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Purchase of organic vegetables as a form of pro-environmental behaviour: Application of Norm Activation Theory

Kupnja ekološkog povrća kao oblik pro-okolišnog ponašanja: Primjena teorije aktiviranja normi

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ABSTRACT

The aim of this research was to explore the applicability of norm activation theory in the context of organic vegetables with intention to purchase as a variable of the interest. Survey was conducted on a sample of 404 organic vegetables consumers. Results of Structural Equation Modeling revealed that the determinants of personal norm were awareness of need and social norm. Personal norm and social norm significantly and positively influenced purchasing intention of organic vegetables, approving applicability of norm activation theory. Based on these findings, recommendations for marketing practice are given in order to strengthen purchasing intention of organic vegetables and thus purchasing behaviour of organic vegetables as a form of pro-environmental behaviour.

Keywords: norm activation theory, organic vegetables, pro-environmental behaviour

SAŽETAK

Cilj ovog istraživanja bio je utvrditi primjenjivost teorije aktiviranja normi u kontekstu kupnje ekološkog povrća s namjerom kupnje kao ciljanom varijablom. Anketno ispitivanje provedeno je na uzorku od 404 potrošača ekološkog povrća. Rezultati modeliranja strukturnih jednadžbi otkrili su da su odrednice osobne norme bile svijest o potrebi i društvena norma. Osobna norma i društvena norma značajno i pozitivno utjecale su na namjeru kupnje ekološkog povrća, potvrđujući primjenjivost teorije aktiviranja normi. Na temelju ovih rezultata, date su preporuke za marketinšku praksu s ciljem jačanja namjere kupnje ekološkog povrća i na taj način kupovnog ponašanja potrošača ekološkog povrća kao oblika pro-okolišnog ponašanja.

Ključne riječi: teorija aktiviranja normi, ekološko povrće, pro-okolišno ponašanje

INTRODUCTION

Undoubtedly, human behaviour significantly contributes to environmental problems (Stern, 2000) either on a small scale by individual consumers' behaviour (White et al., 2019) or as a collective impact (Jena and Behera, 2017). There are many ways to contribute to reducing negative human impact on the environment, nevertheless many people avoid to do so (Osbaldiston and Schott, 2012). In order to stop this negative human impact, there is a need for a change in human behaviour. However, it is not an easy task. A tool that could be useful for a shift towards a more pro-environmental behaviour is the promotion of such behaviour. Promotion will be especially effective when we know which pro-environmental behaviour we want to change, and which factors influence that behaviour (Steg and Vlek, 2009). Therefore, scientists have been focused for a long time on the factors influencing human's pro-environmental behaviour (Clark et al., 2003; Sachdeva et al., 2015), which can be defined as „behaviour that harms the environment as little as possible, or even benefits the environment" (Steg and Vlek, 2009). It is generally assumed that people will perform pro-environmental behaviours if they believe that environmental problems will cause consequences for egoistic, social-altruistic or biospheric issues that are important to them (Hansla et al., 2008).

According to Kaiser et al. (2007) six categories of pro-environmental behaviour can be differentiated, namely: mobility and transportation, waste avoidance, energy conservance, recycling, various behaviours toward conservation and consumerism. Besides, Hunter et al. (2004) deal with terms public and private pro-environmental behaviour. Some ways of public pro-environmental behaviour are signing certain petitions, supporting pro-environmental organizations and participation in relevant demonstrations. On the other side, private ways of pro-environmental behaviour include e.g. recycling, car use reduction and purchase of organic food products (Hunter et al., 2004). In the last two decades, many studies have been conducted on the private pro-environmental i.e. the behaviour of recycling (e.g. Vencatasawmy et al., 2000; Tonglet et al., 2004; Bezzina and Dimech, 2011; Wang et al., 2016; Miliute-Plepiene et al., 2016), energy saving (e.g. Steg, 2008; Martinsson et al., 2011; Sweeney et al., 2013; Mizobuchi and Takeuchi, 2013), reducing or replacing of car use (e.g. Steg, 2003; Abrahamse et al., 2009; Li et al., 2018; Eriksson et al., 2008; Bamberg, 2013), reducing waste generation (e.g. McGrath, 2001; Pirani and Arafat, 2016; Mirosa et al., 2016).

