THE PREDICTORS OF SUBOPTIMAL FOOD PURCHASE INTENTION: A DEVELOPING COUNTRY CONTEXT

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ABSTRACT

It is essential to prevent food waste by successfully promoting the consumption of suboptimal food. Therefore, the undertaking research examines the impact of environmental concern, quality inferior, and individuals' attitude on their suboptimal food purchase intention in Pakistan. The study uses the "Theory of planned behavior (TPB)" as underpinning foundations to find the consumers' attitudes towards suboptimal food purchase intention. Additionally, individuals' attitude, which is the dimension of TPB has a mediating role among the environmental concern, quality inferior, and purchase intention. The data was collected through a questionnaire survey (paper-based and online) from grocery consumers. In total, 450 respondents were from metropolitan cities in Pakistan. Data analysis was done through SPSS 22, and the "Barron and Kenny test" was used for the mediation analysis. The result revealed that environmental concern (EC) has a positive impact on attitude (ATT) and purchase intention (PI). Consistently, quality inferior (QI) negatively influenced attitude (ATT) and purchase intention (PI). The finding of this study also revealed that attitude (ATT) mediates the relationship among environmental concern, quality inferior, and purchase intention (PI). The findings add to the rising literature on suboptimal food purchase intention, particularly in developing countries such as Pakistan. The findings also have both theoretical and practical implications for marketers.

Keywords: Suboptimal Food; Attitude; Purchase Intention; Theory of Planned Behavior; Environmental Concern; Inferior Quality

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Introduction

Food waste is becoming a major problem in many nations. According to Global food waste statistics, the world wastes "1.3 billion tons" of edible food yearly. The United States of America (US) has a major food waste problem. Consumers in the United States squander "300 million pounds "of food every day, on top of the almost "30 million acres of land" and "2 trillion

gallons" of water essential to yielding food (Conrad et al., 2018). Food waste in underdeveloped countries is estimated to be value U$310billion. By the Global Hunger Index 2020, Pakistan is one of the world's most food-insecure countries, ranking 94th on the food security risk index as "very vulnerable." In the last decade, the dilemma of food wastage has received great societal and scientific attention. One of the significant reasons of food waste is lack of interest to purchase, supply chains, consumer to sell and consume suboptimal (De Hooge et al., 2017; Hartmann, Jahnke, & Hamm, 2021; Huang, Kuo, Tung, & Chen, 2021). Suboptimal food waste has serious problem in the world. Over time, different organizations and researchers have provided several definitions to describe suboptimal food. According to the Food and Agriculture Organization of the United Nations (FAO), rejecting foods that are not in their optimal state is a major cause of food waste and called suboptimal food (FAO, 2011). Poor processing, natural variability, and physical or chemical reactions accelerated by inappropriate handling may result in suboptimal food products (do Carmo Stangherlin, Ribeiro, & Barcellos, 2019; Huang et al., 2021). Suboptimal food refers to as "products that deviate from normal or optimal products based on appearance standards in terms of, e.g., weight, shape, or size," or "on the basis of their date labeling" (e.g., close to or beyond the best-before date) and "on the basis of their packaging (e.g., a torn wrapper, a dented can), without deviation on the intrinsic quality or safety" (Aschemann-Witzel, Giménez, & Ares, 2018; Giménez, Aschemann-Witzel, & Ares, 2021). Similarly, suboptimal food (fruits and vegetables) are those that do not meet specified cosmetic requirements, demonstrating vegetables and fruits with a variety of appearances, food items near to expiration date, and food items with damaged packing (Dial, 2021).Vegetables and fruits are primarily chosen based on their appearance (do Carmo Stangherlin et al., 2019), and differences in shape, weight, or size cause refusal, even if they have the same fundamental quality features and safety guarantee (Aschemann-Witzel, de Hooge, & Almli, 2021; do Carmo Stangherlin et al., 2019; Göbel, Langen, Blumenthal, Teitscheid, & Ritter, 2015). Thus, due to the high demand for perfection, edible food is thrown out by producers, farmers, consumers, and retailers. This activity is thought to be an important contributor to food waste and loss (Aschemann-Witzel et al., 2021; do Carmo Stangherlin et al., 2019; Gustavsson, Cederberg, Sonesson, Van Otterdijk, & Meybeck, 2011).

This current study proposed a conceptual model that explores the impact of environmental concern (EC) and quality inferior (QI) on suboptimal food purchase intention (PI)

of grocery consumers in Pakistan. In addition, the recent study also explores the mediating role of attitude (ATT) between the EC, QI, and PI. The novelty of this research is that it is the first attempt to predict the Pakistani consumer purchase intention (PI) about suboptimal food based on the "Theory of planned behavior" (TPB). Researchers recommended that several studies have focused on the mediation role of TPB's regarding suboptimal food consumption (Adel, Dai, & Roshdy, 2021).). Thus, this study has a mediating role of attitudinal dimensions of "TPB" among EC, QI, and suboptimal food purchase intention. Practically, research provides suggestions to marketers and practitioners on promoting suboptimal food consumption and sustaining the food waste management practice. The current research focuses on two main research questions as follows. RQI. Do environmental concern associated between attitude (ATT) and intention (PI) towards purchasing suboptimal food? RQ2. Do quality inferior associated among attitude (ATT) and intentions (PI), towards purchasing suboptimal food?

