The Consumers' Approach to Sustainable Consumption and Production: a Case Study in Lithuania

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The promotion of sustainable consumption and production (SCP) as the most important goal and the main challenge to continuously improve the well-being of present and future generations was stated in the European Union (EU) Sustainable Development Strategy, which was renewed in 2006. Consumers show more concern about their consumption patterns. Unfortunately, actual consumption behaviour is changing very slowly and achievements in industrial efficiencies do not ensure significant positive changes. Even though old member states of the EU still have the largest volume of consumption expenditure, new member states are already not so far from them with one of the highest increases recorded in the Baltic States according to the data from Eurostat. This paper will highlight the most important results from the survey for Lithuanian consumers in order to ascertain their attitudes and habits and to determine relevant factors that influence, inhibit and motivate their consumption behaviour.

Keywords: sustainable consumption and production (SCP), consumers, survey, behaviour.

1 Introduction

Sustainable consumption and production (SCP) was firstly put on the global policy agenda at the United Nations (UN) Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 (Szlezak et al., 2008), where unsustainable consumption and production patterns recognised as the main factors influencing unsustainable world's development (Jackson 2006; Liu et al., 2010; Mont and Plepys, 2003; Szlezak et al., 2008). According to the classical definition of sustainable development (SD), the UN World Commission on Environment and Development (WCED), also known as Brundtland Commission, described SCP as the consumption of products and services that are necessary to satisfy the essential needs and to ensure better quality of life, while reducing consumption of natural resources, emissions of toxic substances and wastes through all their life cycle on purpose not to cause the threat for the demands of future generations (Abeliotis et al., 2010; Glavič and Lukman, 2007; Jackson, 2006; Norris et al., 2003; Peattie and Collins, 2009; Welfens et al.,

2010; Welford et al., 1998). After 10 years from Rio conference, during the World Summit on Sustainable Development (WSSD), which took place in Johannesburg in 2002, transformations in SCP models were recognised as one of the fundamental goals on the way to SD (Jackson, 2006), since without essential changes in the production and system consumption the global sustainable development goal cannot be achieved (Szlezak et al., 2008; Watson et al., 2010). The problem of consumption and production was also highlighted in the European Union (EU) Sustainable Development Strategy, which was renewed in 2006 by the Council of Europe (Council of EU, 2006; Nash, 2009; Staniškis and Stoškus, 2008).

Although consumption is the most important factor for economic growth, it can affect the environment in many different ways (Abeliotis *et al.*, 2010; Hansen and Schrader, 1997; Orecchia and Zoppoli, 2007; Tukker *et al.*, 2008). The current unsustainable pattern of consumption and production determines climate change, pollution, accumulation

of hazardous wastes, depletion of natural resources and decline in biological diversity; besides, it also influences an increase in global migration, differences in economic and social welfare between and within countries (Čiegis and Zeleniūtė, 2008; Lorek and Fuchs, 2013; Nash, 2009). Higher levels of consumption influence higher levels of production, which require larger inputs of energy and material as well as generate larger quantities of waste byproducts (Kletzan *et al.*, 2002; Orecchia and Zoppoli, 2007).

During the last decades, initiatives in sustainable production have successfully focused on improving the resource efficiency in manufacturing systems (Jackson, 2005; Sikdar, 2011). However, despite the improvement in results of environmental practices of many individual producers, an increase in the amount of general consumption often exceeds the achieved progress (the so-called "rebound" effect) (Staniškis and Stoškus, 2008; Staniškis *et al.*, 2012; Stø *et al.*, 2006). Thus, it becomes obvious that technological approaches are not enough to realise the goal of SD without the critical assessment of human choices (Hertwich, 2005; Jackson, 2005; Kunz *et al.*, 2013; Lorek and Fuchs, 2013; Lorek and Spangenberg, 2014; Mont and Plepys, 2003).

Consumers are more environmentally and socially aware today, but they still do not generally consume with concern (López et al., 2007; O'Rourke, 2005; Vaishnavi et al., 2014; Vinkhuyzen and Karlsson-Vinkhuyzen, 2014). This statement has been confirmed by the implications of many researchers (Collins et al., 2007; Francis and Davis, 2015; Gadenne et al., 2011; Horne, 2009; Hughner et al., 2007; Kolkailah et al., 2012; Leary et al., 2014; Liobikienė et al., 2014; Liu et al., 2012; O'Rourke, 2005; Pickett-Baker and Ozaki, 2008; Redman and Redman, 2014; Stø et al., 2006; Welfens et al., 2010). Many different authors have proposed that consumer behaviour is strongly influenced not only by such worldwide tendencies as globalisation, rise global economy, technological progress, innovations and demographic changes, but also by many various elements of the socio-cultural system and interactions between socio-cultural, economical, technological and many other factors (Caeiro et al., 2012; Goedkoop et al., 2003; Hofstetter et al., 2006; Hutter et al., 2010; Jackson, 2008; Kletzan et al., 2002; Lorek and Spangenberg, 2014; Mont and Plepys, 2003; Mont and Power, 2010; Orecchia and Zoppoli, 2007; Peattie and Collins, 2009; Ritter et al., 2014; Soron, 2010; Tukker et al., 2008; Welfens et al., 2010).

Yet the entire struggle to reduce global environmental problems by applying technological methods or controversial policy measures has been significantly exceeded by rising consumption volumes of growing population (Kang *et al.*, 2010). Besides, even after a decade of detailed analyses, very little is still known about what actually motivates change within companies or consumers (O'Rourke, 2005). Therefore, in order to achieve changes in the SCP system, first of all, it is necessary

to ascertain the complexity of the consumption phenomenon *per se*, the reasons for consumer choices and behaviour as well as the main factors that stimulate and force people to change their lifestyles to more sustainable (Mont and Power, 2010; Welfens *et al.*, 2010).

The aim of this article is to present the main results of a survey for Lithuanian consumers and discuss their general knowledge and attitudes regarding sustainability, including the factors that influence, inhibit or motivate them to choose environmentally friendly behaviour and sustainable consumption as well as correlations between these factors and various socio-demographic and socio-economic characteristics. This survey is a part of research for situation analysis of the consumption and production system in Lithuania that formed the basis for the demand and structure of the model of sustainable consumption and production in a company (Jonkutė and Staniškis, 2016).

2 Methodology

2.1 Sample size

In order to ascertain consumers' attitudes and habits and to determine the most relevant factors that influence, inhibit and motivate their consumption behaviour, the empirical research in the form of the survey was conducted for the representatives of consumers' society of Lithuania. The sample size of this research (240 respondents) was evaluated by applying Cochran's formula for large populations (Cochran 1977).