As seen in the literature, most of these pro-environmental behaviours happen primarily because of the pro-social motives of those who perform certain behaviour. But it is not always the main motive for such behaviour, as for example in buying organic food products. Namely, consumers purchase organic food products first of all for personal gain such as health, and thereafter for environmental reasons (see Gracia and De Magistris, 2008; Cerjak et al., 2010; Sirieix et al., 2011).

Classifying theoretical models that can serve to understand pro-environmental behaviours is not an easy task (Liebe, 2010). According to Bamberg et al. (2007) pro-environmental behaviour which is motivated by personal benefits can be better understood using the theory of planed behaviour (TPB, Ajzen, 1991), which belongs to the group of rational choice theories. Since personal benefit issues are the main motives for buying organic food products, it is understandable that numerous studies have used theory of planned behaviour when exploring consumer behaviour regarding organic food products (e.g. Tarkiainen and Sundqvist, 2005; Urban et al., 2012; Martić Kuran and Mihić, 2014; Al-Swidi et al., 2014; Yazdanpanah and Forouzani, 2015). On the other side, the norm activation theory (Schwartz, 1977; Schwartz and Howard, 1981, 1984) is an often used theory for understanding pro-environmental behaviour which is motivated by pro-social motives (Bamberget al., 2007). This theory has proven to be appropriate for explaining various forms of pro-environmental behaviour (Stern, 2000). However, its application is not frequent in the context of organic food consumer behaviour (e.g. Klöckner and Ohms, 2009; Shin et al., 2018), in which

environmental motives are rather important to modern organic food buyers.

This especially regards research on particular organic food categories such as organic vegetables whose global production area more than tripled between 2007 and 2017 (FiBL-IFOAM-SOEL surveys 2006-2019). Additionally, studies have shown that organic vegetables together with organic fruits are the most purchased organic food category in many countries (see Cerjak et al., 2010; Islam, 2014; Bryła, 2016).

Several studies explored consumers' intention and behaviour regarding organic vegetables. Sparks and Shepherd (1992) applied the theory of planned behaviour extended with self-identity to explore intention to consume organic vegetables and they found out that attitudes, subjective norm and perceived control together with self-identity were all significantly related to individuals' intention to consume organic vegetables. Pieniak et al. (2010) found out that consumers' subjective and objective knowledge and their general attitudes towards organic vegetables are related to organic vegetables consumption. Durham and Andrade (2005) proved the importance of both health and the environment as significant motives for organic fruits and vegetables purchase, with environmental concerns being more influential in determining higher levels of purchase. In a recently published paper, Yoon et al. (2019) explored the environmental motivation in organic consumption using revealed spending data and they proved that consumers' environmental concern (measured by a level of disposable product consumption) is related to purchase of organic fruit and vegetables.

However, factors influencing various forms of pro-environmental behaviours are still not enough investigated (Chen et al., 2016), particularly factors related to organic vegetables. Therefore, the aim of this research was to explore if intention to purchase organic vegetables can be explained using norm activation theory.

Research model and hypotheses

The creators of norm activation theory (Schwartz, 1977; Schwartz and Howard, 1981) that explaines altruistic and enironmentally friendly behaviour, set this theory originally only conceptually (Lauper et al, 2016). Consequently, over the last few decades, different versions of norm activation theory have been represented in the literature (Lauper et al., 2016). In spite of that, there are some key variables which are constantly observed in literature (Lauper et al., 2016). According to Gifford and Nilsson (2014), key variables of norm activation theory (hereafter also NAT) are personal norm, social norm, awareness of need and awareness of consequences. The principal premise of this theory is that, personal norm which is considered as central NAT variable (Lauper et al., 2016), directly affects pro-social behaviour (Turaga et al., 2010; Bamberg et al., 2007). Personal norm can be defined as an individual's belief that a certain behaviour is right or wrong (Bamberg et al., 2007). To be relevant for concrete behaviour, personal norm must be first activated (Klöckner, 2013). In our model, assumed activators of personal norm are awareness of need[1], awareness of consequences and social norm. These variables have also been used as activators of personal norm in earlier studies (see Klöckner and Ohms, 2009; Klöckner and Blöbaum, 2010; Klöckner and Friedrichsmeier, 2011; Klöckner and Oppedal, 2011; Wittenberg et al., 2018).

