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Extending Value-Belief and Norm Theory with Social Identity for Preventing Food Waste at Restaurants*

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Abstract

The purpose of the study is to investigate the role of value, belief, norm, and identity as preventive factors against the tendency to waste food as plate leftovers at restaurants. To do so, Value-belief norm (VBN) theory is merged with social identity theory, and the structured hypothesis built around the premises of both theories is tested upon gathering the perspectives of 374 restaurant costumers having benefited from restaurant services within a sixth-month period. The results reveal that pro-environmental identity is the leading predictor behind the attitude toward preventing food waste. Furthermore, pro-environmental value is seen to enhance both attitude and intention towards preventing food waste through belief and norm-oriented factors at a certain level. More specifically, a sequential relation chain involving the interrelation amongst constructs such as pro-environmental value, belief and environmental norm is validated. Accordingly, the pro-environmental value appears to enhance a new environmental paradigm as the belief factor within the model, thereby predicting the environmental norm significantly. In turn, environmental norm seems to predict both the attitude and behavioral intention towards preventing food waste within the restaurant context. The theoretical and practical implications are further discussed in line with the presented findings.

Keywords: Food waste, value-belief norm theory, social identity theory, restaurant.

Restoranlarda Yemek İsrafını Önlemede Değer-İnancı ve Norm Teorisini Sosyal Kimlik Teorisi ile Genişletme

Öz

Bu çalışmanın amacı, restoranlarda tabak artığı kapsamındaki yemek israfı eğilimini dizginleme eğilimini irdeleme yoluyla değer, inanç, norm ve kimliğin önleyici faktörler olarak rolünü araştırmaktır. Bunu yapmak için, Değer-inanç-norm (VBN) teorisi sosyal kimlik teorisi ile birleştirilmiş ve her iki teorinin argümanları doğrultusunda yapılandırılmış hipotezler, son altı ay içinde restoran hizmetlerinden yararlanan 374 restoran müşterisinin görüşlerine başvurularak test edilmiştir. Araştırma sonucunda, gıda israfını önlemeye yönelik tutumun açıklayan en önemli belirleyicinin çevre dostu kimlik olduğu tespit edilmiştir. Ayrıca, çevre dostu değer yargılarının inanç ve norm odaklı faktörler yoluyla gıda israfını önlemeye yönelik tutum ve niyeti belirli bir düzeyde artırdığı görülmüştür. Daha spesifik olarak, çevre dostu değer, inanç ve çevresel norm gibi değişkenler arasındaki karşılıklı ilişkiyi içeren sıralı ilişki zinciri araştırma kapsamında doğrulanmıştır. Buna göre, çevre dostu değer yargılarının model içindeki inanç faktörü olarak yeni bir çevresel paradigmayı geliştirdiği ve böylece çevresel normu önemli ölçüde belirlediği görülmüştür. Yine, çevresel normun, restoran bağlamında gıda israfını önlemeye yönelik tutum ve davranışsal niyeti arttırdığı tespit edilmiştir. Araştırma sonucunda teorik ve pratik odaklı çıkarımlar ve öneriler geliştirilmiştir.

Anahtar Kelimeler: Gıda israfı, değer-inanç ve norm teorisi, sosyal kimlik teorisi, restoran.

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INTRODUCTION

Most available resources today are known to be on the verge of depletion, irrespective of sector, worldwide. The rate of this trend is visible in the related dwindling statistics (FAO, 2021). Food waste constitutes one of these factors with negative repercussions on environment, economy, and community alike (Charlebois et al., 2015; Papargyropoulou et al., 2019; Tatàno et al., 2017). It occurs predominantly at the consumption level (FAO, 2021). Such end consumer-generated waste accounts for about half of all the edible food (Papargyropoulou et al., 2019), calling for urgent investigation (Stenmarck et al., 2016). However, waste management relies on accommodating preventive measures to begin with (Tatàno et al., 2017) to make them effective at most.

In this respect, behavioral issues are amongst the four main factors that need consideration across almost all sectors (Bhattacharya et al., 2021). The same stands valid for restaurants as important contributors to waste generation (Charlebois et al., 2015; L. Wang et al., 2017). More accurately, plate leftovers in restaurants at various settings and cultures have been found to be a major cause of this trend (Charlebois et al., 2015; Filimonau et al., 2020, 2021; Papargyropoulou et al., 2019; Tatàno et al., 2017; W. Wang et al., 2018; Y. Wang et al., 2017a). In this context, reducing the extent at which foods are wasted in restaurants depends on our ability to understand the main driving forces and, subsequently, to find ways to prevent the trend. Yet, attempts in this regard have remained few and far in between and are limited to a handful of works in the literature (Charlebois et al., 2015; Coşkun et al., 2020; Filimonau et al., 2019, 2020, 2021; W. Han et al., 2018; Papargyropoulou et al., 2019; Tatàno et al., 2017; Y. Wang et al., 2017b). In these studies, consumption pattern and culture were regarded as a prominent driver behind plate leftovers (Filimonau et al., 2020, 2021; Papargyropoulou et al., 2019). More specifically, values, beliefs, and norms have been hypothesized to be a prominent motivator to protect resources (De Groot & Steg, 2010) through changing the consumer behavior (Hoyer & MacInns, 2004).

