]Comparative fit index,
[5]Standardized Root mean square residual

Hypotheses test for direct relations

Table 4 presents the results of the checking of the relations among model constructs. Therefore, hypotheses (H1a., H2a., and H5a.) reflecting the link between food-related self-efficacy, attitude towards healthy eating, and perceived behavioral control with healthy eating intention are accepted (t Student value > 1.96 and p < 0.05). However, hypotheses (H3a., H4a.) referring to the ef-

fect of green brand norm and perceived behavioral control on healthy eating intention are rejected. Moreover, hypotheses (H1b., H2b., H3b. and H5b.) are confirmed, while H4b. is rejected. Thus, the exogenous constructs integrated in the research model have a significant effect on the healthy eating intention, except the perceived barriers.

Table 4. Hypotheses test

Dependent variable	Independent variable	*T*	*Sig*	Hypothesis	Test
Healthy eating intention	Food-related self-efficacy	2.793	0.021	H1a.	Accepted
	Attitude toward healthy eating	1.668	0.078	H2a.	Accepted

The moderating role of consumer habit

Results show (see Table 5) that the moderating effect proposed in hypothesis H_3 and H_4 was confirmed. In fact, there is significant moderation effect of the habit consume between food related self-efficacy, attitude towards healthy eating and healthy eating intention (respectively p=0.000; p=0.001) at 5%.

Table 5. Testing the moderating role of consume habit

Moderator: consume habit			
Constructs		**P**	**Hypotheses**
Consume habit	Food related Self-efficacy (X) / Healthy eating intention (Y)	0.02	
	Moderator consume habit (Z)* Food related self-efficacy (X) /Healthy eating intention (Y)	0.000	H3 supported
	Moderation confirmed		
	Attitude towards healthy eating (X) / Healthy eating intention (Y)	0.04	
	Moderator consume habit (Z)* Attitude towards healthy eating (X) /Healthy eating intention (Y)	0.01	H4 supported
	Moderation confirmed		

Validity check

The principal component analyzes confirmed the dimensional structures of our research measures (Table 6). However, few items were removed because of their low correlation with the selected dimensions. Confirmatory factor analysis for each scale has carried out to check the validities. The rho convergent validity varies between 0.501 and 0.504. Then, the exam the results of the φ matrix show that all correlations among the eight variables are positive and significant. These correlations are established at low levels that is means the absence of co-linearity between variables and provides evidence of discriminate validity of each construct (Table 7).

Table 6. Exploratory, reliability and convergent validity

Eigen value		KMO	Bartlett's test of sphericity		Inertia	Reliability		ρ_{VC}	t
F1	F2		Chi-square	Sig.		A	P		
Food-related self-efficacy									
2.49	2.13	0.72	537.62	0.000	76.99	0.71	0.75	0.50	21.03
Attitude towards healthy eating									
3.48	-	0.77	551.32	0.000	98.32	0.70	0.76	0.50	75.39
Consume habit									
2.90	-	0.81	457.53	0.000	72.59	0.86	0.78	0.50	19.90
Healthy eating intention									
2.55	2.18	0.71	826.96	0.000	79.06	0.71	0.75	0.50	46.37

Note: α: Cronbach's alpha, ρ: Jöreskog's rho, ρ_{VC}: convergent validity rho, t: Student test.

Table 7. Discriminate validity

Construct	1	2	3	4
ρ_{vc}	0.5	0.5	0.5	0.5
1. Food-related self-efficacy	1			
2. Attitude towards healthy eating	0.02	1		
3. Consume habit	0.01	0.03	1	
4. Healthy eating intention	0.03	0.02	0.000	1

Fuzzy set approach

Callen, Branco, and Curto (2014) illustrate that only accounting figures can't illuminate market variants. Therefore, this research relates fuzzy set qualitative comparative analysis (fsQCA) to discover the sufficiency antecedents of customers' life insurance consumption.

Calibration

The data for the analysis is the same as used in confirmation phase of structural equation modeling (SEM). Furthermore, calibration is the first step in the fsQCA process, that transfers the original scales into set measures, ranging from 0.0 to 1.0 (Ragin, 2008). Within this study we calibrate all measurements into three breakpoints: 5%, 50%, and 95% respectively according to 1, 3 and 5 point in the Likert scale.

Necessary conditions

Moreover, Woodside (2013, 2010) indicate the importance of achieving high consistency (significance of the antecedent conditions in predicting scores of an outcome condition) over high coverage (strength of a set-theoretic connection).

Drawing on prior fsQCA studies (Muñoz and Dimov, 2015), the consistency threshold corresponds to a gap in the distribution of consistency scores.

The necessary condition displays whether any of the causal conditions is indispensable condition for the outcome (Ragin, 2006; Schneider, Schulze-Bentrop, and Paunescu, 2010). Then, Table 8 shows the consistency of antecedent conditions, which in all cases exceeds 0.80. These indices are satisfactory for the reason that they surpass the threshold recommended by preceding studies (Woodside, 2013; Schneider, Schulze-Bentrop, and Paunescu, 2010).

Table 8. Analysis of necessary conditions

Condition	Consistency	Coverage
Food-related self-efficacy	0.82	0.85
Attitude towards healthy eating	0.86	0.87
Healthy eating intention	080	0.81

Sufficient conditions and solution analysis

Afterward starting by verifying the necessary conditions, the second stage is to attest the conditions of sufficiency. Table 9 shows the Combinations of sufficient conditions, which make complex assumptions (Elliott, 2013). The consistency scores for all conceivable combinations with the consistency cutoff exceed 0.80 persist as final solutions. Moreover, all consistency values should be higher than 0.75 and coverage values range between 0.25 and 0.65, as Woodside (2013) suggests. Therefore, five combinations of sufficient conditions are empirically important.