Awareness of need means that individual is aware of problem existence, and that the problem has to be solved. Awareness of consequences is individual's belief that the way she or he acts only increases the problem (Lauper et al., 2016). Social norm, one of the important factors in development of personal norm (Bamberg et al., 2007), can be defined as one's feeling about expectations of important individuals in one's life, considering definite pattern of behaviour (Gifford and Nilsson, 2014).

Due to difficulties in measuring actual beahviour, researchers very often investigate purchase intention. So far, numerous studies have been interested in pro-environmental intention (e.g. Costarelli and Colloca,

[1] Awareness of need and problem awareness are terms used for the same variable (see Lauper et al., 2016)

2004; Kafyri et al., 2012; Smith et al., 2012; Lauper et al., 2016). Likewise, this study explores the influence of personal norm and socail norm on pro-environmental intention to purchase organic vegetables. According to the theory of planed behaviour (TPB, Ajzen, 1991), social norm is one of predictors of behavioral intention. And as mentioned above, personal norm is influenced by several antecedents.

In their study, Klöckner and Friedrichsmeier (2011) explored the choice of an alternative mode of transportation to the car use. They found that awareness of need has a significant and positive influence on personal norm. Exploring factors influencing personal norm in the context of organic milk buying behaviour, Klöckner and Ohms (2009) found also significant and positive influence of awareness of need on personal norm. Therefore, next hypothesis is proposed:

H1: Awareness of need has a significant and positive influence on personal norm.

Exploring travel mode choice, Hunecke et al. (2001) revealed that awareness of consequences had significant and positive impact on personal norm. Personal norm was also found to be activated by awareness of consequences in studies on organic food conducted by Klöckner and Ohms (2009) and Shin et al. (2018). The first study dealt with organic milk consumer behaviour, and the second one with choice of organic items from the restaurant menu. Based on results of these studies, it is hypothesized:

H2: Awareness of consequences has a significant and positive influence on personal norm.

Studies that dealt with travel mode choice, namely choice of an alternative mode of transportation to the car use confirmed significant and positive impact of social norm on personal norm (see Hunecke et al., 2001; Bamberg et al., 2007; Klöckner and Friedrichsmeier, 2011). Exploring variables influencing paper re-use by children, Matthies et al. (2012) also revealed that social norm was significant predictor of personal norm. Following these results, next hypothesis is proposed:

H3: Social norm has a significant and positive influence on personal norm.

Numerous previous studies, particularly on transportation mode choice, confirmed significant and positive impact of personal norm on pro-environmental behavioural intention (e.g. Wall et al., 2007; Bamberg et al., 2007; Klöckner and Friedrichsmeier, 2011). Studies that are thematically close to our study also confirmed this relationship. Namely, Shin et al. (2018) revealed significant and positive impact of personal norm on intention to choose organic items from restarurant's menu. Onel (2017) found out that intention to purchase pro-environmental products in general was significantly affected by personal norm. Taking into consideration these results, it is hypothesized:

H4: Personal norm has a significant and positive influence on intention to purchase organic vegetables.

Another variable, social norm, has been proved to have significant and positive impact on behavioural intention in studies that used combined models consisted of theory of planed behaviour variables and norm activation theory variables (e.g. Shin et al., 2018; Klöckner, 2013), as well as in studies on consumer behaviour that tested relation between these two variables in the context of the theory of planed behaviour (e.g. Irianto, 2015; Onel, 2017; Tomić Maksan et al., 2019). Therefore, it is hypothesized:

