ROAD LANDSCAPE AS A PRODUCT: DOES IT SATISFY CONSUMERS' AESTHETIC NEEDS?

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Abstract. The contemporary market laws and consumer society impose that road users are regarded to as consumers, and road landscape – as a product. In this context, consumers' willingness to use the product is equivalent to road users' willingness to drive on the road. Consumers' fastidiousness induces to develop road landscape in a way which ensures satisfaction of drivers' versatile needs, including the aesthetic ones. However, development of desirable-to-drive road landscape remains one of the challenges of land management. Hence, based on the analysis of aesthetic needs of road users, the paper proposes a framework for creation of desirable-to-drive road landscape. The research rests on photo-fixation, Kansei engineering, regression, correlation and descriptive analyses. The landscape of the main Lithuanian roads was investigated. The results show that the willingness to drive on a road depends on the level of tune of all the elements comprising the roadscape, the amount of positive impression left by the roadscape, roadscape's pleasurability, level of sophistication, and skittishness. The guidelines for the development of desirable to drive road landscape are proposed, and the map of distribution of roadscape in Lithuania, according to the willingness to drive, is drawn.

Keywords: landscape management, road landscape, aesthetic, product, consumer, Kansei engineering, multiple linear regression, correlation analysis, descriptive statistics.

1. Introduction

Mobility is a social spatial habit which is closely related to the respective cultural norms. Lynch (1981) distinguishes two modes of mobility: "pleasurable drive" in a beautiful landscape which can also become a good means of spending leisure time; and "just drive" which is based on necessity to move from point A to point B and which, according to the scholar, is a boring and futile waste of time. The motion of pedestrians and vehicles is treated as not only a physical action, but as the formation of social bonds and identity. Nowadays, this understanding has even lead to the emergence of a new concept – landscape services. They are defined as "contributions of landscapes and landscape elements to human well-being" (Bastian *et al.* 2014).

The specific culture of auto-tourism was born in the beginning of the 20th century in the USA. However, the observation, evaluation and formation of road landscape from the aesthetic viewpoint of a consumer on the scientific level began in the second half of the 20th century. Nowadays, the USA, Germany, Great Britain, Australia are the leaders in formation of an aesthetic and pleasurable road landscape. These countries have developed evaluation methods for the roadscape,

they have road landscape guidelines and implemented programmes for beautifying this kind of landscape. In Lithuania, *Landscape design guidelines for the state roads and railways* have been prepared and published in the end of 2013 (ordered by the Ministry of Environment). Thus, decisions of locals and tourists to drive on a road are more than a conscious decisions expressed in terms of "if…, then…" rules. Attractive roads are chosen based on not only aspects of structure, territory, traffic and network characteristics of the roads (Augeri *et al.* 2014), but on "non-graspable, sometimes inexplicable internal atmospheric experiences" (Kasemets 2014) as well.

Despite the relevance of the topic, creation of an aesthetic road landscape which, in turn, satisfies road users, remains one of the challenges of sustainable land management and tourism. Aesthetics is a measure of visual perception of environment. In this paper, road landscape is treated as a product. Road users, i.e. drivers and passengers, are the main consumers of the product. Therefore, the focus of this research is to identify what kind of road landscape as a product would cause consumers' willingness to use it. Willingness to use a roadscape is transformed in the research into willingness to drive on a road.

Now, it is important to consider what value of a roadscape means for a contemporary consumer. Nowadays, consumers are characterized by a number of relatively new features: they treasure experience, they are ingenious and demanding, they treasure time and are strenuous (Santala, Parvinen 2007). Contemporary consumers are viewed as generalized consumers, who, according to Daub and Ergenzinger (2005), "can be satisfied only by products and services that have no harmful impact on any of the areas in which they live or operate", and who expect to be satisfied by the receivable value in every aspect of their activities, including driving. It is widely acknowledged that during the planning process of a roadscape, social, cultural and consumer values are negotiated and reframed in the context of the road landscape (Liu, Opdam 2014).