The current research will contribute to the field theoretically and practically. In terms of its theoretical support, this study has contributed several ways to academic research on consumer intention. This study is the first study focused on the food sector in Pakistan according to suboptimal food purchase intention with two aspects environmental concern and quality inferior. Many studies present that customers have a positive attitude toward suboptimal food (Chang, Ma, & Chen, 2020; Symmank, Zahn, & Rohm, 2018; Van Giesen & de Hooge, 2019). Most of the customers have positive attitudes towards suboptimal food (Aschemann-Witzel et al., 2021). Some researches explain that food waste reduction plans have been studied on environmental approaches, while the quality inferior has so far been demoted to a negligible role. Previous studies use the "Theory of planned behavior" (TPB) to find the impact of consumer behavior toward the suboptimal food (Wong, Hsu, & Chen, 2018). The uniqueness of this study is that it is the first attempt to use the TPB to predict consumer behavior towards suboptimal food in Pakistan (Xu, Jeong, Jang, & Shao, 2021). While no prior studies, which observed the interaction of TPB with environmental concern and quality inferior in Pakistan toward suboptimal food. Hence this current study gives the literature on consumer intention to purchase with the focus of suboptimal food. TPB examines consumer attitude towards suboptimal food purchase intention in a single framework. This current study has highlighted the importance of food waste reduction in Pakistan based on practitioners' perspectives. NGO's and food marketers use this study toward food security. Marketers promote the suboptimal food to attain food waste reduction. Therefore,

the research makes an important contribution to understanding the relation among the environmental concern towards purchasing suboptimal food. It contributes to making responsible food promotion strategies and rules against food waste. The remaining paper is planned as follows; the second part reviews the literature on environmental concern, quality inferior (TPB), and purchase intention. The third part of this study provides the research methodology. The fourth section describes the research findings. The last area of this study includes discussion, conclusion, implications, limitations, and future research directions.

Literature Review

Theory of Planned Behavior (TPB)

In the proposed theoretical framework, TPB is used to understand the consumer purchase intention towards suboptimal food in routine. TPB is used to understand their purchase intention towards suboptimal food with environmental concern and quality inferior. "Theory of planned behavior" (TPB) is the extension of TRA (Fishbein, Jaccard, Davidson, Ajzen, & Loken, 1980). TPB describes the three kinds of beliefs (normative beliefs, behavioral belief and control belief) that affect attitude, subjective norms, and perceived behavioral control, respectively (Ajzen, 1991). Attitude (ATT), subjective norms (SN), and perceived behavioral control (PBC) together affect intention, which then predicts behavior (Ajzen, 1991). TPB model defines different constructs, such as attitudes, which indicates the choice of performing the behavior (Fishbein et al., 1980; Sahu, Padhy, & Dhir, 2020). Subjective norms are the social pressure for acting the behavior (Liao, Chen, & Yen, 2007; Sahu et al., 2020). "Perceived behavioral control" explains the person's skill to control their behavior (Ajzen, 2002; Sahu et al., 2020). Intention refers to the effort or willingness of people to perform the behavior (Ajzen, 2001; Sahu et al., 2020). The actual implementation of behavior is called behavior in TPB (Alam & Sayuti, 2011; Sahu et al., 2020), as shown in figure 1.0. TPB theory is explained.

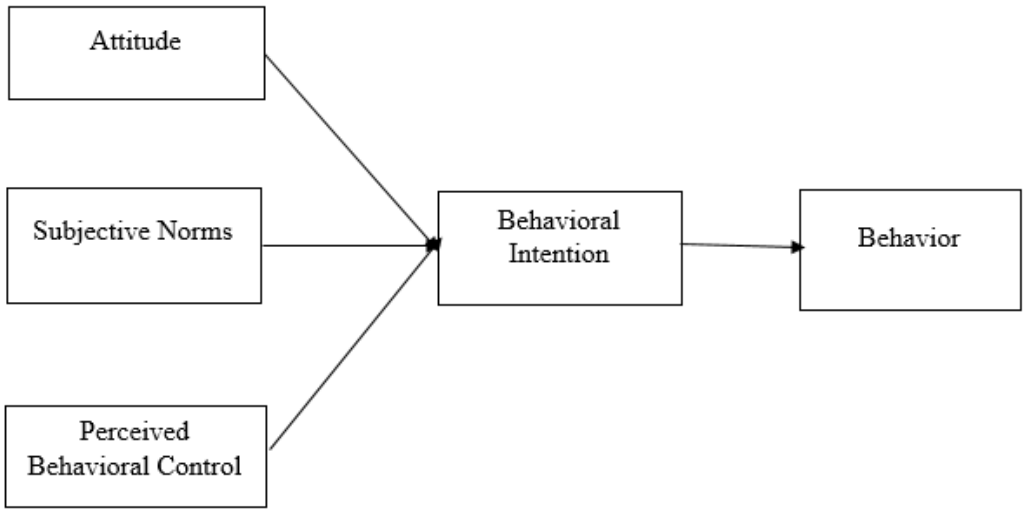

Figure 1.0 TPB (Ajzen, 1991)