2.2 Sampling method

The stratified sample with simple random sampling in the strata was used in the research to guarantee representative results. All Lithuanian inhabitants were divided into 8 strata according to their gender in consideration of the current age structure of the population. The samples were selected in order to retain the distribution of respondents according to the real gender and age proportions of Lithuanian inhabitants.

2.3 Surveying method

On purpose to optimise data collection procedures as well as to combine advantages and compensate weaknesses of different survey methods (De Leeuw, 2005; EC, 2004; Martelli, 2005), the mixed-mode survey was adjusted. In this study, 2 surveying methods were applied, i.e. an online questionnaire and a survey in .doc format distributed as an attachment on e-mail. Moreover, a certain part of the surveys were distributed in the paper form to reduce the bias emerging from the fact that part of all the population still have no opportunities and/or no skills to use computer and the internet (Cobanoglu *et al.*, 2001; De Leeuw, 2005; Martelli, 2005;

Rosenbaum and Lidz, 2007; Schaefer and Dillman, 1998; Sills and Song, 2002).

2.4 The structure of the survey

The survey was composed of 3 question blocks that were based on the literature analysis and earlier research. The first block was intended to identify general perception of the respondents in the areas of SD and SCP. The second section was designed to assess respondents' consciousness and their personal attitudes regarding the consumption act, to identify their sustainable consumption initiatives and to understand the main factors that influence, inhibit or motivate them to choose environmentally friendly behaviour. The main goal of the third block – basic demographic information – was to make further comparisons and perform reasonable interpretations of survey results.

2.5 Scale types and internal consistencies of the survey

The most frequent scale type in the questionnaire was a 5-point Likert-type scale. Respondents were asked to indicate their opinion by choosing one of 5 alternatives expressing the meanings from "strongly disagree" to "strongly agree" with corresponding values from 1 to 5. Nominal and range scales were applied in the survey blocks on basic demographic information. The internal consistency of the scale was measured following the calculation of Cronbach's alpha coefficient. Very high consistency levels of the scale were proved by the value of 0.933 of Cronbach's alpha coefficient.

2.6 Presentation forms of the results

On purpose to simplify and concretise the results, all the respondents' answers were expressed in the form of percentages distributed in 3 groups, namely "disagree" (the answers from groups disagree" and "disagree" "strongly were summarised), "neither agree, nor disagree" and "agree" (the answers from groups "agree" and "strongly agree" were also summarised). These results of the surveys were also encoded to the number format and the mean value of each answer was determined according to 5-point Likert-type scale.

2.7 Data processing and methods of statistical analysis

The research data were processed by the means of mathematical statistical analysis; data processing software packages STATISTICA 12 (StatSoft) and SPSS 17.0 (IBM) were employed.

The descriptive statistics and multidimensional (correlation analysis) statistical methods were applied. The Pearson's chi-square test with the levels of significance (*P*) of 0.05 was used to identify

significant relations between consumer characteristics as well as various factors that determine their behaviour.

2.8 *General definition of the sample*

A significantly larger part of the research participants were women (74 %) and the most active group appeared to be persons from the age range from 20 to 29 (30%). Even 84% of the respondents represented the largest cities. The majority of interviewees had higher university education (67%). In terms of family status, there were approximately unmarried/single similar numbers of married/living with partners respondents (47% and 43%, respectively). The main part of the interviewees full-time (60%) employed specialists/officers. The complicated economic situation in Lithuania was clearly proved by the fact that even 63% of incomes of consumers' households did not exceed the amount of EUR 869.

3 Results and discussion

The success of implementation of sustainable consumption and sustainable production depends on a consumer perception towards the environmental impacts of their choices and behaviour and the expression of these attitudes in their everyday practices (Dagiliūtė, 2008). Thus, it is essential to understand the factors that actually motivate and prohibit sustainable behaviour of consumers (Redman and Redman, 2014).

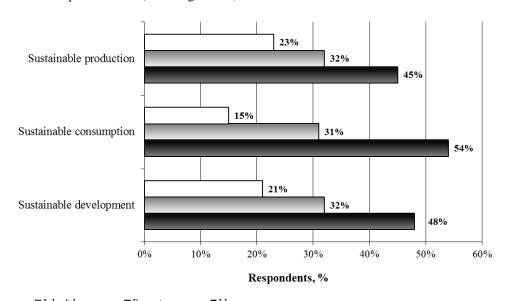
Certainly, the process of consumers' everyday decisions is very complex and is influenced by many different factors (Mont and Plepys, 2003), while their purchasing choices are determined by different motives (Vermeir and Verbeke, 2006). On purpose to identify the most significant factors that influence consumer behaviour, lots of various scientific studies were performed analysing their socio-demographic characteristics (Diamantopoulos *et. al.*, 2003; Von Meyer-Höfer *et al.*, 2014; Wang *et al.*, 2014; Zhao *et al.*, 2014), environmental knowledge and attitudes (Chan, 2001) as well as various other relations; however, homogeneous implications are still not achieved.

The results of research about Lithuanian customers are presented in the next subsections, discussing their general knowledge about SD, SCP and various SD tools; their personal consumption meanings; the importance of sustainability of products/services and their everyday practices as well as frequency of these attitudes in their real life choices; their sustainable consumption initiatives; and factors that influence, inhibit or motivate them to choose environmentally friendly behaviour and sustainable consumption. Moreover, some of the significant correlations between aforementioned factors and consumers' sociodemographic and socio-economic characteristics, such as their gender, age, place of residence, education, family status, number of under-aged children, main occupation, working hours, habitation, household size, average month incomes for household and one family member as well as personal evaluation of financial state and life satisfaction are reviewed.

3.1 Consumers' knowledge regarding SD, SCP and various SD tools

The analysis of consumers' general knowledge about sustainable development, sustainable consumption and production (see Figure 1)

demonstrated that almost half of the respondents (49%) were familiar with these terms and additional 32% of interviewees heard about them. The most recognised definition seemed to be sustainable consumption (54% and 31%), whereas at least identifiable was sustainable production (45% and 23%). The comparison of these research results with the findings of an earlier survey, which indicated that only 28.9% of the respondents were familiar with sustainable development (Dagiliūtė, 2008), allows supposing that public knowledge has positively mediated during the latter years.



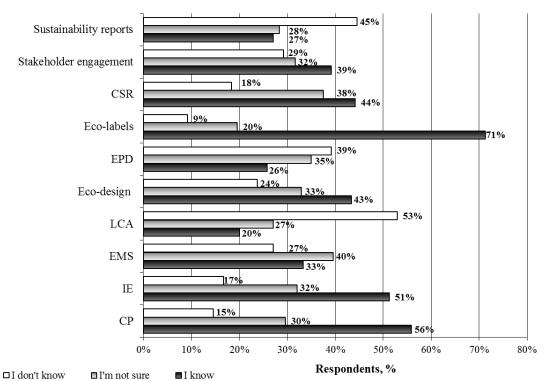


Figure 1. Consumers' knowledge regarding SD tools.