The table 9 shows that an overall solution consistency is 0.95 and the overall solution coverage is 0.89 for healthy eating intention. Furthermore, the raw coverage for causal paths arrays from 0.42 to 0.67. Thus, the causal paths cover most of the healthy eating intention outcome.

Table 9. Combinations of sufficient conditions: truth table solution

Outcome		
Healthy eating intention		
Solution		
	1	2
Condition		
Food-related self-efficacy	●	~
Attitude towards healthy eating	●	●
Consistency	0.90	0.83
Raw coverage	0.61	0.42
Unique coverage	0.22	0.14
Overall solution consistency:	0.95	
Overall solution coverage:	0.89	

Notes: ● indicates core conditions; ● indicates the presence of a condition; ~ indicates a "don't care" situation, in which the causal condition may be either present or absent and ∅ indicates absence.

Pathways to Healthy eating intention

In fsQCA results two pathways for Healthy eating intention. Thus, within all configuration paths, food-related self-efficacy, attitude towards healthy eating are the foremost condition cause. Then, this standing is shown when, the food-related self-efficacy and attitude towards healthy eating are present with significant degree in (solution 1) and less or absence in (solution 2).

Pathways to food-related self-efficacy

All dimensions of food-related self-efficacy and attitude towards healthy eating play the most dominant role in shaping the healthy eating intention (solution 1).

Discussion

Previously, a great deal of research works in many contexts (Thompson and Kidwell, 1998, Öncel and Turkan (2021), Von Alvensleben, 1998, Abderzag, 2021, Fotopoulos and Chryssochoidis, 2000 and Fotopoulos and Krystallis, 2002) has recognized that the number of customers who consume organic products is low and that older people have a stronger intention of healthy eating and are more willing to pay for healthy products. Moreover, the young and teenagers are less susceptible to consume healthy. However, Kean, et al. (2012) affirmed that young who watch more television is more disposed to consume unhealthy food. Even though, the consumption of print-media and books leads to eat healthy.

Subsequently, Our study which investigated the behavior of young Saudis in relation to healthy consumption showed that food-related self-efficacy has a significant effect on healthy eating intention. Therefore, the retailer should make additional efforts to get young people interested in organic products, especially that the food-related self-efficacy of this consumer branch is lower than with older ones. Then, the influence on young people can be within the constituents of attitude towards healthy eating, while friends, relatives, and family members exert a significant positive effect on the intention to eat healthily. The retailer can orient his promotion efforts towards this target of influencers. Specifically, we insist on the role of the family and school to make young people more conscious of the importance of eating healthy food. We recommend the use of efficient promotion chains, such as the radio, television, newsletters, and internet to reach this target of influencers. Therefore, the retailers and producers of healthy products should pay attention to the information on the packaging, advertising, and merchandising in the Mall. Moreover, the sales force has to persuade consumers to try this kind of products through a variety of promotion techniques like tasting or the distribution of free samples in the Mall.

Nguyen-Viet *et al.* (2017) indicated that the command and control approaches to food safety in the developed countries based on inspection and punishment are less efficient than the auto-motivation and effort of the national consumers. Nguyen-Viet *et al.* (2017) added that the accent on the procedure of production is effective to assure safety for stakeholders. Thus, the Saudi authorities who penalize the commercialization of unhealthy products can be more effective if they intervened in the process of production to make it safe.

Huong (2012), Pereira et al. (2021), Sporleder et al. (2014), and Wu *et al.* (2015) stated that the product cost, the value, , the green brand image, friends and family, and consumer perception are the essential factors that lead consumers to choose organic products.

Conclusion

In the Saudi market, we deduced that income cannot in itself lead to the purchase of organic food. Therefore, this study has found that food-related self-efficacy, or rather attitude for healthy eating in particular, has a strong effect on the purchase of organic products. Nevertheless, previous research concerning food-related self-efficacy and buying intentions, such as Michaelidou and Hassan's (2008) study, is not significant. Furthermore, Ureña *et al*. (2008) revealed that men are more willing to pay higher prices than women. Ureña *et al*. (2008) also affirmed that people over 50 years old and showing preferences for future savings are more likely to buy organic food provided their income is not affected. In the same sense, the results of this research work show that the perceived barriers have no significant effect on healthy eating intention. Thus, in the Saudi market the material barriers are not as much important as food-related self-efficacy, the attitude towards healthy eating and the green brand image. Although, the perceived behavioral control have a significant effect on the healthy eating intention moderate by the consume habit.

The value universalism, integrating safeguard of the environment and nature and animal welfare, gives the impression to take the most important part in regular adolescent consumers of organic food (Özburak2021, Chinnici *et al.*, 2002, Adaviah and Thoo (2014), Schifferstein and Oude Ophuis, 1998; Zanoli and Naspetti, 2002; Krystallis *et al.,* 2008; Stobbelaar *et al.,* 2007 and Mondelaers *et al.*, 2009). Besides, Ureña *et al*. (2008) insisted that both higher education and the concern for young children also increase the chance of consuming organic food.

In order, to make our data more accurate, we should target more than 750 interviewees in the whole Kingdom. The limitation of our sample is due to restricted logistic means.

Futures research can study the effect of the social demographic profile, education, the protection of the environment and animals, *etc*. on the healthy eating intention of young people in the Saudi market. Furthermore, it will be more edifying to take more time for the administration of surveys to appreciate the healthy eating intention.

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