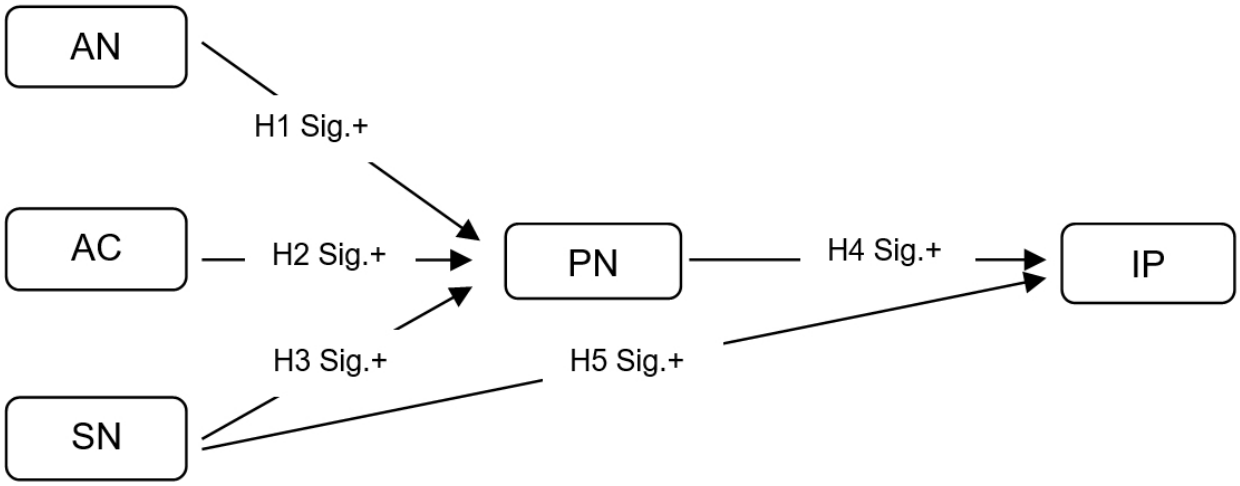
H5: Social norm has a significant and positive influence on intention to purchase organic vegetables.

The research model shows all the hypotheses that will be tested (Figure 1).

MATERIAL AND METHODS

Data collection and sample

Survey data were collected during July and September 2016 in Zagreb, capital of the Republic of Croatia using face to face survey in 4 different locations: a supermarket, a city market, and two organic food stores. Survey



Notes: H indicates hypothesis; Sig+ indicates significant positive influence; AN= awareness of need, AC= awareness of consequences, SN= social norm, PN= personal norm, IP= intention to purchase organic vegetables

Figure 1. Research model

participants from each selling channel were chosen using systematic sample procedure. Every second individual who bought organic vegetables was asked to participate in the survey. The first survey participant was selected randomly. Where one consumer was not willing to take part in the survey, the next one was selected. The final sample consisted of 50 supermarket consumers, 150 city market consumers, and 204 consumers from specialized organic food stores coming to the total number of 404 respondents. Sociodemographic characteristics of participants are presented in appendix (Table 8. Description of the sample).

Measures

The variables of the model were measured using statement items based on statements from previous research (Table 1). All variables: awareness of need, awareness of consequences, social norm, personal norm, and intention to purchase were measured on a 5 point Likert scale, from I completely disagree (1) to I completely agree (5).

Statistical approach

Data analyses were done using statistical programs SPSS 21 and Amos. At the beginning, data were prepared for Structural Equotion Modeling (hereafter also SEM). Namely, sample size was inspected, as well as presence of multivariate outliers and existence of normal distribution. Weston and Gore (2006) recommend a minimum of 200 cases for conducting SEM analysis. Multivariate outliers were inspected by testing the Mahalanobis distance (D^2). Following recommendation from Tabachnick and Fidell (2013) cases with $P<0.001$ for the X^2 value were excluded from further analysis. To test univariate normality of data, distribution of each observed variable (indicator) for skewness and kurtosis was inspected. Skewness indexes that are higher than 3.0 can be considered as extreme (Chou and Bentler, 1995), as well as kurtosis indexes that are higher than 20.0 (Kline, 2005). According to Weston and Goore (2006), univariate normality gives an insight, whether multivariate normality should be a subject of interest.

As the first step of SEM, confirmatory factor analysis of measurement model[2] was conducted. Following the recommendation of Hair et al. (2011) standardized indicator loadings lower than 0.7 were excluded from the further analyses. Besides, values of fitness indexes for both measurement model and composite model were taken into consideration, following the recommendation from Holmes-Smith et al. (2006).