In accordance with this premise, there is ample evidence on the transformative role of values, beliefs, and norms in regard to consumer behavior in a wide array of contexts within the tourism literature (Agag, 2019; Bani-Melhem et al., 2021; Beall et al., 2021; Dolnicar et al., 2019; González-Rodríguez et al., 2020; Gupta & Sharma, 2019; H. Han, 2015; H. Han et al., 2018; Hwang et al., 2020; Jang, 2021; Kellison et al., 2017; Kiatkawsin & Han, 2017; Le et al., 2021; Lee & Jan, 2017; Rodríguez et al., 2021; Sharma & Gupta, 2020; L. Wang et al., 2020, 2021; Wynveen et al., 2013; Youn et al., 2020, 2021; Zarei et al., 2021). It has also been seen that food waste can be reduced by up to 65% through instilling pro-environmental values and norms into the identity of communities (Farr-Wharton et al., 2014). The spread of this concept has been further supported based on VBN (value-belief and norm) theory, which is amongst the most useful tools to show the ability of values and norms to affect behaviors. Yet, to the best of our knowledge, despite its prevalent use in a wide range of contexts within the tourism sector, VBN theory has not been widely applied to alter guest behavior (Dolnicar et al., 2019) in the context of food waste reduction in restaurants. What is more, a lack of identity within the VBN model has been acknowledged as its major limitation, since such identity is believed to play a more prominent role in predicting the attitude and intention towards a particular behavior (Gatersleben et al., 2014; Van der Werff et al., 2013). To help further our knowledge in this field within the literature, the present work aims to addresses VBN theory upon merging it with social identity theory (SIT) in the context of food waste.

A research in this manner is also believed to assist tourism professionals in various terms. First, Designing such a model will fill the gap that exists in revealing restaurant consumers' tendency behind leaving waste as plate leftovers (Filimonau et al., 2021; Gao et al., 2021). Second, the model will help determine whether VBN theory has a more predictive power in revealing the food waste prevention tendency in comparison with other most widely used theories, namely planned behavior, goal framing, and norm activation (Coşkun et al., 2020; De Groot & Steg, 2010). Third, the values, norms and identities at the core of this cultural phenomenon would be integrated within a single comprehensive theoretical framework (Papargyropoulou et al., 2019; Lingen Wang et al., 2018). Investigating this concept in Turkey is even more crucial bearing in mind that the gastronomy economy was worth 30 billion dollar there even in pandemic circumstances (TAVAK, 2021. Apart from this, one has to consider that the determined value of waste per meal for restaurants is between 0.72 kg (Tatàno et al., 2017) and 0.93 kg (L. Wang et al., 2017). In light of these facts, finding valuable information for preventing losses in a sector with such revenues – and such waste, for that matter - will facilitate the designing of effective resource management programs, supporting the sustainability of the industry, and showing the importance of value-, norm- and identity-oriented factors in reducing end consumer-generated waste.

LITERATURE REVIEW

The determinants of food waste have been investigated from an extensive perspective (Gao et al., 2021). Research into food waste in restaurants in the literature has examined the demand and supply aspect of food waste in the simplest sense. Within the scope of the supply, studies have examined waste measurement and related management applications (Charlebois et al., 2015; Filimonau et al., 2020, 2021; Hennchen, 2019; Papargyropoulou et al., 2019; Pirani & Arafat, 2016; Tatàno et al., 2017; L. Wang et al., 2017). In addition, the employers' perceptions of waste were also examined (Sakaguchi et al., 2018). When attempts examining the demand aspect are examined, it can be seen that the variables such as price sensitivity and flavor (Coşkun et al., 2020) are explained within the scope of Planned Behavior Theory (PBT). This concept has also been used to explain waste reduction in self-determination theory coupled with goal framing theory (Lingen Wang et al., 2018). Besides, the social practices of consumers were investigated as a precursor behind food waste generation (Papargyropoulou et al., 2019). Yet, the role of values, identity, and norms still remain unaddressed, except for one attempt, Stöckli et al. (2018), to the best of the author's knowledge.

Building upon the norm activation model (NAM) (De Groot & Steg, 2010), Value-belief-norm (VBN) theory is one of the three fundamental theories - norm activation model, theory of planned behavior, and value-belief-norm theory - in the environmental psychology literature (Gkargkavouzi et al., 2019). The theory is derived from the Norm Activation model (NAM) (Hameed & Khan, 2020; Schwartz, 1977), considering the personal or moral norm as the predictor of environmental behavior (Gkargkavouzi et al., 2019). Accordingly, norm activation is necessary to avoid a perceived threat. In this respect, basic values constitute the foundation of norm-activation and, more specifically put, the theory posits a hierarchical sequence between values and norms (Eriksson et al., 2006; Stern, 2000). In that context, values first affect belief, thereby resulting in shaping the norms which, in turn, determine the intention to behave or the attitude toward behaving in a certain way (Stern, 2000). Value refers to "a desirable trans-situational goal varying in importance"(Schwartz, 1992, p. 21). Apart from this, belief concerning the environment can be described as "the internal facts that people hold about nature and their relationships with the environment" in terms of the premises of VBN theory (López-Mosquera & Sánchez, 2012). Personal norms is "the feeling a moral obligation to perform or refrain from specific actions" (Schwartz & Howard, 1981). In other words, the individual feels an obligation to act toward a situation of interest regarding the core value of her/his interests. In this way, an obligation transforms into an attitude or behavior in the given setting (Stern, 2000; Westin et al., 2020). The explanatory power of this sequential relation chain was validated to predict behavioral intention in certain contexts (De Groot & Steg, 2007; Gatersleben et al., 2014); in particular, in terms of sustainable behavior (De Groot & Steg, 2010; L. Wang et al., 2021).

VBN theory was undertaken to predict sustainability-oriented behavioral types, such as reducing car use (Eriksson et al., 2006; Nordlund & Garvill, 2003), and adopting energy policy reforms (Steg et al., 2005). The theory has also been employed in a number of studies within the tourism literature in terms of predicting behavioral intention. To name a few, here are some examples:

Green P2P accommodation (Agag, 2019): green innovation (Bani-Melhem et al., 2021); ecotourism (Beall et al., 2021); eco-friendly hotels (González-Rodríguez et al., 2020); eco-friendly decision-making systems (H. Han et al., 2018); green lodging (H. Han, 2015; L. Wang et al., 2021); safe hotels (Rodríguez et al., 2021); agrotourism (Le et al., 2021); drone services (Hwang et al., 2020); sustainable restaurant businesses (Jang, 2021); traditional restaurants (Youn et al., 2020); public parks (Kellison et al., 2017); and, finally, pro-environmental tourist behavior (Dolnicar et al., 2019; Gupta & Sharma, 2019; Kiatkawsin & Han, 2017; Lee & Jan, 2017; Sharma & Gupta, 2020; L. Wang et al., 2020; Wynveen et al., 2013; Youn et al., 2020, 2021; Zarei et al., 2021).