Hypotheses Development

Purchase Intention (PI)

Purchase intention is the most prominent construct in the marketing field. Purchase intention in this research framework shows the willingness of consumers to purchase food products in the future. According to Westaby (2005) intention is defined "as a person's location on a subjective probability dimension involving a relation between himself and some action." Previous literature indicates that purchase intention has great importance in the field of food marketing (Aitken, Watkins, Williams, & Kean, 2020; Amalia, Sosianika, & Suhartanto, 2020; Stöckli & Dorn, 2021; Testa, Sarti, & Frey, 2019; Xu et al., 2021). Similarly, previous research indicates that consumers who have good labeling of organic food information have a positive intention to buy organic food items (Aitken et al., 2020). In addition, Amalia et al. (2020) also confirmed a significant positive impact of intention to purchase on halal food buying behavior. However, it can be seen from the literature review on the relationship between purchase intention and purchasing behavior that in the majority of the studies, purchase intention positively and significantly affected the purchasing behavior in the organic food sector (Asif, Xuhui, Nasiri, & Ayyub, 2018; Testa et al., 2019; Tsalis, 2020; X. Wang, Pacho, Liu, & Kajungiro, 2019).

Environmental Concern (EC)

Environmental concern in the framework is mentioned as "the degree to which people are aware of problems regarding the environment and support efforts to solve them or indicate the willingness to contribute personally to their solution" (Ahmed et al., 2021). The existing literature discussed that environmental concern positively influenced suboptimal food purchase intention (do Carmo Stangherlin, de Barcellos, & Basso, 2020). Further, a previous study discussed that persons with environmental concerns have high purchase intention towards abnormal shaped fruits and vegetables (Loebnitz, Schuitema, & Grunert, 2015). Moreover, previous findings also suggested that environmental concern (EC) has a positive impact on customer attitude and organic food purchase intention (Wong et al., 2018)). According to (Ahmed et al., 2021; Azzurra, Massimiliano, & Angela, 2019; Chang et al., 2020) environmental consumers consume more organic food items than the general public who are not concerned about the environment. In similar relines, researchers have placed greater emphasis on environmental concern due to consumers' rising concerns about environmental sustainability and consider solving the environmental issues. Scholars explained in their previous studies that consumers who have strong motivation about environmental concern significantly impact organic food buying intention (Ahmed et al., 2021; Katt & Meixner, 2020) This study then hypothesizes the following

H1a: Environmental concern positively influenced the purchase intention of suboptimal food.

Quality Inferior (QI)

In this TPB framework, the quality inferior is referred to as defective fruits and vegetables. Earlier studies revealed that small external changes in fruits and vegetables negatively impact purchase intention (Jaeger et al., 2018). According to Xu et al. (2021) quality inferior negatively influences consumer attitude and suboptimal food purchase intention. Moreover, previous studies discussed that quality inferior has a significant negative impact on purchasing intention (Jang & Namkung, 2009). Further, previous studies show that quality concern consumers positively impact meat with traceability purchase intention (Buaprommee & Polyorat, 2016). Moreover, previous research explains that quality greatly affects consumer purchasing behavior (Furst, Connors, Bisogni, Sobal, & Falk, 1996). Thus, the study hypothesizes that:

H1b: Quality inferior negatively influenced the purchase intention of suboptimal food.

Attitude (ATT)

Attitude in this research framework shows that consumers who are aware of suboptimal food have a positive feeling to purchase suboptimal food. Attitude is "a person who has positive and negative evaluation toward doing the behavior" (Westaby, 2005). Attitude is also mentioned as "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question"(Wong et al., 2018). Prior research states that consumers' attitudes positively impact suboptimal food purchase intention (Xu et al., 2021). Similarly, earlier research also proved that customer attitude positively impacts the purchase intention of suboptimal food (Wong et al., 2018). Further, the researcher found that attitude is positively related to purchasing well-being food, namely Yak-sun (Lim & An, 2021). Yak-sun is a medicinal food that controls disease signs and improves immunity (Lim & An, 2021). Moreover, prior research indicates that attitude positively affects consumer intention to buy a soft drink (Kassem & Lee, 2004; Lim & An, 2021). Additionally, a researcher in prior work discussed that the consumers who have a positive attitude about food innovation were more likely to buy the meat-mushroom blended burger (Sogari et al., 2021). The findings of this study help to understand the youngster's behavior towards the plant-forward food and motivate the young consumer to move towards the plant-forwarded food (Sogari et al., 2021). Thus, the study hypothesizes that:

H2: Attitude positively affects the purchase intention of suboptimal food.