[2] Measurement model is important, because it allows to evaluate how well used indicators identify the set constructs. The second component of SEM is structural model, which presents interrelationships between model constructs. Considered together, these two components build a composite model (see Weston and Goore, 2006)

Table 1. NAT statements used in the research

Construct	Indicator (item)	Source
Awareness of need (AN)	The production of conventional vegetables increases climate changes. (AN_1)	Klöckner and Blöbaum (2010); Steg and de Groot (2010); Klöckner and Ohms (2009)
	The production of conventional vegetables presents problem for sustainability of (one) society. (AN_2)	
	The use of conventional vegetables causes a lot of problems for environment. (AN_3)	
	Production of conventional vegetables is a serious problem for the environment. (AN_4)	
Awareness of consequences (AC)	My purchase of conventional vegetables contributes to the climate changes. (AC_1)	Hunecke et al. (2001); Klöckner and Ohms (2009); Klöckner and Blöbaum (2010)
	If I decide to purchase conventional vegetables, I contribute to the impairment of environment. (AC_2)	
	By purchasing conventional vegetables, I affect the environment in a negative way. (AC_3)	
	My decision to purchase conventional vegetables has negative consequences for society. (AC_4)	
Social norm (SN)	My family think I should purchase organic vegetables. (SN_1)	Martić Kuran and Mihić (2014); Tomić (2016)
	My colleagues think I should purchase organic vegetables. (SN_2)	
	My close friends think I should purchase organic vegetables. (SN_3)	
	My family is purchasing organic vegetables. (SN_4)	
	My colleagues are purchasing organic vegetables. (SN_5)	
	My close friends are purchasing organic vegetables. (SN_6)	
Personal norm (PN)	According to the values that are important to me, I feel an obligation to purchase organic vegetables. (PN_1)	Klöckner and Blöbaum (2010); Steg et al. (2005); Klöckner and Ohms (2009)
	I feel personal obligation to purchase as much organic vegetables as possible. (PN_2)	
	My personal values tell me that it is right to purchase vegetables with the organic food label. (PN_3)	
Intention to purchase organic vegetables (IP)	I intend to purchase organic vegetables. (IP_1)	Tomić (2016) Martić Kuran and Mihić (2014)
	Next time when I purchase vegetables, my choice is going to be organic vegetables. (IP_2)	
	I will probably purchase organic vegetables in the future. (IP_3)	

Those authors recommend to use at least one index from each of three index groups (absolute fit, incremental fit and parsimonious fit). Root Mean Square of Error Approximation (RMSEA) and Goodnes of fit index (GFI) were used as absolute fit indexes. Comparative Fit index (CFI) and Tucker-Lewis Index (TLI) were used as incremental fit indexes, and Chi Square/ degree of freedom (x^2/df) as parsimonious fit index. Following the recommendation from Browne and Cudeck (1993) and Batista and Coenders (2000), RMSEA value lower than 0.08 was considered as acceptable. Based on the recommendation from Arbuckle (2005) and Kline (2011), values of GFI, CFI, and TLI equal or higher than 0.90 were considered as acceptable. Following Schumacker's and Lomax's (2004) recommendation, x^2/df value lower than 5.0 was considered as acceptable.

Additionally, validity (convergent and discriminant), as well as reliability (internal and composite) of measurement model constructs was tested. Validity tests the purposefulness of research elements (Drost, 2011).

Convergent validity is confirmed when average variance extracted (hereafter also AVE) is 0.5 or greater (Ahmad et al., 2016). Discriminant validity is confirmed when two conditions are met. The AVE of each construct should be greater than its squared correlation with any other construct, and an indicator's loadings should be greater then all of its cross loadings (Hair et al., 2011). Reliability can be defined as the extent to which we can use a particular measurement, under assumption that it will measure the same object (Drost, 2011). Internal reliability is confirmed when Cronbach alpha coefficient is higher than 0.6 (Ahmad et al., 2016). Composite reliability is confirmed when Jöreskog rho coefficient is greater than 0.7 (Chin, 2009). The Jöreskog rho coefficient reports how well indicators measure their construct (Rahman et al., 2012). Regarding the validity and reliability of the measurement model, the above recommendations were followed.

The composite model was tested, as the second step of the SEM analysis.

RESULTS

Results of data preparation for SEM

Results of Mahalanobis distance test revealed that there were 35 multivariate outliers in the sample. These cases were excluded from further procedure. The results of skewness and kurtosis tests confirmed existence of univariate normality. Based on that, it is assumed that multivariate normality was not a subject of interest. With 369 respondents, there were enough cases to conduct SEM analysis.