Yet, despite the paramount importance attached to food waste behavior, there exists no study in the literature that investigates the precursors based on VBN theory.

Social identity theory (SIT) is another well-accepted concept with its rigorous premises (Abrahams, D. Hogg, 1990). The theory poses that the feeling of belonging to a group predisposes an individual to adopt the values and norms of the milieu (Stets & Burke, 2000). This point stands common between SIT and VBN explicating that values augment the assumption about consumption patterns and behaviors symbolizing those values (Fishbein, 1980). Thereafter, not acting in accordance with identity ignites the feeling of guilt (Schwartz & Clausen, 1970). This happens when identity activates the feeling of obligation to act (Fishbein, 1980; Schwartz & Clausen, 1970). However, the absence of identity within the model in this sequential relation chain can be accepted as the major limitation of the VBN. Therefore, the present study is expected to be a contribution to the body of knowledge upon merging VBN and SIT in the context of food waste.

Hypothesis Development

Value is the basic component of identity (Hitlin, 2003); it is described as "desirable, trans-situational goals, varying in importance that serve as guiding principles in people's lives" (Schwartz, 1992). In the context of being pro-environmental, it implies the core within a mindset where protecting the environment is central in priority. There are numerous views regarding which predictors explain value-identity association (Gatersleben et al., 2014). As a whole, it can be said that the approach that sees value as the main motivation of identity (Schwartz, 1992; Wood, 2000) originates from the main stream within the literature. In this respect, value was empirically validated to determine how identity is shaped in a robust way (Berzonsky et al., 2011). Value has also been validated in the context of pro-environmental behavior, where the relationship between supporting relevant findings, value and behavior is fully mediated by identity (Gatersleben et al., 2014). Thus, the first hypothesis of the study is as follows:

H1: *Environmental value enhances pro-environmental identity positively.*

The new environmental paradigm (NEP) is the sensitivity and awareness towards the biosphere and the impairment that humanity causes which eventually degrades it. Therefore, NEP is considered as a component factor which directs behavior (Dunlap et al., 2000; López-Mosquera & Sánchez, 2012). For VBN theory, belief is accepted as the outcome of the value (Stern, 2000). The fact that value plays a guiding role as a principle for behavior in the individuals' lives is explained by the fact that it affects the ideas that the individual believes to be correct and, henceforth, feels obliged to do the right thing (Schwartz, 1992). This premise – that is, the role of values of environmental paradigm as belief – has been validated by previous studies across various fields (Agissova & Sautkina, 2020). Similarly, the tourism literature unfolds a similar output to that produced in other areas of research. More specifically, biospheric value has been viewed to enhance the environmental paradigm in contexts such as the followings:

Eco-friendly decision-making process (H. Han et al., 2018); green hotels (H. Han, 2015); human services in restaurants (Jang, 2021); traditional restaurants (Youn et al., 2020); pro-environmentally drone services (Hwang et al., 2021); and finally, pro-environmental travel intention (Kiatkawsin & Han, 2017; Le et al., 2021; Sharma & Gupta, 2020; Wynveen et al., 2013).

Thus, a further hypothesis proposed here is:

H2: *Environmental value enhances environmental paradigm as belief positively.*

Personal norms depend on certain internal factors associated with values and beliefs regarding what the right and wrong is (Thøgersen, 2006). The literature on this subject holds that, within the Norm Activation model, it is a prerequisite behind adopting pro-environmental norms that an individual needs to be aware of the potential consequences of what is done to the environment (Guagnano et al., 1995; Schwartz, 1977). This postulation is believed to be the basis for associating environmental beliefs with environmental norms. As a matter of fact, environmental paradigm as a belief factor within this model reflects the awareness towards biodiversity and its current situation (López-Mosquera & Sánchez, 2012). The relevant interrelation between the concepts ahs been validated through constructs within the tourism literature, mainly in the following works:

Green lodging (H. Han, 2015); green hotels (L. Wang et al., 2021); environmentally friendly drone services (Hwang et al., 2020); human services (Jang, 2021); public parks (Kellison et al., 2017); traditional restaurants (Youn et al., 2020); pro-environmental travel behavior; and various other contexts (Kiatkawsin & Han, 2017; Le et al., 2021; Sharma & Gupta, 2020; Wynveen et al., 2013; Zarei et al., 2021).

These works are amongst the attempts that validate the prominent role of environmental belief on personal norm. Accordingly, we introduce a third hypothesis as:

H3: *Environmental paradigm as belief enhances environmental personal norm positively.*

According to the norm activation model, moral norms inseminate doing the right action, hence consolidating the moral obligation to act pro-environmentally (Schwartz, 1977). Besides, norms as predictive factors behind pro-environmental behaviors have been upheld in the context of TRA (Fishbein & Ajzen, 1975), TPB (Ajzen, 1991), goal framing theory (Lindenberg & Steg, 2007), and the norm activation model (Schwartz, 1977). Accordingly, numerous empirical studies deriving the premises of relevant theories have provided evidence, alleging the augmenting role of personal norms on explaining pro-environmental attitudes and behavioral intentions (Bamberg & Möser, 2007; Onwezen et al., 2013). These studies vary in their contexts, such as car travel behavior (Westin et al., 2020), electric vehicle adoption (Jansson et al., 2017), or recycling (Park & Ha, 2014). In tourism literature, norms in general are seen to augment the attitude towards local cuisine (Ryu & Jang, 2016) and green hotels (Teng et al., 2013). Norms in the subjective sense have also been found to be a significant predictor of behavioral intention across contexts (Teng et al., 2013). Considering VBN theory-based studies in the

tourism context, norms in the personal sense have been hypothesized (H. Han, 2021) and validated to induce sustainable consumer behaviors in contexts such as the following:

Adopting travel demand management systems (Eriksson et al., 2006); utilizing environmentally friendly drone services (Hwang et al., 2020); human services (Jang, 2021); preferring traditional restaurants (Youn et al., 2020); adopting auspicious food names (Youn et al., 2021); intent towards public park usage (Kellison et al., 2017); ecotourism (Lee & Jan, 2017); and pro-environmental travel intention (Kiatkawsin & Han, 2017; Le et al., 2021; Sharma & Gupta, 2020; Wynveen et al., 2013; Zarei et al., 2021).