Consumer value has been analyzed since the 1980s, and its comprehension, due to the change of the perception of consumers, has also elaborated to a great extent (Fig. 1).

Based on Fig. 1, which integrates the research results of a number of scholars (Chang, Wang 2011; Flint *et al.* 2008; Khalifa 2004; Martelo Landroguez *et al.* 2011; Mele 2007; O'Sullivan, McCallig 2012; Rintamäki *et al.* 2007; Ryu *et al.* 2010; Strandvik *et al.* 2012), following conclusions were made:

- consumer value is a positive significance of a product to a consumer;
- consumer value is perceived in the context of alternatives of the product;
- consumer perceived value encompasses a number of dimensions, which are conditionally divided into benefit and cost;
- recent perception of consumer value is based not on the contrast of benefit and cost but rather on their reconciliation;

- because consumers are different and not always rational, the shift from value calculation to its identification, creation and communication occurs.

Thus, consumer value is a multidimensional construct, agreeably to Grönroos and Helle (2010), and Santala and Parvinen (2007). Similarly, Dallos (2013) emphasises the complexity of the landscape concept. However, if to assume road users being consumers and road landscape being a product, it becomes clear that some of the distinguished dimensions of consumer value are hardly adaptable to value of a roadscape: what is maximal price of overlooking a landscape of a road? how can quality of the landscape be evaluated? what features does the landscape has? etc. It is time to turn to what it is already known about consumer value besides its definitions and dimensions.

According to Chvilickas and Smaliukienė (2009), highly motivated consumers tend to rely on cognitive components, whereas individuals with low motivation use emotional aspects to form their attitudes. Because consumers of a certain road usually have low intrinsic motivation to use it – rather, they are forced by extrinsic factors to do so (Lynch 1981), their perceived value and satisfaction are dependent on emotional aspects, such as, for example, interactive experience, roused emotions (Bastian *et al.* 2014; Holbrook 2005; Kasemets 2014; Liu, Opdam 2014) and wish to drive on a road (Flint *et al.* 2008). However, wish to use a certain product depends on previous experience and previous emotions (Mascarenhas *et al.* 2004), therefore willingness as a formative emotional element of consumer value is regarded as a higher-level expression of consumer value. Hence, in light of the presented definitions of consumer value of a road landscape, the value is defined as a road user's willingness to drive on that road.
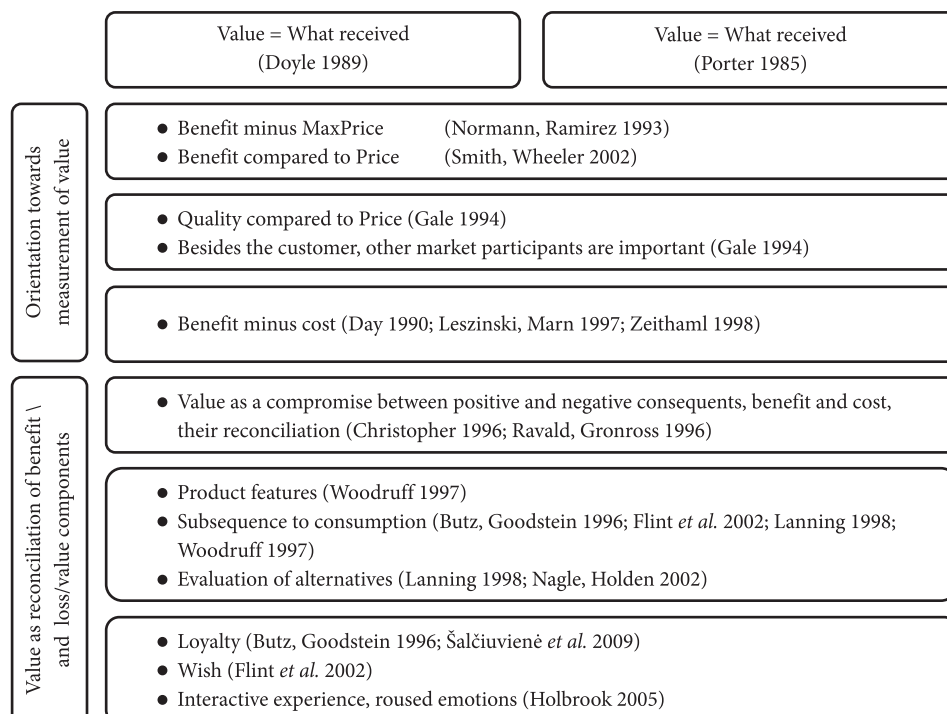
Value = What received (Doyle 1989)	Value = What received (Porter 1985)