Respondents' answers regarding the specific SD measures (Figure 2) showed that the most known tools were eco-labels (71% "I know" and 20% "I'm not sure" answers). Slightly fewer interviewees were familiar with cleaner production (CP) (56% and 30%, respectively), industrial ecology (IE) (51% and 32%) and corporate social responsibility (CSR) (44% and 38%). However, these results do not guarantee that respondents understood the real meanings of the aforementioned concepts as indicated by Kolkailah et al., (2012) during the consumers' consciousness analysis regarding CSR. The least recognised tools for Lithuanian consumers seemed to be lifecycle assessment (LCA) and sustainability reports: respectively 53% and 45% respondents indicated them as unknown.

Table 1. The evaluation of consumption meanings.

Selected interviewees were almost unambiguous regarding the most significant personal meaning of consumption considering it simply as the satisfaction of essential needs (89%; average evaluation according to 5-point Likert-type scale -4.18) (Table 1); however, for more than half of the respondents (51%; 3.32), consumption was also a measure for emotional state improvement. A slightly lower amount of survey participants designated consumption as a symbol of freedom and independence (48%) as well as a feeling of happiness and life satisfaction (46%). The mostly disapproved meaning of consumption seemed to be a measure to emphasise social status (39% of respondents who disagreed; 2.80) and a sense of self-expression or

social individuality revelation (28%; 3.14).

Consumption meanings

Consumption meanings	Disa	Disagree Neither agree, nor disagree		Agı	ree	Average evaluation according to Likert	
	N	%	N	%	N	%	scale
Measure for emotional state improvement	49	20	69	29	122	51	3.32
Freedom and independence	51	21	75	31	114	48	3.28
Happiness and life satisfaction	58	24	71	30	111	46	3.24
Measure to emphasize social status	93	39	88	36	59	25	2.80
Self-expression, social individuality expression	66	28	81	33	93	39	3.14
Satisfaction of essential needs	8	3	19	8	213	89	4.18

The analysis of significant correlations between the listed consumption meanings and respondents' characteristics showed that consumption satisfaction of essential needs was connected with a habitation type (Pearson's chi-square test value χ^2 =51.97, significance level p=0.041) and with an average monthly income for one member of respondents' family (χ^2 =63.10, p=0.011). This meaning was mostly characteristic of consumers that live in small households in the modest accommodations they do not own, such as hostels, rented flats and rooms or own smaller flats and obtain less than EUR 1000 for one family member per month. Self-expression and social individuality expression as a meaning of consumption were influenced by respondents' gender ($\chi^2=8.29$, p=0.082) as well as an average monthly income for one family member (χ^2 =60.30, p=0.021) and this value was most significant for women with higher incomes. Meanwhile, consumption as a measure to emphasise social status seemed to be interconnected with average monthly incomes of consumers' household (χ^2 =51.21, p=0.048) and was more relevant for people that indicated household monthly incomes from EUR 2000 to 4000.

3.3 Factors that influence consumers to choose particular products and services

As one of the most important objectives of this research is to ascertain the factors that significantly

determine consumption in the country, characteristics of products and services influencing consumers' choices are analysed further (Table 2). When the respondents were asked to assess their (non)approval for listed statements, they highlighted such factors as the quality and convenience of products/services (95%; 4.39), submission of comprehensive and understandable information (85%; 4.09) and price (84%; 4.06) criteria. It seemed that consumers were partial regarding the attitudes and recommendations of their family members, friends and colleagues (73%; 3.78) as well as present traditions, manners and habits (68%; 3.68). The respondents also tended to consider time for purchasing (63%; 3.59) and products/services country of origin (62%; 3.56), followed by attention to eco-labels (55%; 3.53).

The discussed results of the survey confirmed the implications of many authors who previously remarked quality and price (Berger, 1993; Biswas and Roy, 2015; Dagiliūtė, 2008; D'Souza et al., 2006; Francis and Davis, 2015; Horne, 2009; Kolkailah et al., 2012; O'Rourke, 2005; Stevens, 2010; Vermeir and Verbeke, 2006; Welfens et al., 2010; Young, 2006), attitudes and actions of family members, friends and other familiars (Biswas and Roy, 2015; Gadenne et al., 2011; Mont and Plepys, 2003; Pickett-Baker and Ozaki, 2008) as well as habits (Horne, 2009; Mont and Plepys, 2003; Vermeir and Verbeke, 2006) and country of origin (Dagiliūtė, 2008) as the most determinative factors for consumers' automatic everyday decisions. Thus, although environmental characteristics of products

influenced respondents' choices, these criteria still were not the most important in comparison with other features (Berger, 1993; D'Souza *et al.*, 2006; Welfens *et al.*, 2010; Young, 2006). However, it should be mentioned that the research disclosed the

increasing tendency of the importance of sustainability characteristics (55%) for country's consumers in comparison with results of an earlier similar study (Dagiliūtė, 2008).

Table 2. The evaluation of factors that influence consumers during the purchasing of products and services.

Factors that influence consumers during the purchasing of products and services		gree	Neither agree, nor disagree		Agree		Average evaluation according to Likert
	N	%	N	%	N	%	scale
Traditions, manners and habits	26	11	51	21	163	68	3.68
Time for purchasing	35	15	53	22	152	63	3.59
Recommendations from NGOs and other institutions	69	29	92	38	79	33	3.01
Opinion of family members, friends and colleagues	14	6	52	21	174	73	3.78
Social responsibility practices of producer/supplier	59	25	94	39	87	36	3.11
Environmental responsibility practices of producer/supplier	56	23	96	40	88	37	3.12
Popularity of product/service	88	37	92	38	60	25	2.80
Advertisements and various discounts for product/service	40	17	83	34	117	49	3.38
Eco-label of product/service	29	12	80	33	131	55	3.53
Comprehensive and understandable information about product/service	10	4	27	11	203	85	4.09
Delivery time of a product	79	33	85	35	76	32	2.95
Package of a product	92	38	91	38	57	24	2.75
Product's size/occupational space	39	16	98	41	103	43	3.35
Quality and convenience of a product/service	2	1	10	4	228	95	4.39
Product's country of origin	34	14	57	24	149	62	3.56
Popular brand of a product/service	64	27	79	33	97	40	3.15
Product's/service's price	8	3	31	13	201	84	4.06

It could be proposed that consumers were more or less influenced by almost all of the examined socio-demographic and socio-economic indicators when purchasing products and services.