In the context of food waste, the feeling of guilt resulting from unfulfilling norms have been put forth as the junction point between norms and food waste behavior (Gao et al., 2021; McCarthy & Liu, 2017). Also, Stöckli et al. (2018) revealed that normative incentives are a superior means for reducing the waste-specific behaviors of restaurant guests. More specifically, Siriex et al. (2017) shed light on the enhancing role of personal norms on preventing waste. Therefore, further hypotheses will be as follows:

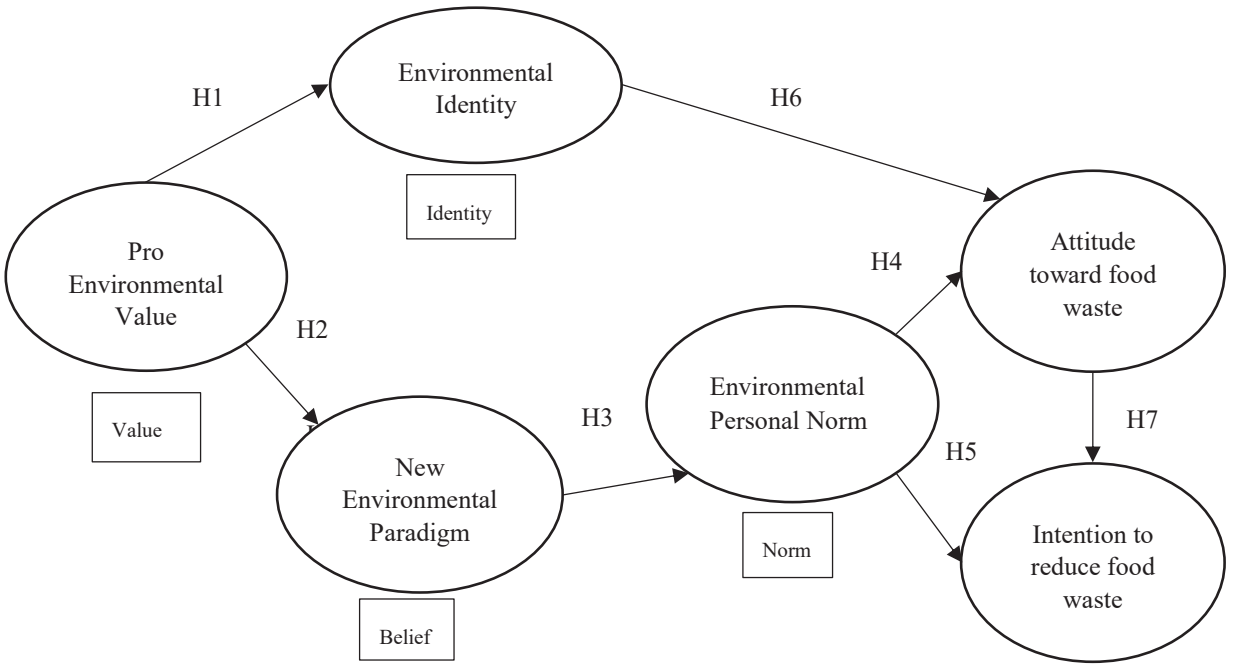
H4: *Environmental personal norms enhance the attitude towards decreasing food waste positively.*

H5: *Environmental personal norms enhance the intention to reduce food waste positively.*

Environmental identity is described as "the extent to which one sees oneself as a type of person whose actions are environmentally friendly" (Van der Werff et al., 2013, p. 1258). This concept is about the extent to which an individual makes environmentalism central part of his/her life (Gatersleben et al., 2014). There is already some evidence in the context of green consumerism (Gatersleben et al., 2014; Sparks & Shepherd, 1992; Whitmarsh & O'Neill, 2010). This evidence was also validated in terms of pro-environmentalism (Bisogni et al., 2002; Stöckli et al., 2018; Whitmarsh & O'Neill, 2010). There is additional proof on this subject in the tourism literature; for instance, Lee and Jan (2017) revealed that environmental identity amplified both environmental attitude and ecotourism behavior. Put differently, environmental identity also plays a role for tightening the frequency of consumption. Saving energy, to provide an example, was validated to be associated with identity (Gatersleben et al., 2014; Van der Werff et al., 2013). More specifically, Bisogni et al. (2002) and Stöckli et al. (2018) have found that identity-evoking aptness on environment protection directs individuals toward saving resources. Certain other attempts related to food waste prevention motivation have highlighted the pro-environmental identity as a prominent driver of decreasing food waste (Luu, 2020). All these evidences show that environmental identity causes the attitude towards wasting food to weaken; henceforth:

Model

Figure 1. Conceptual Model for Food Waste Reduction



H6: *Environmental identity augments the attitude towards decreasing food waste positively.*

In the tourism literature, particular studies based on VBN theory in the context of green purchase behavior (L. Wang, 2020), visiting green hotels (L. Wang et al., 2021), auspicious food names (Youn et al., 2021), and pro-environmental behavioral intention (Zarei et al., 2021) have validated the predictive role of attitude on behavioral intention. Therefore, we postulate this hypothesis:

H7: *The attitude towards decreasing food waste enhances behavioral intention towards decreasing food waste positively.*

Figure 1 delineates the above-proposed hypotheses within a conceptual model.