Orientation towards measurement of value
- Benefit minus MaxPrice (Normann, Ramirez 1993)
- Benefit compared to Price (Smith, Wheeler 2002)

- Quality compared to Price (Gale 1994)
- Besides the customer, other market participants are important (Gale 1994)

- Benefit minus cost (Day 1990; Leszinski, Marn 1997; Zeithaml 1998)

Value as reconciliation of benefit \ and loss/value components
- Value as a compromise between positive and negative consequents, benefit and cost, their reconciliation (Christopher 1996; Ravald, Gronross 1996)

- Product features (Woodruff 1997)
- Subsequence to consumption (Butz, Goodstein 1996; Flint *et al.* 2002; Lanning 1998; Woodruff 1997)
- Evaluation of alternatives (Lanning 1998; Nagle, Holden 2002)

- Loyalty (Butz, Goodstein 1996; Šalčiuvienė *et al.* 2009)
- Wish (Flint *et al.* 2002)
- Interactive experience, roused emotions (Holbrook 2005)

Fig. 1. Dynamics of definitions of consumer value (Stankevičė 2004)

However, the analysis of the literature revealed the lack of evaluation of road landscape as a product. The need for analyzing road landscape from the perspective of an aesthetic consumer is determined by conscious consumer society and its willingness to use the best, safest, most comfortable and pleasurable product. Thus, the paper is aimed at proposing a framework of development of desirable-to-drive road landscape from the aesthetic viewpoint of a consumer. The research methodology rests on field research, which includes observation on site with purposive photo-fixation, quantitative survey with the application of the idea of Kansei engineering method, semantic differential scale and affinity analysis. Then, multiple linear regression and correlation analyses, as well as descriptive analysis and descriptive statistics are used to investigate the data.

2. Methodology

2.1. Research object

The main Lithuanian roads with the respective landscape – arterial roads, which are labelled as European arterial roads and corridors of the network of European roads, except for bypasses, – were selected for the research, and are treated as the research object. The total length of the 12 roads (A1 road Vilnius–Kaunas–Klaipėda, A2 road Vilnius–Panevėžys, A3 road Vilnius–Minskas, A5 road Kaunas–Marijampolė–Suvalkai, A6 road Kaunas-Zarasai–Daugpilis, A8 road Panevėžys–Aristava–Sitkūnai, A9 road Panevėžys–Šiauliai, A10 road Panevėžys–Pasvalys–Bauska, A11 road Šiauliai–Palanga, A12 road Riga–Šiauliai–Tauragė–Kaliningradas, A13 road Klaipėda–Liepoja, A16 road Vilnius–Prienai–Marijampolė) reaches 1512.27 km. Some roads are located in Lithuania and in the neighbouring countries (Russia, Belarus, Latvia and Poland), though only the sections of roads which are located in Lithuanian territory were investigated.

2.2. Observation on-site

Observation of road landscape on-site includes driving on each road and photo-fixation of characteristic views and panoramas. To identify the particular places of the photo-fixation, the employed observation method relied on peculiarities of landscape perception which are presented by Cullen (1995). There are three expositional zones of anthropogenic objects:
  – predominance of scale (up to 3 h, where h is an object's height);
  – predominance of scenery (up to 3.5 km);
  – the zone of psychological effect (up to 6 km).
The level of coverage of the zone of predominance of scale is too low and, consequently, improper for taking pictures. On the contrary, the zone of psychological effect embraces large areas: even though distant objects could be seen, they become entirely impersonal. In the zone of predominance of scenery objects which are situated beyond the respective boundaries are perceived as an unclear background, and objects which are situated within the

boundaries are clearly seen. Therefore, the landscape was photographed as close as each 3.5 km at least.