The magnitude of products/services prices $(\chi^2=56.52, p=0.043)$ and delivery time of products $(\chi^2=60.90, p=0.018)$ were reliably associated with average monthly incomes for one respondents' family member and were mostly relevant to consumers with average-sized and higher incomes. The importance of the popularity of products/services $(\chi^2=55.84, p=0.019)$, package of products $(\chi^2=52.69,$ p=0.036) as well as advertisements and various discounts for products/services (χ^2 =67.98, p=0.001) tended to decline with the increasing education level. Meanwhile, the aforementioned significance of package of products (χ^2 =31.10, p=0.002) and time for purchasing (χ^2 =26.63, p=0.009) was emphasised corresponding to respondents' working hours. If the first factor was highlighted by unemployed persons, the latter was mostly important for full-time or halftime employees. The importance of brand popularity of products/services significantly correlated with respondents' education (χ^2 =59.58, p=0.008), family status (χ^2 =24.24, p=0.019) and their household size $(\chi^2=26.57, p=0.046)$ and was more inherent to higher educated, single consumers from bigger households. The significance of products' country of origin was emphasised corresponding to respondents' gender $(\chi^2=10.33, p=0.035)$, average monthly incomes for their household (χ^2 =51.40, p=0.046) and for one their family member (χ^2 =57.48, p=0.036). This

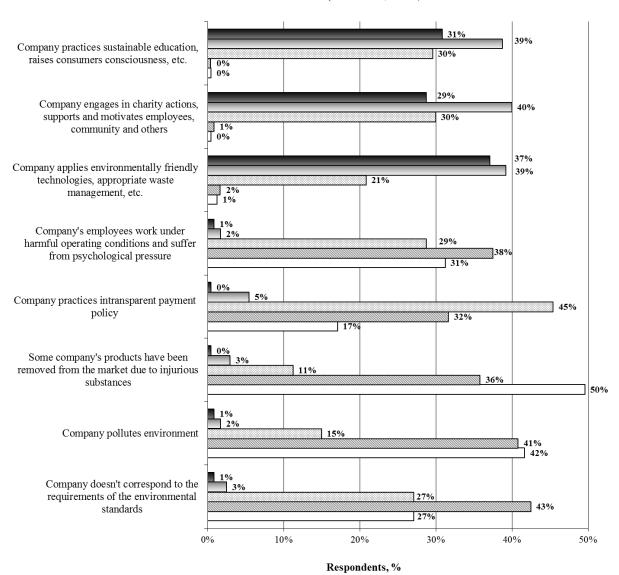
factor was mostly highlighted by men with average incomes of about EUR 1100 for a household and EUR 400 for one family member. Meanwhile, the quality and convenience of products or services were determined by place of residence (χ^2 =40.81, p=0.006) and were inherent to the inhabitants of the largest Lithuanian cities or settlements. The sizes of products and their occupational spaces also significantly correlated with average monthly incomes for consumers' households (χ^2 =54.84, p=0.023) and the number of their under-aged children (χ^2 =48.57, p<0.001). According to the results obtained, the aforementioned factor was typical of respondents with more children and average monthly household incomes of about EUR 1100 or 1400. The significant dependence was also estimated between environmental responsibility practices of producers and respondents' average monthly household incomes ($\chi^2 = 55.82$, p = 0.019) showing this factor to be more relevant for consumers with minor or average-sized household incomes. Meanwhile, the importance of social responsibility practices of producers was reliably influenced by respondents' age (χ^2 =42.84, p=0.036), family status ($\chi^2=21.17$, p=0.048) and personal values of their financial state ($\chi^2=26.70$, p=0.045) and life satisfaction (χ^2 =30.38, p=0.016) and was mostly relevant to 20-29-year-old and 40-69-yearold groups of divorced people or widowers with higher values of their financial state and life satisfaction. The value of comprehensive and understandable information was significantly

associated with consumers' education ($\chi^2=60.77$, p=0.006), the number of under-aged children $(\chi^2=27.68, p=0.035)$ and their working hours $(\chi^2=32.48, p=0.001)$ and was mostly relevant to higher educated half-time workers with no children. The importance of traditions and habits as well as opinion of family members, friends and colleagues, as the factors that influence consumers when purchasing products and services, were determined by respondents' place of residence (χ^2 =44.76, p=0.023; $\chi^2=54.32$, p=0.002) and average monthly incomes for one family member (χ^2 =82.26; p<0.001; χ^2 =68.31, p=0.003); they were basically inherent to the inhabitants from the largest cities with minor and average-sized incomes. The significance acquaintances' opinion was also dependent on the number of respondents' under-aged children

(χ^2 =50.42; p<0.001) and was mostly highlighted by consumers with one or no children.

3.4 Impacts of positive and negative information regarding companies' environmental and social activities

It is also interesting to analyse the impacts of positive and negative information regarding companies' environmental and social activities for Lithuanian consumers' purchases. The research results (Figure 3) supported the findings of previous investigations (Chen, 2010; Griffin *et al.*, 1995; Huang and Kung, 2010) that a companies' reputation was significantly related to the acceptance of consumers, besides the negative information about enterprises' practices and the impacts of their products is more influential than positive facts (O'Rourke, 2005).



■I will buy and promote others to do so ■I will buy ■It won't change my choice \square I won't buy \square I won't buy and promote others to do so Figure 3. The influence of different information about companies for consumers' choices.

While selecting products and services, respondents were strongly encouraged by such

positive facts about companies' activities as the application of environmentally friendly technologies,

appropriate waste management, etc.; realisation of sustainable education, consumers consciousness raising; as well as charity actions supporting and motivating employees, community and others. In relation to this, 76%, 70% and 69% respondents, respectively, referred that they would buy products or render services from such companies. Besides, 37%, 31% and 29% among them would also promote their acquaintances to do so. Similar results revealing favourable consumers' attitudes towards socially responsible companies were also obtained in the study by Kolkailah *et al.* (2012).

As the most relevant facts that determine respondents not to choose merchandise from specific companies were the information about some products that have been removed from the market due to injurious substances (85% respondents would not buy products from such companies and even half of them would also discourage others to do so) and the fact that companies pollute environment (83% and 42%). Slightly less significant seemed to be the information about nonconformity of requirements of environmental standards within enterprises (70% and 27% among them) as well as employees working under harmful operating conditions and suffering from psychological pressure (69% and 31% among them), while the fact about companies' intransparency regarding its payment policy was the most irrelevant. The latter demonstrates that Lithuanian inhabitants partly advocate black economy in the country and even 45% of the interviewees underlined that they would not change their choice to buy products from such companies or to practice their services.