METHOD

Research Instrument

As the paper aims to uncover the role of values, beliefs, norms, and identities for predisposing tourists to prefer ecotourism activities, it will do so by extending VBN theory using pro-environmental identity. This attempt is combined with using quantitative methods which, in turn, help develop the survey questionnaires for data collection (Hair, 2009). Therefore, the concepts represented based on the theoretical framework (see Figure 1) are operationalized by benefiting from the extant literature in certain dimensions. In this respect, three items for pro-environmental values are adopted from (H. Han et al., 2020). Belief, on the other hand, is measured with nine items according to the New Environmental Paradigm (NEP) scale (Dunlap et al., 2000), which has been applied and evaluated previously to explain the main premises of VBN theory, both outside the tourism sector (López-Mosquera & Sánchez, 2012) and within it (Eriksson et al., 2006), specifically, in ecotourism (Mandić & Vuković, 2021). Therefore, NEP is utilized here to represent the belief factor within VBN theory within the model. Additionally, the norm and identity concepts are represented with environmental personal norm and pro-environmental self-identity (three items for each) and adopted from (Van der Werff et al., 2013). Lastly, the constructs "attitude toward food waste" (four items) and "behavioral intention towards preventing food waste at restaurants" (three items) are adopted from (Russell et al., 2017) due to their being already validated with a sample of similar characteristics (Coşkun et al., 2020). The translation equivalences of the items are determined in a two-stage process, during which they were translated into Turkish, and then back into English. Subsequently, two language experts controlled and confirmed the content validity of the items in terms of accuracy as well as sufficiency.

Sampling and Data Collection

As per the research aim, the sample needs to be composed from customers having recently experienced some form of service at restaurants. This necessity led to our use of the purposive sampling method (Campbell et al., 2020). Apart from this, ensuring the required sample size for a model of reasonable degree has been reported to depend on reaching 5 and 10 observations per items (Kline, 2011). For this purpose, the G*POWER 3.1.9.4. software was employed, yielding a sample size based on a total of 74 observations in terms of hypothesis testing. The data collection process took effect between January 02 and February 15 of 2021. During the period, published and online versions of the questionnaire form were disseminated across both social media platforms and certain localities in city center of Adıyaman with the high likelihood of the public using restaurant services in short periods of time. Only those having been to a restaurant setting during the previous sixth-month period were included in the survey, resulting in 337 full observations. Of these, 63 cases were excluded due to insufficient response or missing value items, yielding a total final of 274 responses regarded adequate for structural equation modelling (Hair et al., 2019; Kline, 2011).

Data Analysis

Prior to analyzing, the items in the questionnaire were coded into the SPSS 21 package program. As PLS-SEM does not require data normality as a prerequisite for initiating the analysis, it was not calculated (Hair et al., 2017). The outliers were checked using the Mahalanobis distance, which resulted in two outliers, which were kept within the dataset as they did not cause any entry error (Hair et al., 2017). The conceptual model of the study involves extending VBN theory with an identity-oriented construct. This expansion improves the research by accommodating an exploratory structure (Hair et al., 2017). Apart from this, the fact that VBN theory remains unexplored in the context of food waste at restaurants further adds to the exploratory nature of this attempt. Studies with exploratory aspects are known to utilize PLS-SEM rather than CB-SEM (Usakli & Küçükergin, 2018). This has brought PLS-SEM to the fore among the other methods for structural equation modeling (Hair et al., 2019). For this purpose, SmartPLS 3 was run to conduct PLS-SEM (Ringle et al., 2015). Eventually, an exploratory factor analysis (EFA) was conducted (Hair et al., 2019), of which the outcomes are listed in Table 1.

Table 1. EFA results

Factors/Items	Factor loading	Cronbach's alpha
Pro-Environmental Value (PVA)		0.960
Item 1	0,849	
Item 2	0,810	
Item 3	0,792	
Belief on Environmental Catastrophe (BEC)		0.828
Item 3	0,602	
Item 4	0,801	
Item 5	0,790	
Belief on Environmental Resources (BER)		0.691
Item 7	0,626	
Item 8	0,786	
Item 9	0,815	
Environmental Identity (EI)		0.954
Item 1	0,819	
Item 2	0,871	
Item 3	0,843	
Environmental Norm (EN)		0.926
Item 1	0,811	
Item 2	0,831	
Item 3	0,857	
Attitude (ATT)		0.936
Item 1	0,828	
Item 2	0,809	
Item 3	0,858	
Item 4	0,790	
Behavioral Intention (INT)		0.921
Item 1	0,813	
Item 2	0,842	
Item 3	0,821	
KMO measure of sampling adequacy: 0.910		
Barlett's test of sphericity: χ^2=5543.20; df=120; p=0.000		
Total variance explained: 84.1%		

As seen in the Table 1, EFA was carried out on 26 items within seven constructs. During the process, one item from the new environmental paradigm construct was excluded as it had a cross loading with the environmental value factor. Similarly, two items from the new environmental paradigm construct were placed within the same line with the environmental value variable (<0.50); hence, excluded from the dataset. The final version yielded satisfactory correlation to conduct EFA considering the Barlett's test of sphericity (χ^2 =5543.20; df=120; p=0.000). Similarly, the Kasier-Meyer-Olkin (KMO) value (0.910), which was determined adequate for the sample size (Hair, 2009; Usakli et al., 2022), meant that the dataset was suitable for EFA. The EFA process yielded a seven-factor structure of the model. All structures - except the seventh dimension, in which the seventh, eighth, and ninth items of NEP had a value of 0.907 - seemed to be sufficient for a dimension to be extracted as a factor (Tabachnick & Fidell, 2012) with an eigenvalue greater than one. The NEP was extracted having two separate constructs, one of which was titled "Belief on Environmental Catastrophe" (items 1, 2, and 3) and another as "Belief on Environmental Resources" (items 6,7, and 8). The total variance concerning the seventh-factor solution predicted 84.1% of the total variance (Table 1). Whether there exists a common method bias was checked using the Harman's single factor test, and it was seen that the dominant factor of the model does not explain the majority of variance (>50%) (Cooper et al., 2020).

FINDINGS

As seen from Table 2, each gender of the participants relatively constitutes an equal portion of the sample size. Accordingly, the predominant individuals are those with an Associate Degree-Bachelor's Degree (59.5), between 18-25 (36.5%), vacating once annually (51.9%), earning between 0-2800 TL (33.9%), and preferring casual restaurants (50.7%).