Meditating role of Attitude

According to Xu et al. (2021), the attitude has a mediating effect on the environmental self-identity and purchase intention of suboptimal food. Previous studies discussed that attitude (ATT) mediates the relationship between environmental concern and organic food purchase intention (Çabuk, Tanrikulu, & Gelibolu, 2014; Chu, 2018). Further, (Khaola, Potiane, & Mokhethi, 2014) suggested that consumer attitude mediates the relationship between environmental concern and purchasing green products. Similarly, according to Xu et al. (2021), aattitude mediates the relationship between quality inferior and suboptimal food purchase intention. Moreover, previous findings indicated that attitude has a strong mediating effect

between quality and private label brand purchase intention (Norfarah, Koo, & Siti-Nabiha, 2018).

H3a: Attitude mediates the relationship between environmental concern and purchase intention of suboptimal food.

H3b: Attitude mediates the relationship between quality inferior and purchase intention of suboptimal food.

Research Framework

A conceptual framework is developed based on the above discussions, as shown in Figure 1.0. TPB is the main base of this study, combining the two aspects of "quality inferior" and "environmental concern" to create an extended (TPB) model. This current study shows the Pakistani individual's intentions towards suboptimal food. Figure 2.0 shows the research framework in which EC, QI is (IV) independent variables, and PI is a (DV) dependent variable, and ATT is a (MV) mediating variable.

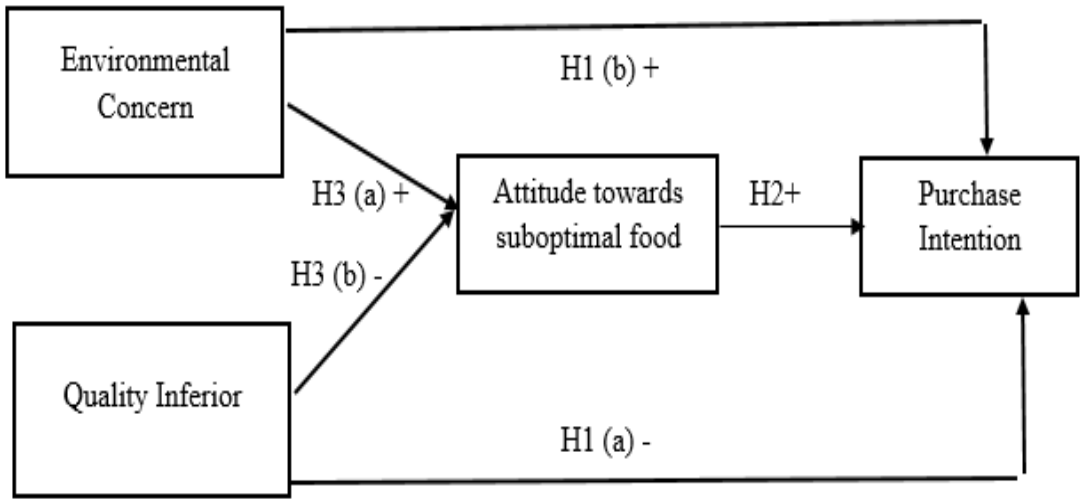

Figure 2.0. Conceptual framework of the study
TPB (Ajzen, 1991)

Methodology

Questionnaire Design

Table 1.0 explains the measurement items depend on (TPB) and extensive studies of food waste management. Seven -point Likert scale was used to assess the measurement items. A questionnaire was developed to find the consumer attitude about suboptimal food purchase intention. The questionnaire was divided into two sections. Section A includes demographic information, and section B includes other measurement items about the four constructs. Fifty prints of the questionnaires were circulated among respondents to check the validity of this study. The findings were then used to make changes to the questionnaire.

Sample Size and Data Collection

The data was collected from March to June 2021 through the survey. The questionnaires were distributed to the grocery consumers in metropolitan cities of Pakistan. The survey was (paper-based and online). In total, 600 questionnaires were circulated, and after removing invalid responses, 450 questionnaires were the final sample size with a response rate of 75%. Table 2.0 shows the demographic information about respondents.

Statistical Analysis

This study was used SPSS version 22 for assessing the conceptual framework and data analysis. This recent study used Barron and Kenny's mediation test to find the mediation relationship among the QI, EC, and PI.

Results

Table 1.0. Measurement items for constructs

Constructs	Items	Sources
ATT	"Buying suboptimal food is a good idea" "Buying suboptimal food is a wise choice" "I like the idea of buying suboptimal food" "Buying suboptimal food would be pleasant"	(Y. Wang, Wiegerinck, Krikke, & Zhang, 2013)
PI	"I am willing to consume suboptimal food if they are available for purchase" "I intend to consume suboptimal food if they are available for purchase" "I plan to consume suboptimal food if they are available for purchase" "I will try to consume suboptimal food if they	(Ajzen, 2002)

	are available for purchase"	
EC	"The balance of nature is very delicate and can be easily upset" "Human beings are severely abusing the environment" "Humans must maintain the balance with nature in order to survive" "Human interferences with nature often produce disastrous consequences"	(Roberts & Bacon, 1997)
QI	"Discoloration of ugly food (e.g., too different from the average color) is unappetizing" "The tastes of ugly fruits and vegetables are not as good as normal fruits and vegetables" "The texture of ugly fruits and vegetables are not as pleasant as normal fruits and vegetables" "The smell of ugly fruits and vegetables are not as appetizing as normal fruits and vegetables"	(Lockie, Lyons, Lawrence, & Grice, 2004)