3.5 Significance of sustainability characteristics for consumers during their purchasing and everyday practices as well as the frequency of such choices in their real life

Many research studies on consumers' environmental behaviour and attitudes that influence it have been performed within various science fields. In this context, there have been persistent discussions

whether environmental beliefs definitely determine sustainable behaviour or not (Gadenne et al., 2011; Leary et al., 2014). The findings in some studies have confirmed that consumers with more intense environmental consciousness tend to be more sustainability-oriented engaged in purchasing behaviour (Kolkailah et al., 2012; Mostafa, 2007; Saeednia and Valahzaghard, 2012; Vazifehdoust et al., 2013; Zhao et al., 2014). However, other research studies have indicated that such beliefs are not a precise indicator of sustainable actions (Collins et al., 2007; Francis and Davis, 2015; Gadenne et al., 2011; Horne, 2009; Hughner et al., 2007; Kolkailah et al., 2012; Leary et al., 2014; Liobikienė et al., 2014; Liu et al., 2012; O'Rourke, 2005; Pickett-Baker and Ozaki, 2008; Redman and Redman, 2014; Stø et al., 2006; Welfens et al., 2010). The latter case has claimed the existence of values-actions gap indicating that there is no direct link between environmental attitudes and sustainable behaviour (Gadenne et al., 2011). Likewise, an assumption has been made that environmental consciousness could only be an indirect factor that conditions such behaviour and other indices could be interpolated within this connection (Bamberg, 2003; Leary et al., 2014)

According to the results of the survey, more than half of the respondents (58%) accepted the proposition that the sustainability of products and services as well as everyday activities they chose was "important" and 13% of the interviewees stated it to be "very important", while 27% of the respondents remained indifferent with the opinion "neither important, nor unimportant" and only 2% assessed this fact as "unimportant". However, it is worth mentioning that none of the survey participants completely denied the importance of sustainability (Figure 4). The aforementioned implications validate the findings of other authors. According to them, a positive attitude towards sustainable consumption and environmental concerns tends to be declared by approximately from 30% (Hughner et al., 2007; Vermeir and Verbeke, 2006) to 53% of the respondents (Welfens et al., 2010).

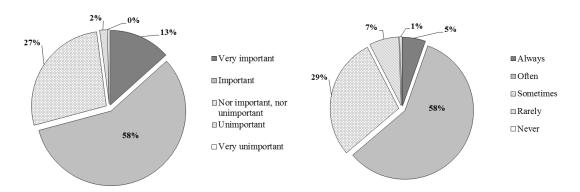


Figure 4. Consumers' attitudes regarding the significance of sustainability of products and services they purchase and their practices (left) as well as frequency of such choices in their real life (right).

Significant correlations were observed between the ratings of sustainability importance and 2 socio-

demographic respondents' characteristics, namely place of residence (χ^2 =80.89, p<0.001) and personal

values of financial state (χ^2 =28.15, p=0.030). It should be fixed that in this case, in contrast to the evaluations of other questions, lower rating on the 5point Likert scale presented higher favour regarding sustainability (i.e. 1 = very important, 5 = veryunimportant). While analysing the interviewees' answers, it was noted that sustainability was more relevant to the respondents that lived in the largest cities and indicated the highest personal evaluation of financial state. Although significant dependencies were not observed, the tendency showed that sustainability was more important for older and higher educated people that lived in smaller households.

Similar implications of other researchers also indicated that older (Dagiliūtė, Diamantopoulos et. al., 2003; Kaklamanou et al., 2015; Zelezny et al., 2000) and more educated (Diamantopoulos etal., consumers Kaklamanou et al., 2015) tended to understand more about the importance of sustainable consumption and although dependencies behaviour. between sustainability and respondents' age as well as their households' size were not identified in Widegren's (1998) and Dagiliūtė's (2008) studies, while Kaklamanou et al., (2015) observed an opposite direction of correlation between environmental concerns and households' size. In contrast to the findings of other researchers (Diamantopoulos et al., 2003; Redman and Redman, 2014; Zelezny et al., 2000), a significant correlation between consumers' gender and their environmental attitudes was not determined in this research.

All the respondents that highlighted the importance of sustainability of the products they consumed, services they rendered and their everyday practices were asked to rate the frequency of such behaviour in their real life. According to the results obtained, 58% of the aforementioned interviewees stated that they acted like this often, and 29% sometimes; however, the number of consumers that rarely behaved sustainability-oriented (7%) was greater in comparison with those committed to such practices always (5%). However, it could be stated that behaviour of consumers changed slightly positively during the recent years. This fact can be validated by the results of Dagiliūtė's (2008) study indicating that 53% of the respondents were always or often engaged in sustainability practices, while this research determined the percentage of such interviewees to be by 10% greater (63%).

The analysis of the respondents' answers disclosed that a tendency to adapt sustainability initiatives in real life circumstances was significantly related to the number of inhabitants in their households (χ^2 =46.11, p=0.001). It could be proposed that eco-friendly behaviour was more inherent to consumers that lived with one more or 2 persons. Although significant correlations were not determined, the noticeable tendencies corresponding to the results of other researchers' surveys revealing the relations between eco-friendly consumers' behaviour and their relatively lower incomes

(Dagiliūtė, 2008) as well as older age (Dagiliūtė, 2008; Diamantopoulos *et al.*, 2003) were also identified in this research.

3.6 Consumers' initiatives for sustainable consumption

While investigating the most widely accepted sustainable consumption initiatives of Lithuanian consumers (Table 3), the leading role was attributed to such easily viable and economically beneficial practices as re-use of packing materials, shopping bags, etc. (90%; 4.34), conservation of natural resources (85%; 4.14) and refusal of optional purchases (80%; 4.00). Slightly fewer respondents were engaged in screening of various wastes and delivery of hazardous wastes for disposal to appropriate companies (77%; 3.95) as well as in purchasing of environmentally friendly goods (67%: 3.78). The popularity of natural resources conservation and waste screening in the country was also discovered by other recently performed studies (Liobikienė et al., 2014; Spinter, 2013), although, according to Dagiliūtė (2008), a few years ago only 4% of respondents stated to be constantly engaged in waste screening initiative. Probably, the finding of such differences could be a sign of growing consumers' consciousness regarding this aspect and a prognostic of their acceptance for other sustainable consumption initiatives in the nearest future.