The PLS-SEM analysis results were examined within the scope of the outer model. As recommended by J.F. Hair et al. (2017), the inner model values were also examined.

Table 2. Demographics of Participants

Type	Characteristic	Frequency ($\bar{x}$)	Percentage (%)
Gender	Female	129	47.1
	Male	145	52.9
Education	Primary/Secondary School	17	6.2
	High School	35	12.8
	Associate Degree-Bachelor's Degree	163	59.5
	Master's Degree or Ph.D.	59	21.5
Age	18-25	100	36.5
	26-34	67	24.5
	35-44	58	21.2
	45-55	37	
	56+	12	4.4
Frequency of Vacation	Once every two years	124	33.1
	Once a year	194	51.9
	Twice a year	42	11.2
	More	14	3.7
Income (Monthly-TL)	0-2800	93	33.9
	2801-4800	42	15.3
	4801-6800	62	22.6
	6801-10000	27	9.9
	Over 10000	27	9.9
Preferred Type of Restaurant	Casual Restaurant	139	50.7
	Themed Restaurant	54	19.7
	Fast Food	52	19.0
	Others	29	10.6
TOTAL		**374**	**100**

Outer Model

Table 3. Outer Model Results

Items	Loadings	Cronbach's Alpha	CR	AVE
Pro-environmental Value (PVA)				
Item 1	0.952	0.960	0.974	0.926
Item 2	0.968			
Item 3	0.966			
Belief on Environmental Catastrophe (BEC)				
Item 3	0.885	0.828	0.895	0.741
Item 4	0.850			
Item 5	0.846			
Belief on Environmental Resources (BER)				
Item 7	0.874	0.691	0.821	0.612
Item 8	0.857			
Item 9	0.582			
Environmental Identity (EI)				
Item 1	0.937	0.954	0.970	0.916
Item 2	0.969			
Item 3	0.966			
Environmental Norm (EN)				
Item 1	0.943	0.926	0.953	0.871
Item 2	0.907			
Item 3	0.949			
Attitude (ATT)				
Item 1	0.946	0.936	0.954	0.840
Item 2	0.928			
Item 3	0.945			
Item 4	0.843			
Behavioral Intention (INT)				
Item 1	0.901	0.921	0.950	0.864
Item 2	0.943			
Item 3	0.943			

According to Table 3, the outer loading values are above 0.7 for each item in all constructs, thus ensuring reliability. It has been observed that only one item loading value in the BER construct is in the range of 0.40-0.70, which can remain in the model as it does not affect reliability (Hair et al., 2019). The internal reliability of all the constructs in the outer model is also ensured as the Cronbach's Alpha values were over 0.60 range and all the composite reliability (CR) values were in the 0.60-0.95 range (Hair et al., 2017). The average variance extracted (AVE) values of all the constructs exceeded 0.50, thereby confirming the convergent validity as well (Fornell & Larcker, 1981). The discriminant validity values appear in Table 4.

Table 4. Discriminant Validity A (Fornell-Larcker Values)

	1	2	3	4	5	6	7
PVA (1)	0.961						
ATT (2)	0.586	0.916					
BEC (3)	0.586	0.541	0.861				
BER (4)	0.322	0.280	0.424	0.782			
EI (5)	0.629	0.517	0.451	0.329	0.957		
EN (6)	0.550	0.484	0.478	0.361	0.542	0.933	
INT (7)	0.466	0.578	0.489	0.234	0.492	0.524	0.929

The first stage of evaluation for the discriminant validity values was fulfilled through looking for the fornell-larcker values (Table 4). It was seen that all values for each construct exceed those corresponding to the other constructs (Hair et al., 2020). This confirmed the first stage of the discriminant validity.

Table 5. Discriminant Validity B (HTMT Values)

Results	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
PVA (1)	0.962						
ATT (2)	0.586	0.916					
BEC (3)	0.586	0.541	0.861				
BER (4)	0.322	0.280	0.424	0.782			
EI (5)	0.629	0.517	0.451	0.329	0.957		
EN (6)	0.550	0.484	0.478	0.361	0.542	0.933	
INT (7)	0.466	0.578	0.489	0.234	0.492	0.524	0.929

The second stage to evaluate the discriminant validity values was carried out by looking for the HTMT values (Table 5). Those that corresponded with other variables were found to be lower than 0.85; hence, confirming the discriminant validity of each construct in the model (Henseler et al., 2015). A test of the hypotheses was carried out within the inner model phase.

Inner Model

Table 6. Inner Model Results

A Variance Inflation Factor (VIF) test was done prior to hypothesis testing. As the values for each variable were found to be under 5, the assumptions on the multiple collinearity criteria (Hair et al., 2017) were validated. Furthermore, the R^2 value was examined for all the endogenous variables, and the coefficients for each variable in terms of their explanatory role were seen to be similar to previous studies applying VBN theory as their framework (Agag, 2019; Bani-Melhem et al., 2021; Beall et al., 2021; Dolnicar et al., 2019; González-Rodríguez et al., 2020; Gupta & Sharma, 2019; H. Han, 2015; H. Han et al., 2018; Hwang et al., 2020; Jang, 2021; Kellison et al., 2017; Kiatkawsin & Han, 2017; Le et al., 2021; Lee & Jan, 2017; Rodríguez et al., 2021; Sharma & Gupta, 2020; L. Wang et al., 2020, 2021; Wynveen et al., 2013; Youn et al., 2020, 2021; Zarei et al., 2021).

A 5000 sub-sample bootstrap was conducted to determine the significance of the path coefficient. In that, PVA has a positive effect on EI (β=0.629, $p<0.05$), BEC (β=0.586, $p<0.05$), and BER (β=0.322, $p<0.05$). Thus, H1, $H2_a$ and $H2_b$ were validated. Also, BEC (β=0.397, $p<0.05$) and BER (β=0.193, $p<0.05$) have a positive effect on EN. Therefore, $H3_a$ and $H3_b$ was validated. Similarly, EN has affected ATT (β=0.289, $p<0.05$) and INT (β=0.319, $p<0.05$) positively, supporting H4 and H5. Lastly, EI was seen to affect ATT (β=0.361, $p<0.05$), which in turn augmented INT (β=0.424, $p<0.05$) positively and confirming H6 and H7.