Demographic Statistics

The demographic information of the grocery consumers is exhibited in table 2.0. Approximately 64.9 % of respondents were male, and 35.1 % of respondents were female. The table also explained that the majority of the respondents belongs to the age group of (20-30) year's old age which consisted of 52.8 %, followed by 26.0% from 31-40 years old groups, remaining 14.8 % from age 41-50 years, 4.9 % from age 51-60 years and only 1.5 % respondents were from the age groups of 61 years or above. Moreover, 52.2 % of respondents were married, and 47.8 % of respondents were unmarried. Furthermore, 5.4% of respondents held intermediate degrees, while 28.3% undergraduates, 34.0 % graduate, and 226 % postgraduate, and only 6.3 %) respondents held professional degrees. Moreover, the demographic profile of the respondents also demonstrated that most of the respondents were government employees 24. %, while 22.8 % were private employees, Self-employed followed by 22.0% and rest of 31.2 % respondents belonged to others statuses like housewife, retired employees, etc. Moreover, 8.3% respondents were belonged to less or equal to 20,000 income group, while 27.1 %) respondents were fall 20,001–50,000 income group, followed by 23.1 %) fall 50,001-100,000 income group, furthermore 16.5 %) respondents were fall 100,001-200,000 income group, and 25.1 %) respondents were belonging to above 200,000 income groups. Additionally, the demographic profile of the respondents also showed that 12.5 % respondents were with small family size (1-3

members), while 48.9 % respondents were with medium family size (4-5 members) and 38.6 %) respondents were with large family size (above six members).

Table 2.0. Demographic Information of Respondents (n=450)

Variable	Category	Frequency	Percentage
Gender	Male	422	64.9
	Female	228	35.1
Age (Years)	20–30	343	52.8
	31–40	169	26.0
	41–50	96	14.8
	51–60	32	4.9
	More than 60	10	1.5
Marital Status	Married	339	52.2
	Unmarried	311	47.8
Education	Intermediate	35	5.4
	Undergraduate	184	28.3
	Graduate	221	34.0
	Postgraduate	169	26.0
	Professional	41	6.3
Occupation	Govt. Employee	156	24.0
	private Employee	148	22.8
	Self-Employed	143	22.0
	Other	203	31.2
Household income per month (PKR)	Less or equal to 20,000	54	8.3
	20,001–50,000	176	27.1
	50,001-100,000	150	23.1
	100,001-200,000	107	16.5
	Above 200,000	163	25.1
Household size	Small	81	12.5
	Medium	318	48.9
	Large	251	38.6

Descriptive Statistics and Correlation Analysis

Descriptive statistics were performed to summarize and explain the main characteristics of the data sets of the current study. It was conducted to obtain general descriptions of the constructs used in this research. Therefore, through descriptive statistics, mean, variance minimum, standard deviation, and maximum values of mediating, independent and dependent variables were computed. The results of descriptive statistics are illustrated in the following table 3.0. Table 3.0 represents the reliability values, such as ATT has .949, PI has .962, EC has .872, and QI has .911, which is acceptable for the data analysis. Table 3.0 also shows correlation analysis and descriptive statistics of variables like ATT, EC, QI, and PI. Table 3.0 demonstrates that QI has the lowest mean of (10.79), while EC has the highest means value (15.56). Moreover, the entire values of standard deviations fall between the range of 3.64 -5.59, which established the acceptable variability within the data set. The below table 3.0.also shows the correlation analysis. The findings explain that ATT, PI, and EC have significant positive relationships. While QI has a significant negative effect.

Table 3.0. "Descriptive Statistics and Correlation Analysis"

Variables	Mean	SD	Reliability	ATT	PI	EC	QI
ATT	13.0856	5.59964	.949	1			
PI	13.1389	5.06587	.962	.768**	1		
EC	15.5689	4.00121	.872	.296**	.200**	1	
QI	10.7978	3.64977	.911	-.253**	-.277**	.305**	1

"*, ** Significant at the p<0.05 and p<0.01 levels, respectively."

Regression Analysis

Table 4.0 displays the regression analsyis of this current study. Results of regression analysis expalined that effect of EC on ATT having values R = .296, R^2= .087, SD= 5.35, β = .296 and P value =.000. Additionally, regression values for the effect of QI on ATT are R =.253, R^2 =, .064, SD= 5.42, β = -.253 and (P =.000) show the significance of this direct effect. Further, the impact of EC on PI has significant result as the P-value (P < 0.05), R = .200, R^2 = .40, SD = 4.96 and the β = .200. Moreover, findings also describes the effect of QI on PI as the P-value < 0.05 R = .277. R^2 = 0.77, SD= 4.87 and the β = -.277.