Statistically significant correlations observed between the initiative to re-use packing materials and respondents' gender ($\chi^2=12.91$, p=0.012) and age ($\chi^2=63.97$, p<0.001). Research disclosed that women from younger and middle-aged groups were more likely to engage in these practices. Consumers' places of residence (χ^2 =54.35, p=0.002), personal values of financial state $(\chi^2 = 26.70,$ p=0.045) and life satisfaction values ($\chi^2=32.67$, p=0.008) as meaningful characteristics determined the tendency to save natural resources and this initiative was more relevant to respondents from smaller cities or settlements with moderate values of their financial state and highest values of their life satisfaction, while struggle to refuse optional purchases significantly correlated with respondents' working hours (χ^2 =22.74, p=0.030) and was observed to be more typical for half-time workers. The analysis of the application of waste screening initiative and consumers' characteristics demonstrated that this action was significantly dependent on respondents' education (χ^2 =54.68, p=0.024) and family status ($\chi^2=27.89$, p=0.006), while meaningful correlations were also estimated between the disposition to choose responsible travelling methods and interviewees' gender $(\chi^2=12.35, p=0.015)$, average monthly household incomes (χ^2 =76.74, p=0.000) and place of residence $(\chi^2=46.15, p=0.017)$. Waste screening tended to be more inherent for higher educated widowers or divorced people, whereas women from the largest cities with minor household incomes showed the

tendency to choose responsible travelling methods more often. Sustainable education of family members, friends, colleagues and others tended to be reliably influenced by respondents' age (χ^2 =50.06, p=0.006), education (χ^2 =69.05, p=0.001) as well as their family status (χ^2 =32.32, p=0.001) and was mostly characteristic of older than 30-year-old groups of divorced consumers or widowers with highest education. Meanwhile, restriction of chemical

substances in the households was significantly determined by interviewees' gender (χ^2 =19.61, p=0.001), number of under-aged children (χ^2 =31.56, p=0.011) and family status (χ^2 =23.03, p=0.028). This initiative was more typical for women, divorced consumers or widowers with no or approx. 3 children.

Table 3. The evaluation of consumers' initiatives towards sustainable consumption.

Consumers' initiatives towards sustainable consumption			ag n	ther ree, or ngree	Agr	ee	Average evaluation according to Likert
			N	%	N	%	scale
Sustainable education of family members, friends, colleagues and others	29	12	67	28	144	60	3.61
Trying to refuse optional purchases	12	5	37	15	191	80	4.00
Responsible travelling/transport methods	39	16	60	25	141	59	3.60
Environmentally friendly products/services	11	5	67	28	162	67	3.78
Re-use of packing materials, shopping bags, etc.	10	4	14	6	216	90	4.34
Restriction of chemical substances in the household	26	11	67	28	147	61	3.67
Waste screening	24	10	32	13	184	77	3.95
Conservation of natural resources	11	5	24	10	205	85	4.14

3.7 Factors that influence consumers to choose environmentally friendly lifestyle and sustainable consumption

When asked to evaluate the factors that had the strongest influence regarding their environmentally friendly choices (Table 4), the biggest part of the respondents indicated the aspiration to live in the cleaner environment (90%; 4.23) and declared their cognition that eco-friendly behaviour was important

and beneficial (83%; 4.10). Moreover, some participants mentioned the influence of economic benefit and opportunity to save their finances (77%; 3.93) to be a great stimulus for such behaviour. Slightly fewer consumers proposed their choices to be mostly related with aspirations to save natural resources that are rapidly decreasing (72%; 3.95) as well as with the responsibility for the wellbeing of future generations (70%; 3.86) or were just limited by their current income size (72%; 3.87).

Table 4. The evaluation of factors that influence consumers to choose environmentally friendly lifestyle and sustainable consumption.

Factors that influence consumers to choose environmentally friendly lifestyle and sustainable consumption	Disagree		Neit agr no disag	ee, or	Agree		Average evaluation according to Likert	
	N	%	N	%	N	%	scale	
Opinion and pattern of family members, friends and colleagues	28	12	80	33	132	55	3.54	
Recommendations from education and science institutions and NGOs, various public movements	70	29	96	40	74	31	3.00	
Advertisements, information in the media	75	31	96	40	69	29	2.95	
Fashion	134	56	84	35	22	9	2.32	
Cognition that eco-friendly behaviour is important and beneficial	8	4	32	13	200	83	4.10	
Responsibility for the wellbeing of future generations	12	5	60	25	168	70	3.86	
Aspirations to save natural resources that are rapidly decreasing	7	3	61	25	172	72	3.95	
Aspirations to live in the cleaner environment	5	2	20	8	215	90	4.23	
Economic benefit and savings	16	7	40	16	184	77	3.93	
High prices of products and services	29	12	50	21	161	67	3.75	
Income size	23	9	45	19	172	72	3.87	

The motive of economic benefit (χ^2 =51.98, p=0.041) and aspirations to live in the cleaner environment (χ^2 =53.34, p=0.002) were influenced by respondents' education and seemed to be more

relevant to higher educated persons, whereas opinion and pattern of consumers' family members and other acquaintances were significantly dependent on their family status (χ^2 =24.76, p=0.016) with the widowers

more likely to be affected by sustainability ideas of their acquaintances. The analysis of the indices related to the recommendations from education and science institutions and NGOs demonstrated significant dependency regarding average monthly incomes for one respondents' family member $(\chi^2=62.25, p=0.014)$, which showed that this initiative was more typical of consumers with minor incomes. Income size as a factor to choose ecofriendly behaviour was importantly determined by 4 socio-demographic/socio-economic characteristics, namely family status (χ^2 =25.37, p=0.013), number of under-aged children (χ^2 =44.34, p<0.001), average monthly incomes for household (χ^2 =52.03, p=0.041) as well as personal values of financial state $(\chi^2=30.62, p=0.015)$. According to the results obtained, this factor mostly affected single respondents or widowers with no children, minor incomes for a household and poorest evaluation of their economic state.

3.8 Barriers that hinder consumers to choose environmentally friendly lifestyle and sustainable consumption

It is also important to understand the barriers that inhibit consumers to choose environmentally friendly behaviour. The disadvantageous choices of the majority of the respondents were determined (Table 5) by their limited personal financial resources (63%; 3.67). This fact proved that the widespread stereotype about seemingly expensive eco-lifestyle was still dominant. Obviously, quite a large number of consumers distrusted the information about products and services that companies proposed (60%; 3.64) and noticed a lack of political authority initiatives regarding the promotion of sustainable consumption and eco-friendly lifestyle (50%; 3.40). These results correspond with earlier research studies that also designated such main obstacles for sustainable behaviour as limited personal budget (Vittersø and Tangeland, 2015; Welfens et al., 2010), distrust regarding companies (Salmela and Varho, 2006) and a lack of government leadership (Gadenne et al., 2011; Welfens et al., 2010). Other important barriers that were identified by many scientists included a lack of time (Niemeyer, 2010) and information (Dagiliūtė, 2008; Francis and Davis, 2015, Niemeyer, 2010; O'Rourke, 2005; Salmela and Varho, 2006; Vittersø and Tangeland, 2015; Welfens et al., 2010; Young et al., 2010), although the results of this study disclosed slighter importance of these obstacles compared with the aforementioned factors (47%; 3.29 and 44%; 3.25). It is worth highlighting that 53% of the interviewees contradicted the proposition that indifference (2.53) or a lack of understanding of sustainable consumption's essence and importance (2.49) forced them to undertake sustainable behaviour and lifestyle. This finding confirms the growing consciousness of Lithuanian consumers once again.