Confirmatory factor analysis

Results of confirmatory factor analysis (hereafter also CFA) revealed that there were five indicators having standardized loading below 0.7. Also, model fitness indexes were not in acceptable intervals. To improve quality of measurement model, according to recommendation of Hair et al. (2011) indicators SN_1, SN_2, SN_4, SN_5 (social norm) and AC_1 (awareness of consequences) (see Table 1) were excluded from further analysis. After these exclusions, construct social norm remained with only two indicators. Following recommendation from Kenny et al. (2006), loadings of both indicators were fixed on 1.0. Thus, Heywood case was avoided, which means appearance of negative error variance (Weston and Goore, 2006). Then, CFA was conducted again. All fitness indexes (x^2/df, GFI, TLI, CFI, RMSEA), as well as standardized indicator loadings had acceptable values (Table 2).

Table 2. Results of CFA

Construct	Indicator (item)	Standardized loading
Awareness of need (AN)	AN_1	0.847
	AN_2	0.831
	AN_3	0.944
	AN_4	0.928
Awareness of consequences (AC)	AC_2	0.953
	AC_3	0.957
	AC_4	0.815
Social norm (SN)	SN_3	0.956
	SN_6	0.904
Personal norm (PN)	PN_1	0.897
	PN_2	0.901
	PN_3	0.799
Intention to purchase organic vegetables (IP)	IP_1	0.838
	IP_2	0.917
	IP_3	0.924
Fitness indexes	x^2/df= 3.376; GFI= 0.903; TLI= 0.957; CFI= 0.966; RMSEA= 0.080	

Validity

In the terms of convergent validity, the measurement model was found to be valid. As presented in Table 3, AVE of each construct exceeded the value of 0.5.

Table 3. Correlation squares and average variance extracted (AVE)

Construct	AN	AC	SN	PN	IP
AN	**0.790**				
AC	0.729	**0.829**			
SN	0.145	0.108	**0.866**		
PN	0.390	0.301	0.208	**0.752**	
IP	0.109	0.071	0.168	0.624	**0.858**

Notes: AN = awareness of need, AC = awareness of consequences, SN = social norm, PN = personal norm, IP = intention to purchase organic vegetables; AVE values are presented diagonal

Discriminant validity was not completely confirmed for all constructs of the measurement model. According to the results presented in table 3, AVE of each construct was higher than its squared correlation with any other construct in the model. But, according to the results of exploratory factor analysis (EFA) presented in Table 4, the indicator PN_3 (My personal values tell me that it is right to purchase vegetables with the organic food label) had a higher loading on construct intention to purchase, than on own construct (personal norm). Therefore, this indicator was excluded from further operationalization.

Reliability

Measurement model had a good reliability. Namely, the value of Cronbach alpha coefficient for all constructs was above 0.6, indicating existence of internal reliability (see Table 5). Also, the composite reliability was confirmed, because the value of Jöreskog rho coefficient of each construct was above 0.7 (see Table 5).

Covariance and correlation

Results presented in Table 6 show that respondents had high awareness of need (mean 4.09) as well as personal norm (mean 4.03). Awareness of consequences and social norm were moderate (means 3.91 and 3.61). Intention to purchase organic vegetables was very high (mean 4.37). Covariances and correlations among all model constructs were significant and positive (P<0.001) (Table 6).

Table 4. Cross loadings (from EFA)

Indicator (item)	Construct (factor)				
	AN	AC	SN	PN	IP
AN_1	**0,855**	0,282	0,099	0,105	0,152
AN_2	**0,802**	0,321	0,113	0,095	0,241
AN_3	**0,819**	0,372	0,157	0,209	0,091
AN_4	**0,756**	0,457	0,136	0,211	0,074
AC_2	0,470	**0,803**	0,120	0,173	0,071
AC_3	0,474	**0,806**	0,121	0,158	0,072
AC_4	0,442	**0,764**	0,078	0,057	0,173
SN_3	0,183	0,087	**0,908**	0,120	0,224
SN_6	0,103	0,119	**0,940**	0,075	0,156
PN_1	0,401	0,250	0,156	**0,615**	0,477
PN_2	0,268	0,188	0,143	**0,725**	0,500
PN_3	0,126	0,125	0,143	**0,575**	0,693
IP_1	0,104	0,072	0,149	0,174	**0,917**
IP_2	0,110	0,056	0,098	0,182	**0,910**
IP_3	0,138	0,091	0,174	0,110	**0,916**