Table 4.0. "Regression Analysis"

Direct Effect	R	R2	Standard Error	Beta Value	P Value
EC →ATT	.296	.087	5.35	.296	0.000
QI → ATT	.253	.064	5.42	-.253	0.000
EC → PI	.200	.40	4.96	.200	0.000
QI → PI	.277	0.77	4.87	-.277	0.000

Mediation Results

Table 5.0 shows the mediation analysis for this current study. Results of model A shows that both direct and indirect effects are significant as the P-value is more (0.05), so the mediation is partial meditation. Moreover, the results of model B demonstrate that both direct and indirect effect are also significant as the P-value is more (0.05); thus, the mediation is partial.

Table 5.0. Mediation Analysis

	Models	Direct Effect	Indirect Effect	Mediation Effect
Model A	EC-----ATT----PI	Significant	Significant	Partial Mediation
Model B	QI-----ATT----PI	Significant	Significant	Partial Mediation

Discussions

A summary of the hypothesis (rejected or accepted) in this study is shown in Table 6.0. The main goal of this current study is to find the main predictor of the suboptimal food purchase intention. TPB was used to develop the conceptual model for this study. The dimension of TBP, attitude, has a mediating effect among constructs EC, QI, and PI. At first, HIa and H1b were accepted. The findings of this study showed that environmental concern positively influenced suboptimal food purchase intention, while quality inferior negatively influenced suboptimal food purchase intention, which is similar to the results drawn by (Chang et al., 2020; Janssen, 2018; Xu et al., 2021). On the other hand, the attitude has a significant positive impact on suboptimal food purchase intention. Hence, the study concluded that H2 was supported, which is similar to

the previous results drawn by (Shukla, 2019; Wong et al., 2018; Xu et al., 2021). More specifically, the findings of this study showed that attitude mediates the relationship among environmental concern, quality inferior, and purchase intention, which is similar to previous findings (Chu, 2018; Norfarah et al., 2018; Nyremo & Widerberg, 2020; Xu et al., 2021) so, H3a and H3b were accepted.

Table 6.0 Hypothesis results

Hypothesis	Content	Results
H1a	Environmental concern positively influenced the purchase intention (PI) of suboptimal food.	Accepted
H1b	Quality inferior negatively influenced the purchase intention (PI) of suboptimal food.	Accepted
H2	Attitude positively influences the purchase intention (PI) of suboptimal food.	Accepted
H3a	Attitude mediates the relationship between environmental concern and purchase intention of suboptimal food.	Accepted
H3b	Attitude mediates the relationship among quality inferior and purchase intention (PI) of suboptimal food.	Accepted

Conclusion

The current study has two main objectives. Firstly, the present study explores the value and utilization of TPB to investigate the consumer attitude and intention towards suboptimal food purchases. Second, the current study aimed to improve the TPB's predictive potential by incorporating two more variables: environmental concern and quality inferior. This study showed that the (TPB) could work efficiently as a conceptual framework for predicting consumer intention regarding suboptimal food. This study also explains that quality inferior and environmental concern seem to be valuable notions in advancing the acceptance and prediction of customer intentions regarding suboptimal food purchasing. Finally, the significant finding of this study is that attitude, environmental concern, and quality inferior are all critical factors in predicting consumer intentions towards the purchase of suboptimal food among Pakistani consumers.

Research Implications

The study findings provide policymakers, marketers, and practitioners suggestions about suboptimal food consumption, rising consumer knowledge of effective food waste reduction, and

enhancing sellers' involvement in food waste management practices. First, the Punjab food authority can play a vital role in delivering food waste management education to consumers to promote suboptimal food awareness and food insecurity. Social media platforms and educational institutes can share information regarding food waste through different activities, such as seminars, webinars, workshops, and courses. Food waste management companies and government can share information about food waste by using social media and mobile media platforms. Second, food waste management companies and local governments should work together to form successful public-private partnerships. Second, local governments and food waste management companies should work together to create successful public-private partnerships. Training programs should be offered for the farmers and consumers about food waste reduction. Last, other stakeholders, such as retailers, manufacturers, logistics carriers, and food waste management companies, are encouraged to work together to promote suboptimal food.

Future Research and Limitations

Consistent with prior research, this current study has some limitations that offer future research recommendations. First, this current study was conducted in Pakistan. Future research may be undertaken in developed countries. Second, this study was cross-sectional. Future research can be longitudinal study. Third, this study focused on fruits and vegetables; future research can be on other food products. Fourth, the sample size in this study was small, and the large sample should be in the future. Fifth, this study was quantitative. Future research can be conducted experimentally in nature.

References

Adel, A. M., Dai, X., & Roshdy, R. S. (2021). Investigating consumers' behavioral intentions toward suboptimal produce: an extended theory of planned behavior–a cross-cultural study. British Food Journal.

Ahmed, N., Li, C., Khan, A., Qalati, S. A., Naz, S., & Rana, F. (2021). Purchase intention toward organic food among young consumers using theory of planned behavior: role of environmental concerns and environmental awareness. Journal of Environmental Planning and Management, 64(5), 796-822.

Aitken, R., Watkins, L., Williams, J., & Kean, A. (2020). The positive role of labelling on consumers' perceived behavioural control and intention to purchase organic food. Journal of Cleaner Production, 255, 120334.