The results pertaining to the third phase of the inner model determine Q^2 and f^2. It was seen that BEC, BER, and EN have Q^2 values lower than 0.25, indicating less-than-required prediction power. On the other hand, EI, ATT, and INT have better results in this respect that are beyond acceptable levels. Lastly, the predictive ability of the model was revealed in accordance to the f^2 values. The relation patterns of $H2_b$, $H3_b$, H4, H5, and H6 had only a small impact level; whereas, $H3_a$

and H7 had an average-level effect. Yet, H1 and $H2_a$ offered large-level effect (Cohen, 1992), showing that that a pro-environmental value possesses high-level predictive power on pro-environmental identity and environmental belief.

in the context of restaurants within the tourism sector. In this sense, the most remarkable aspect of the study is that pro-environmental identity is revealed as the most determinative factor behind reducing the

Table 6. Inner Model Results

Hypothesis	Effect	Path Coefficients (%95 Bias Corrected Confidence Intervals)	T	Result	VIF	f^2
H_1	PVA→EI	0.629[*0.523;0.710*]	13.119	Supported	1.000	0.654
H_{2a}	PVA→BEC	0.586[*0.248;0.517*]	12.221	Supported	1.000	0.523
H_{2b}	PVA→BER	0.322[*0.203;0.425*]	5.730	Supported	1.000	0.116
H_{3a}	BEC→EN	0.397[*0.248;0.517*]	5.776	Supported	1.219	0.174
H_{3b}	BER→EN	0.193[*0.063;0.310*]	3.075	Supported	1.219	0.041
H_4	EN→ATT	0.289[*0.147;0.429*]	3.980	Supported	1.415	0.087
H_5	EN→INT	0.319[*0.200;0.432*]	5.423	Supported	1.306	0.132
H_6	EI→ATT	0.361[*0.212;0.484*]	5.014	Supported	1.415	0.136
H_7	ATT→INT	0.424[*0.289;0.537*]	6.580	Supported	1.306	0.235

R^2 BEC= 0.343 BER=0.104 EN=0.259 EI=0.395 ATT=0.321 INT=0.412

Q^2 BEC= 0.238 BER=0.058 EN=0.219 EI=0.357 ATT= 0.266 INT=0.349

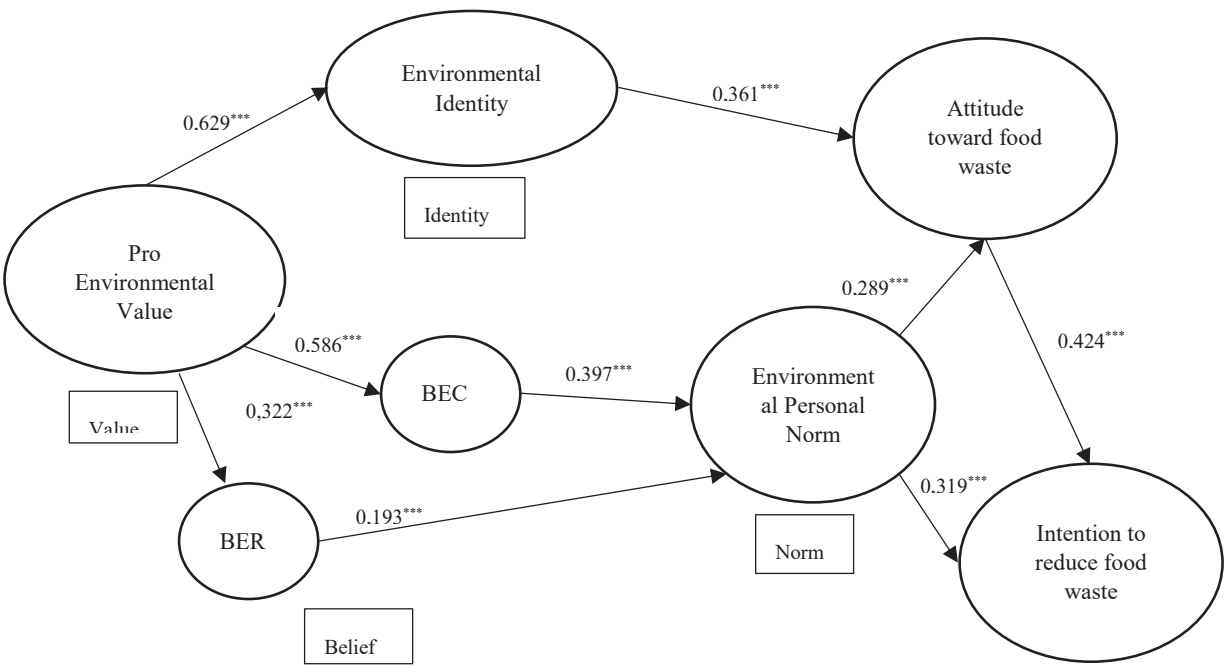
Note: PVA= Pro-environmental Value EI= Environmental Identity; BEC= Belief on Environmental Catastrophe; BER= Belief on Environmental Resources; EN= Environmental Norm; ATT= Attitude toward preventing waste; INT= Behavioral intention toward preventing waste

DISCUSSION AND CONCLUSION

The present study addresses the role of values, norms, and identities in preventing guest-generated food waste

food-wasting tendency. The finding corroborates the presumption (Schwartz, 1992; Wood, 2000) and amplifies empirical evidences