Notes: AN = awareness of need, AC = awareness of consequences, SN = social norm, PN = personal norm, IP = intention to purchase organic vegetables; Indicator that will be excluded: PN_3 (My personal values tell me that it is right to purchase vegetables with the organic food label); EFA= Exploratory factor analysis

Table 5. Values of coefficients of reliability (Cronbach alpha, Jöreskog rho)

Construct	AN	AC	SN	PN	IP
Coefficient					
Jöreskog rho	0,938	0,936	0,928	0,901	0,948
Cronbach alpha	0,937	0,931	0,925	0,899	0,944

Notes: AN= awareness of need, AC= awareness of consequences, SN= social norm, PN= personal norm, IP= intenion to purchase organic vegetables

Table 6. Covariance and correlation matrix

Variable	M	SD	AN	AC	SN	PN	IP
AN	4.09	0.939	-	0.689*** (0.854)	0.305*** (0.382)	0.482*** (0.667)	0.196*** (0.331)
AC	3.91	1.070		-	0.330*** (.329)	0.530*** (.586)	0.199*** (0.267)
SN	3.61	1.067			-	0.403*** (0.449)	0.302*** (0.409)
PN	4.03	0.996				-	0.493*** (0.740)
IP	4.37	0.800					-

Notes: AN= awareness of need, AC= awareness of consequences, SN= social norm, PN= personal norm, IP= intention to purchase organic vegetables; Covariances and correlations in brackets; *** P<0.001

NAT model for prediction of intention to purchase organic vegetables

Results of tested model are presented in Table 7. Values of fitness indexes (x^2/df, GFI, TLI, CFI and RMSEA) indicate that norm activation theory model is applicable in explaining consumers' intention to purchase organic vegetables. Awareness of need had significant and positive impact on personal norm in the context of purchasing organic vegetables (β=0,524; P<0.001), confirming hypothesis 1. Social norm was found to have significant and positive, but lower impact on personal norm (β=0,233; P<0.001). Therefore, hypothesis 3 is confirmed. Hypothesis 2 is rejected, because the impact of awareness of consequences on personal norm was not confirmed (Table 7).

Table 7. Results of tested NAT model

		B	S.E.	P	β	R^2
AN → PN	(H1)	0.590	0.107	***	0.524	
AC → PN	(H2)	0.040	0.082	0.623	0.045	
SN → PN	(H3)	0.212	0.042	***	0.233	
PN						0.47
PN → IP	(H4)	0.549	0.040	***	0.672	
SN → IP	(H5)	0.080	0.034	0.019	0.108	
IP						0.53
Model fitness indexes		X^2/df= 3.153; GFI= 0.912; TLI= 0.963; CFI= 0.972; RMSEA= 0.076				

Notes: AN = awareness of need, AC = awareness of consequences, SN = social norm, PN = personal norm, IP = intention to purchase organic vegetables; B = unstandardized coefficient, β = standardized koefficient, S.E.= standard error, P = significance level, *** P<0.001

Awareness of need and social norm explained 47% of variance in personal norm (Table 7). Personal norm and social norm had significant and positive impact on intention to purchase organic vegetables, confirming hypothesis 4 and 5. These two variables explained 53% of variance in intention (Table 7).

DISCUSSION

Previous studies have confirmed the effectiveness of norm activation theory in prediction of pro-environmental intention and behaviour (see Hunecke et al., 2001; Harland et al., 2007; Lauper et al., 2016). However, no previous studies explored the impact of personal norm on purchasing intention for organic vegetables in the context of environmentally relevant behaviour. The results of this study confirmed that norm activation theory is effective in determining consumers' pro-environmental intention regarding organic produce suggesting importance of personal norm in the domain of organic vegetables.

Norm activation theory variables explained 47% of the variance in personal norm about purchase of organic vegetables. This result is in line with the findings of the previous studies on pro-environmental behaviours (see Hunecke et al., 2001; Matthies et al., 2012; Wittenberg et al., 2018). Our model explained 53% of the variance in purchasing intention of organic vegetables. Similar percentage of explained variance in intention reported also Lauper et al. (2016) in their study on road-traffic noise prevention.

The influence of both personal norm, as well as social norm on intention to purchase organic vegetables was significant and positive. However, the influence of social norm is rather small while personal norm showed much higher impact on intention. This result is in line with the finding of the study conducted by Doran and Larsen (2016) on choosing an eco-friendly travel options.