Ajzen, I. (1991). The theory of planned behavior. Organizational behavior and human decision processes, 50(2), 179-211.

Ajzen, I. (2001). Nature and operation of attitudes. Annual review of psychology, 52(1), 27-58.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior 1. Journal of Applied Social Psychology, 32(4), 665-683.

Alam, S. S., & Sayuti, N. M. (2011). Applying the Theory of Planned Behavior (TPB) in halal food purchasing. International journal of Commerce and Management.

Amalia, F. A., Sosianika, A., & Suhartanto, D. (2020). Indonesian Millennials' Halal food purchasing: merely a habit? British Food Journal.

Aschemann-Witzel, J., de Hooge, I. E., & Almli, V. L. (2021). My style, my food, my waste! Consumer food waste-related lifestyle segments. Journal of Retailing and Consumer Services, 59, 102353.

Aschemann-Witzel, J., Giménez, A., & Ares, G. (2018). Consumer in-store choice of suboptimal food to avoid food waste: The role of food category, communication and perception of quality dimensions. Food Quality and Preference, 68, 29-39.

Asif, M., Xuhui, W., Nasiri, A., & Ayyub, S. (2018). Determinant factors influencing organic food purchase intention and the moderating role of awareness: A comparative analysis. Food Quality and Preference, 63, 144-150.

Azzurra, A., Massimiliano, A., & Angela, M. (2019). Measuring sustainable food consumption: A case study on organic food. Sustainable Production and Consumption, 17, 95-107.

Buaprommee, N., & Polyorat, K. (2016). The antecedents of purchase intention of meat with traceability in Thai consumers. Asia Pacific Management Review, 21(3), 161-169.

Çabuk, S., Tanrikulu, C., & Gelibolu, L. (2014). Understanding organic food consumption: attitude as a mediator. International Journal of Consumer Studies, 38(4), 337-345.

Chang, H.-P., Ma, C.-C., & Chen, H.-S. (2020). The impacts of young consumers' health values on functional beverages purchase intentions. International journal of environmental research and public health, 17(10), 3479.

Chu, K. M. (2018). Mediating influences of attitude on internal and external factors influencing consumers' intention to purchase organic foods in China. Sustainability, 10(12), 4690.

Conrad, Z., Niles, M. T., Neher, D. A., Roy, E. D., Tichenor, N. E., & Jahns, L. (2018). Relationship between food waste, diet quality, and environmental sustainability. PLoS ONE, 13(4), e0195405.

De Hooge, I. E., Oostindjer, M., Aschemann-Witzel, J., Normann, A., Loose, S. M., & Almli, V. L. (2017). This apple is too ugly for me!: Consumer preferences for suboptimal food products in the supermarket and at home. Food Quality and Preference, 56, 80-92.

Dial, L. A. (2021). Are Fruit Snacks Like Fruit? Children's and Parents' Evaluations of Deceptive Packaged Foods. Bowling Green State University.

do Carmo Stangherlin, I., de Barcellos, M. D., & Basso, K. (2020). The impact of social norms on suboptimal food consumption: a solution for food waste. Journal of International Food & Agribusiness Marketing, 32(1), 30-53.

do Carmo Stangherlin, I., Ribeiro, J. L. D., & Barcellos, M. (2019). Consumer behaviour towards suboptimal food products: a strategy for food waste reduction. British Food Journal.

Fishbein, M., Jaccard, J., Davidson, A. R., Ajzen, I., & Loken, B. (1980). Predicting and understanding family planning behaviors Understanding attitudes and predicting social behavior: Prentice Hall.

Furst, T., Connors, M., Bisogni, C. A., Sobal, J., & Falk, L. W. (1996). Food choice: a conceptual model of the process. Appetite, 26(3), 247-266.

Giménez, A., Aschemann-Witzel, J., & Ares, G. (2021). Exploring barriers to consuming suboptimal foods: A consumer perspective. Food Research International, 141, 110106.

Göbel, C., Langen, N., Blumenthal, A., Teitscheid, P., & Ritter, G. (2015). Cutting food waste through cooperation along the food supply chain. Sustainability, 7(2), 1429-1445.

Gustavsson, J., Cederberg, C., Sonesson, U., Van Otterdijk, R., & Meybeck, A. (2011). Global food losses and food waste: FAO Rome.

Hartmann, T., Jahnke, B., & Hamm, U. (2021). Making Ugly Food Beautiful: Consumer Barriers to Purchase and Marketing Options for Suboptimal Food at Retail Level–A Systematic Review. Food Quality and Preference, 104179.

Huang, W.-S., Kuo, H.-Y., Tung, S.-Y., & Chen, H.-S. (2021). Assessing Consumer Preferences for Suboptimal Food: Application of a Choice Experiment in Citrus Fruit Retail. Foods, 10(1), 15.

Jaeger, S. R., Antúnez, L., Ares, G., Swaney-Stueve, M., Jin, D., & Harker, F. R. (2018). Quality perceptions regarding external appearance of apples: Insights from experts and consumers in four countries. Postharvest biology and technology, 146, 99-107.