Figure 2. Inner Model Results



(Berzonsky et al., 2011; Gatersleben et al., 2014) that identity is the main motivator behind taking action or conducting behavior in this context. Promulgating within the community through social networking sites, sensitivity for environmentalism may be a cause for the prominent role of values in forming a pro-environmentalist identity. It can also be highlighted as an antecedent behind the remarkable role that value plays in regard to environment-oriented beliefs, presented in the present work as the belief on environmental catastrophe (BEC). The association amongst EVA, BEC, and BER provides evidence for VBN theory-based arguments (Stern, 200) and is in agreement with previous studies (H. Han, 2015; H. Han et al., 2018; Hwang et al., 2021; Jang, 2021; Kiatkawsin & Han, 2017; Le et al., 2021; Sharma & Gupta, 2020; Wynveen et al., 2013; Youn et al., 2020). Similarly, BEC is seen to enhance EN in a more effective way in comparison to BER - as expected. The distinctiveness between these two sub-components may be stem from the implications they might have. BEC connotes a sudden situation by definition. Therefore, believing in the likelihood of such catastrophe may cause a person to oblige him or herself to act in a pro-environmental matter, as expected (H. Han, 2015; Hwang et al., 2020; Jang, 2021; Kellison et al., 2017; Kiatkawsin & Han, 2017; Le et al., 2021; Sharma & Gupta, 2020; L. Wang et al., 2021; Wynveen et al., 2013; Youn et al., 2020; Zarei et al., 2021).

This obligation, in turn, is seen to augment both ATT and INT. The finding is consistent with the Stöckli et al. (2018)'s argument regarding the superior role of norms-specific messages in reducing wasting tendency. It also validates the predecessors in the this of tourism (Ryu & Jang, 2016; Teng et al., 2013), other related studies with a VBN framework (Eriksson et al., 2006; H. Han, 2021; Hwang et al., 2020; Jang, 2021; Kellison et al., 2017; Kiatkawsin & Han, 2017; Le et al., 2021; Lee & Jan, 2017; Sharma & Gupta, 2020; Wynveen et al., 2013; Youn et al., 2020, 2021; Zarei et al., 2021), and food waste-oriented tourism studies (Gao et al., 2021; McCarthy & Liu, 2017).

On the other hand, the fact that environmental personal norm enhances both the attitude and the behavioral intention towards reducing food waste contradicts a similar study conducted on a sample with similar characteristics (Coşkun et al., 2020). This contrast may stem from the contextual difference between the subjective norm and the environmental personal norm. In more elaborate terms, the different outcomes imply that an individual is not affected by the ideas and behaviors regarding food waste as a result of the subjective norm. Instead, owing to the environmental norm, implicit ideas held by individuals or propagated through the media encourage them to impose upon themselves some form of pressure to protect the environment and natural resources by means of attempting to prevent food waste. Indeed, the difference between these two study outputs has also been explicated by Siriex et al. '(2017)s findings, where they show that personal norms lead to preventing the intention to waste food, while social norms do not matter as much in doing so. Similarly, identity is regarded as an amplified factor behind the attitude towards reducing food waste – in line, hence, with extant literature (Bisogni et al., 2002; Gatersleben et al., 2014; Lee & Jan, 2017; Stöckli et al., 2018; Van der Werff et al., 2013).

Theoretical and Practical Implications

The present study has several implications in theoretical terms. The most prominent amongst them is the illuminative role of the study on revealing how such amounts of waste are generated in restaurants (L. Wang et al., 2017; Lingen Wang et al., 2018). As noticed from the hypothesis testing, values, norms and, specifically, identity play a critical role in preventing waste. Amongst them, the "identity" factor stands out in this study as a preventive measure towards wasting, hence asserted as the second contribution of the study to the body of knowledge in this field. This contribution can also be accepted as a pertinent reason for VBN theory since pro-environmental identity is regarded to be an optimal choice for integration within the framework. Third, the study findings have extended the generalizability of the VBN theory premises through validating related arguments based on a sample from restaurant customers and tourists in a developing country. This contribution is believed to have an indirect implication in terms of its benefit to the knowledge; this is because tourists, in particular, may be a major source of problem (Özekici & Ünlüönen, 2021) and waste generation in restaurants (L. Wang et al., 2017). Under these circumstances, the present work has shown how to reduce food waste aptness among this specific type of customers within the sector.

The results obtained here have numerous implications for tourism professionals as with the other contexts within extant tourism literature (Ertaş & Kadırhan, 2020; Yarış et al., 2019; Yayla & Çetiner, 2019; Yazıcıoğlu & Kızanlıklı, 2018; Yılmaz, 2019). While organizing measures to reduce waste is regarded as a challenge for restaurants (Tatàno et al., 2017), preventing end-consumer-generated waste gains more importance. Thus, the most notable contribution of this work for tourism professionals is finding that value-, norm-, and identity-oriented factors play a prominent role in preventing plate leftovers. Therefore, restaurant

operators should raise awareness through advertising, which informs consumers how plate leftovers are harmful to the environment. At this context, value transformative factors through which consuming tendency of tourists may be changed (Özekici & Ünlüönen, 2019b). were not adequately addressed in extant tourism literature (Özekici & Ünlüönen, 2019a).

What is more, augmenting the moral norm towards reducing food waste has many implications for the hospitality industry. First, drawing public attention to socially accepted norms at the entrance to the service area during the breakfast hours, when the open buffet is offered, will raise such awareness regarding reducing food waste (Stöckli et al., 2018) and reduce the guests' tendency to leave food unconsumed or, ideally, to take only as much serving as they can actually consume. This implementation is particularly important for vegetables as they constitute the main item in waste (L. Wang et al., 2017). Second, co-operating in terms of adopting effective organizational measures (Papargyropoulou et al., 2019) will helps as well in this respect. To do so, the amount of ingredients economically and nutritionally sufficient to provide a satisfactory meal needs to be determined as a standardized guideline for restaurants and customers alike (Stöckli et al., 2018). Finally, designing effective communication mechanisms (Filimonau et al., 2020) will facilitate the effective realization of all such measures.

Future studies could address whether the type of restaurant visitors – tourist or not, for instance – makes a distinguishing difference in terms of food waste generation, and also whether counter-waste measures stated earlier do indeed make a positive difference in combatting the trend.

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