According to the results of this study, the importance of limited personal financial resources as an obstacle for sustainability was significantly related to 4 socio-demographic/socio-economic parameters, namely respondents' place of residence (χ^2 =44.05, p=0.027), average monthly incomes for their households (χ^2 =55.46, p=0.020) and for every member of their families (χ^2 =58.88, p=0.027) as well as personal evaluations of their financial state $(\chi^2=45.23, p<0.001)$. Economic motives to seek sustainability tended to inhibit consumers that lived in settlements or villages and had minimum average monthly incomes both for households and for every member of their families as well as the poorest evaluations of their financial state. The correlations observed between distrust of information that companies propose and interviewees' place of residence (χ^2 =45.25, p=0.021) and their household sizes (χ^2 =29.92, p=0.018) indicated that this obstacle was mostly common to consumers that lived in the smallest households in the largest cities. Meanwhile, the analysis of another limiting factor for sustainability-oriented behaviour, i.e. a lack of understanding of sustainable consumption's essence importance, demonstrated meaningful dependences between this obstacle and respondents' education (χ^2 =76.09, p<0.001), family status (χ^2 =26.71, p=0.009), main occupation (χ^2 =57.89, p=0.033) and average monthly incomes for their households (χ^2 =56.22, p=0.017). It was noticed that the most sensitive consumers' group regarding this barrier was lower educated, divorced, qualified workers with minor household incomes. Lack of time as a barrier for sustainable behaviour also showed significant correlations with respondents' family status (χ^2 =22.45, p=0.033) and the main occupation $(\chi^2=57.83, p=0.034)$ as well as their working hours $(\chi^2=23.50, p=0.024)$ and was mostly typical of single consumers or widowers that worked as half-time or flexitime qualified workers or in key positions. Meanwhile, the absence of economic motivation was related to gender (χ^2 =13.18, p=0.010) and evaluation of personal life satisfaction (χ^2 =40.75, p=0.001) and was the major limiting factor for men with the weakest life satisfaction values. Lack of political authority initiatives was significantly linked with the number of respondents' under-aged children $(\chi^2=30.87, p=0.014)$ while insufficient amount of information correlated with their gender (χ^2 =9.64, i=0.047) and were most likely to inhibit men with 2 or 3 children.

Table 5. The evaluation of barriers that hinder consumers to choose environmentally friendly lifestyle and sustainable consumption.

Barriers that hinder consumers to choose environmentally friendly lifestyle and sustainable consumption	Disa	igree	ag r	ither gree, nor agree	Agree		Average evaluation according to Likert
	N	%	N	%	N	%	scale
Lack of political authority initiatives	46	19	75	31	119	50	3.40
Absence of economic motivation	80	33	67	28	93	39	3.06
Indifference	126	53	73	30	41	17	2.53
Lack of time	61	25	66	28	113	47	3.29
Distrust of information that companies propose	23	10	73	30	144	60	3.64
Insufficient amount of information	52	22	83	34	105	44	3.25
Too wide offer of analogous products/services	56	23	70	29	114	48	3.32
Limited personal financial resources	36	15	53	22	151	63	3.67
Lack of understanding of sustainable consumption's essence and importance	127	53	64	27	49	20	2.49

3.9 Factors that can stimulate consumers to choose environmentally friendly lifestyle and sustainable consumption

The analysis of the interviewees' answers regarding the factors that can stimulate them to choose eco-friendly lifestyle and consume more sustainably (Table 6) demonstrated that the economic motive was dominant again. Even 92% (4.37) of the respondents stated that the strongest stimulus could be the fact that products and services would not cost more than their less eco-friendly alternatives. The participants of the research also highly emphasised the importance of such incentives as presentation of understandable labelling of products and the comprehensive information about services (90%; 4.28) as well as similar quality and durability of sustainable goods and their less eco-friendly alternatives (83%; 4.19). The inhibitory influence of economic factors was also observed in many other studies within different science fields (D'Souza et al., 2006; Gadenne et al., 2011; Lane and Potter, 2007; Niemeyer, 2010; O'Rourke, 2005; Vermillion and Peart, 2010; Wasik, 1992; Young et al., 2010). According to Ferguson and Goldman (2010) who reviewed the results of a global consumers' survey, consumers tend to buy eco-friendly products even during economic depression, and what is more, increasing numbers of them are inclined to pay higher price for such goods (Chen, 2010; Vaishnavi et al., 2014; Welfens et al., 2010). However, the results of this study supported the findings of Vermillion and Peart (2010), D'Souza et al. (2006) and Kolkailah et al. (2012) as well as O'Rourke (2005), proposing that the majority of consumers were still not ready to pay more for sustainable products within current economic situation. Besides, they required such goods to be not worse regarding the quality characteristics than their market analogues.

Clear labelling of products and presentation of comprehensive information about services seemed to be dependent on the respondents' education (χ^2 =78.72, p<0.001), number of their under-aged

children (χ^2 =246.80, p<0.001), main occupation $(\chi^2=150.95, p<0.001)$ as well as average monthly incomes for one member of their families (χ^2 =64.81, p=0.008) and would stronger determine sustainable behaviour of higher educated specialists/officers with 2 or 3 children and larger incomes. The factor illustrating consumers' demand for reliable and valid information justifying the importance of eco-friendly behaviour was estimated to be significantly correlated with the number of respondents' underaged children (χ^2 =36.62, p=0.002) and their main occupation (χ^2 =88.42, p<0.001). According to the survey results, it seemed that this incentive would be the most influential to the consumers with 1-2 or no children working as specialists/officers or being housewives or retirees. Meanwhile, the importance of similar quality and durability of sustainable and less eco-friendly analogous products (χ^2 =52.58, p=0.037) and the requirement for sustainable behaviour not to require considerable changes in consumption habits $(\chi^2=52.67, p=0.036)$ were both significantly associated by the respondents' habitation type; and the significance of these factors was mostly influential for consumers that lived in the smallest owned or rented flats, while the first factor was also relevant to hostel inhabitants. The relevance of the stimulus for products to be sold and services to be rendered in ordinary locations was reliably influenced by the number of interviewees' underaged children ($\chi^2=26.88$, p=0.008), while the incentive for products to be manufactured by familiar companies correlated with average monthly household incomes (χ^2 =47.92, p=0.008). These factors seemed to be mostly relevant for respondents that had 2 or 3 children and for consumers with higher incomes. And the final factor disclosing consumers' disposition not to pay more for ecofriendly goods was estimated to be significantly associated with respondents' main occupation $(\chi^2=92.43, p<0.001)$ and was more typical of specialists/officers and students.