Jang, S. S., & Namkung, Y. (2009). Perceived quality, emotions, and behavioral intentions: Application of an extended Mehrabian–Russell model to restaurants. Journal of Business Research, 62(4), 451-460.

Janssen, S. (2018). Consumers' quality assessment and purchase intentions of suboptimal fruits and vegetables. BSc, Wageningen University and Research.

Kassem, N. O., & Lee, J. W. (2004). Understanding soft drink consumption among male adolescents using the theory of planned behavior. Journal of Behavioral Medicine, 27(3), 273-296.

Katt, F., & Meixner, O. (2020). Is it all about the price? An analysis of the purchase intention for organic food in a discount setting by means of structural equation modeling. Foods, 9(4), 458.

Khaola, P., Potiane, B., & Mokhethi, M. (2014). Environmental concern, attitude towards green products and green purchase intentions of consumers in Lesotho. Ethiopian Journal of Environmental Studies and Management, 7(4), 361–370-361–370.

Liao, C., Chen, J.-L., & Yen, D. C. (2007). Theory of planning behavior (TPB) and customer satisfaction in the continued use of e-service: An integrated model. Computers in Human Behavior, 23(6), 2804-2822.

Lim, H.-R., & An, S. (2021). Intention to purchase wellbeing food among Korean consumers: An application of the Theory of Planned Behavior. Food Quality and Preference, 88, 104101.

Lockie, S., Lyons, K., Lawrence, G., & Grice, J. (2004). Choosing organics: a path analysis of factors underlying the selection of organic food among Australian consumers. Appetite, 43(2), 135-146.

Loebnitz, N., Schuitema, G., & Grunert, K. G. (2015). Who buys oddly shaped food and why? Impacts of food shape abnormality and organic labeling on purchase intentions. Psychology & Marketing, 32(4), 408-421.

Norfarah, N., Koo, P., & Siti-Nabiha, A. (2018). Private Label Brand Purchase Intention: A Malaysian Study. Global Business & Management Research, 10(1).

Nyremo, H., & Widerberg, A. (2020). Eco-labels: A Tool to Enhance Sustainable Consumption-A quantitative study about how consumers knowledge and trust in eco-labels can affect purchase intention.

Roberts, J. A., & Bacon, D. R. (1997). Exploring the subtle relationships between environmental concern and ecologically conscious consumer behavior. Journal of Business Research, 40(1), 79-89.

Sahu, A. K., Padhy, R., & Dhir, A. (2020). Envisioning the future of behavioral decision-making: A systematic literature review of behavioral reasoning theory. Australasian Marketing Journal (AMJ), 28(4), 145-159.

Shukla, S. (2019). A study on millennial purchase intention of green products in India: applying extended theory of planned behavior model. Journal of Asia-Pacific Business, 20(4), 322-350.

Sogari, G., Li, J., Wang, Q., Lefebvre, M., Gómez, M. I., & Mora, C. (2021). Factors influencing the intention to purchase meat-mushroom blended burgers among college students. Food Quality and Preference, 90, 104169.

Stöckli, S., & Dorn, M. (2021). Awareness, intention, and behavior: Three empirical perspectives on predicting the purchase of abnormally shaped fruits and vegetables. Resources, conservation and recycling, 168, 105431.

Symmank, C., Zahn, S., & Rohm, H. (2018). Visually suboptimal bananas: How ripeness affects consumer expectation and perception. Appetite, 120, 472-481.

Testa, F., Sarti, S., & Frey, M. (2019). Are green consumers really green? Exploring the factors behind the actual consumption of organic food products. Business Strategy and the Environment, 28(2), 327-338.

Tsalis, G. (2020). What's the deal? Consumer price involvement and the intention to purchase suboptimal foods. A cross-national study. Food Quality and Preference, 79, 103747.

Van Giesen, R. I., & de Hooge, I. E. (2019). Too ugly, but I love its shape: Reducing food waste of suboptimal products with authenticity (and sustainability) positioning. Food Quality and Preference, 75, 249-259.

Wang, X., Pacho, F., Liu, J., & Kajungiro, R. (2019). Factors influencing organic food purchase intention in developing countries and the moderating role of knowledge. Sustainability, 11(1), 209.

Wang, Y., Wiegerinck, V., Krikke, H., & Zhang, H. (2013). Understanding the purchase intention towards remanufactured product in closed-loop supply chains: An empirical study in China. International Journal of Physical Distribution & Logistics Management.

Westaby, J. D. (2005). Behavioral reasoning theory: Identifying new linkages underlying intentions and behavior. Organizational behavior and human decision processes, 98(2), 97-120.

Wong, S.-L., Hsu, C.-C., & Chen, H.-S. (2018). To buy or not to buy? Consumer attitudes and purchase intentions for suboptimal food. International journal of environmental research and public health, 15(7), 1431.

Xu, Y., Jeong, E., Jang, S. S., & Shao, X. (2021). Would you bring home ugly produce? Motivators and demotivators for ugly food consumption. Journal of Retailing and Consumer Services, 59, 102376.