Personal norm has to be activated in order to impact intention or behaviour. In our model, personal norm is determined with two variables: awareness of need and social norm, while awareness of consequences did not prove to have significant influence on it. Awareness of need had much higher influence compared to social norm, suggesting that consumers with more developed awareness of production and use of conventional vegetables being a serious environmental issue, feel stronger moral obligation to purchase organically produced vegetables. This result is in line with results of other pro-environmental studies, e.g. a study on purchasing organic milk (Klöckner and Ohms, 2009), and a study on using an alternative form of transportation instead of a car and closing the faucet while brushing the teeth (Harland et al., 2007).

This implies that, in order to increase pro-environmental behaviour, communication activities should aim to raise awareness of the need to purchase organic vegetables. This can be achieved through communication campaigns that will highlight benefits organic production has for the environment compared to conventional production. Ultimately, this would result in a stronger sense of moral obligation to purchase organic vegetables, and finally in a stronger pro-environmental intention.

Consumers whose friends purchase organic vegetables more often and advise their friends to do so, feel a stronger moral obligation to purchase organic vegetables. A similar significant impact of social norm on personal norm was confirmed by Hunecke et al. (2001), Bamberg et al. (2007) and Klöckner and Friedrichsmeier (2011) in studies that addressed choosing a different mode of transportation instead of a car. Weaker consumers' sense of moral obligation to purchase organic vegetables can be strengthened by a promotion aimed at strong (more frequent) consumers. Such campaigns should appeal to „strong“ consumers of organic vegetables to encourage „weaker“ consumers to purchase organic vegetables, and thus strenghten their moral obligation to purchase these products.

CONCLUSIONS

This research revealed that norm activation theory model is appropriate and effective in determining consumers' purchasing intention of organic vegetables. The used model explained 47% of the variance in personal norm and 53% variance in intention. Awareness of need

is more important predictor of personal norm, than social norm, while awareness of consequences did not have significant influence on personal norm. Further, both personal norm and social norm are important predictors of intention to purchase organic vegetables with personal norm as more important predictor compared to social norm. Based on the research results, it can be concluded that consumers are aware of problems caused by the production and use of conventional vegetables, and that they intend to purchase organic vegetables in order to contribute to the preservation of the environment.

Limitations and recommendations for future studies

Because of limitations of the conducted study, more detailed conclusions about purchasing behaviour of organic food, as one of the many ways of pro-environmental behaviour, are not possible.

In the study was used a sample of organic vegetables buyers, rather involved in organic purchase and presumably considerably involved in environmental issues.Therefore, they may have higher personal norm regarding pro-environmental organic vegetables behaviour. However, it is not unusual to recruit respondents more involved in the topic compared to general public (Harland et al., 1999). Therefore, future studies could explore if there is a difference in appropriateness of norm activation theory for organic produce between more and less involved respondents.

Another recommendation for future studies is to include consumers of different categories of organic food products to get deeper insight into purchasing intention or purchasing behaviour of organic food with intention to reduce negative impact on the environment.

Another limitation of this research refers to the number of items used to describe constructs in the research model. Although we started the research with at least three items per construct, during the statistical procedure several items had to be omitted, leading to only two items per constructs social norm and personal norm. Following recommendation to have at least 4-5 items for good definition of a construct (see Ricci et al., 2015), future studies should focus on better choice of items for a particular construct.

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APPENDIX

Table 8. Description of the sample

		N	%
Gender	female	321	79.5
	male	83	20.5
Age	18 – 29	48	11.9
	30 – 45	186	46.0
	46 – 60	114	28.2
	61 and older	56	13.9
Education	elementary school	8	2.0
	high school	176	43.6
	college / university	181	44.8
	MSc / Dr.Sc.	39	9.70
Number of household members	1	36	8.0
	2	85	21.0
	3	111	27.5
	4	123	30.4
	5 and more members	49	13.1
Presence of children under 12 in household	yes	175	43.3
	no	229	56.7
Financial status of the family	very good	43	10.6
	good	130	32.2
	average	207	51.2
	bad	23	5.7
	very bad	1	0.2
Place of growing up	rural	72	17.8
	urban	332	82.2

Source: Survey