Table 6. The evaluation of factors that can stimulate consumers to choose environmentally friendly lifestyle and sustainable consumption.

Factors that can stimulate consumers to choose environmentally friendly lifestyle and sustainable consumption		sagree Neit agr no disa		ree, or Agree		ee	Average evaluation according to Likert	
	N	%	N	%	N	%	scale	
Reliable and valid information would be provided that eco- friendly behaviour is really important	13	5	53	22	174	73	3.95	
Such behaviour would not require considerable changes in consumption habits	20	8	78	33	142	59	3.72	
Products would be understandable marked/labelled and the comprehensive information about services would be presented	5	2	18	8	217	90	4.28	
Products would be sold / services would be rendered in ordinary locations	11	5	42	17	187	78	4.03	
Products would be manufactured / services would be rendered by familiar companies	19	8	60	25	160	67	3.85	
Products and services would be similar quality and durability	11	5	29	12	200	83	4.19	
Products and services would not cost more	3	1	16	7	221	92	4.37	

In summary of the discussed results, it could be noticed that different aforementioned factors, meanings and initiatives were significantly, but diversely influenced by various respondents' sociodemographic and socio-economic characteristics. Thus, it would be quite complicated to unambiguously define the most important of them. A similar implication was also made by Dagiliūtė (2008), whereas Diamantopoulos et al. (2003) resumed that demographic factors, frequently used as the main segmental variables within the market, were nevertheless not precise enough to define sustainable consumer. However, generalisation of the survey outcomes proposed that sustainable behaviour, choices and consciousness of Lithuanian consumers were largely influenced by their gender, education, family status, number of under-aged children, place of residence and incomes. Therefore, a presumptive sustainable consumer of the country could be a higheducated single woman with no children who lives in one of the largest cities and obtains minimum incomes.

4 Conclusions and considerations

According to the research results, almost an average of respondents were familiar with sustainable development, sustainable consumption and production terms. The most known SD tools were eco-labels, while the least recognised tools seemed to be LCA and sustainability reports. The comparison of the research results with the findings of earlier studies in the country allows proposing that public knowledge and consumers' consciousness regarding sustainability were positively mediated during the latter years.

The most significant meaning of consumption for the respondents was simply the satisfaction of their essential needs, while mostly disapproved seemed to be a measure to emphasise their social status. The most important factors that influence consumers to choose products and services were quality and convenience, submission of comprehensive and understandable information and their price. Research results supported the findings of former investigations that companies' reputation was significantly related with consumers' acceptance to choose their products.

According to the interviewees' answers, 71% of them highlighted the importance of sustainability of products and services as well as everyday activities they choose and none of the survey participants completely denied the importance of sustainability. However, it was determined that only 58% of the aforementioned interviewees tended to act sustainably often.

Lithuanian consumers most frequently applied such sustainable consumption initiatives as re-use of packing materials, conservation of natural resources and refusal of optional purchases.

The biggest part of the respondents stated that the most influential factors to choose environmentally friendly behaviour were the aspiration to live in the cleaner environment, cognition that eco-friendly behaviour was important and beneficial as well as economic benefit and opportunity to save finances.

The disadvantageous choices of the majority of the respondents were mostly determined by their limited financial resources, distrust of information about products and services that companies proposed and a lack of political authority initiatives regarding promotion of sustainable consumption.

The most significant incentive to stimulate consumers to choose eco-friendly lifestyle and consume more sustainably could be the fact that products and services would not cost more than their less eco-friendly alternatives.

Although the different factors, meanings and initiatives were significantly but diversely influenced by various respondents' socio-demographic and socio-economic characteristics and it would be quite complicated to unambiguously define the most

important of them, generalisation of the survey outcomes proposed that sustainable behaviour, choices and consciousness of Lithuanian consumers were largely influenced by their gender, education, family status, number of under-aged children, place of residence and incomes; thus, a presumptive sustainable consumer of the country could be a high-educated single woman with no children who lives in one of the largest cities and obtains minimum incomes.

The findings of this research could not only help to understand the main drivers of consumption choices in Lithuania, but altogether with earlier presented results of a companies' survey (Jonkutė and Staniškis, 2013) could allow researchers to investigate the current consumption and production system in Lithuania and to assess tools and initiatives applied by consumers and companies as well as the most influential, inhibitory and motivating factors to reach SCP. Moreover, these implications in association with previous analysis particularly proposed in earlier author's publication (Jonkutė and Staniškis, 2016a) that identified the most appropriate actions of other main SCP system stakeholders were applied to determine the demand and structure of the model of sustainable consumption and production in a company (Jonkutė and Staniškis, 2016).

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Vartotojų požiūris į tausojantį vartojimą ir darnią gamybą: Lietuvos atvejis

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Tausojančio vartojimo ir darnios gamybos skatinimas, siekiant nuolatos didinti esamų ir būsimų žmonijos kartų gerbūvį, yra svarbiausias tikslas, išreikštas 2006 m. atnaujintoje Europos Sąjungos Darnaus vystymosi strategijoje. Pastaruoju metu pastebimas vis didesnis vartotojų susirūpinimas esamu netausojančiu vartojimo būdu. Vis dėlto, reali vartojimo elgsena keičiasi labai lėtai, o pramoninio efektyvumo pasiekimai neužtikrina reikšmingų teigiamų pokyčių. Nors senosios ES šalys narės vis dar pasižymi didžiausiomis vartojimo sąnaudomis, tačiau ir naujosios narės jas sparčiai vejasi. ES statistikos tarnybos (Eurostat) duomenimis, vieni didžiausių vartojimo padidėjimų užfiksuoti Baltijos šalyse. Šiame straipsnyje aptariami svarbiausi Lietuvos vartotojų anketinės apklausos rezultatai, siekiant nustatyti jų nuostatas ir įpročius bei apibrėžti reikšmingiausius veiksnius, įtakojančius, kliudančius bei skatinančius jų vartojimo elgseną.

Raktiniai žodžiai: tausojantis vartojimas ir darni gamyba, vartotojai, apklausa, elgsena.