However, the distance fits the research if the corresponding road is built on a flat landscape and if there is a considerable visual space around it. Otherwise, the distance must be shortened in places with altering landscape, where a prominent dominant is inserted. In accordance with the principles of serial vision, the space can be divided into "here" and "there" (Cullen 1995). Based on the above developed peculiarities of the perception of landscape, places of the photo-fixation of the road landscape are identified: a) if a route is straight and a road is located in a flat landscape – as often as each 3.5 km at least, b) in the places of alteration of landscape, c) when a prominent dominant appears within a field of view of a landscape, d) after a turn or on the top of a hill when one merges into another space, or "there".

The pictures were taken on days with similar weather conditions. Moreover, several photo-shots of the same landscape helped trace the sceneries. It was purposive because a focusing angle of a camera is narrower than a field of human sight, and several photo-shots can thus be integrated into a one-piece picture which reflects the whole scenery of a landscape. This technique was applied to a mixed landscape. In total, 1505 pictures were made. However, only the pictures which best reflected the sceneries (288) were chosen for presenting them in the survey.

Besides, as different weather conditions do, different seasons affect the comprehension of a roadscape as well. One of the examples proving this fact is Drottenborg's (2002) experiment when she researched driving safety in the same landscape before and after blossom of wild cherries. According to her, more beautiful landscape during blossom caused about 5% decreased driving speed. This experiment demonstrates that different seasons do affect the comprehension of landscape. Yet an assessment of hedonomics of the sample roadscapes during different seasons and the subsequent comparison of the findings necessitates a separate extensive study and exceeds the scope of this paper. Hence, this issue is left for further research.

2.3. Quantitative survey

The selected pictures became a part of the questionnaire of the quantitative survey. Though the questionnaire includes demographic questions, its main part is composed of the numbered pictures, and the lists of evaluation criteria below them. The choice of the criteria is based on the idea of Kansei engineering method. Recently, the method has been used in an early stage of creation of a product in order to make the product pleasurable. Kansei engineering method enables to measure perception and link it to design, beauty and aesthetics criteria (Hartono, Chuan 2011). With reference to the method (Llinares, Page 2008), 123 words and phrases, describing road landscape, from various scientific literature were distinguished. Later affinity analysis was applied, and a group of 10 students participated in the process. They grouped 123 words and phrases into 28 groups. This resulted in 28 words and phrases,

describing Kansei feelings. These words and phrases were interconnected and thus constituted 14 pairs of opposing words and phrases:

- interesting – boring;
- natural – artificial;
- safe – unsafe;
- skittish – monotonous;
- beautiful – ugly;
- outstanding – ordinary;
- harmonious – chaotic;
- sophisticated – primitive;
- enabling relaxation – enabling stress;
- majestic – modest;
- pleasant – unpleasant;
- elements match for surrounding environment – elements do not match for surrounding environment;
- left an intense positive impression – left an intense negative impression;
- I would like to drive on this road – I would not like to drive on this road.

It is important to emphasize that the latter criterion indicates the level of satisfaction experienced by an aesthetic consumer. Scales of semantic differential with five levels of gradation were provided in order to get measurements of each of the pictures. Circles were assigned to the values: the smallest circles meant the smallest approval, and the biggest circles meant the greatest approval. The sequence of the circles varied from line to line, and the sequence of the distinguished pairs was mixed from picture to picture. This was done in order to keep the respondents thinking and prevent them from giving automatic responses.

The questionnaires were placed in a Lithuanian portal of internet-based surveys and were accessible to all who wanted to participate in the survey or had an electronic link to the survey. The total number of respondents reached $N = 249$. The data were analysed by *PASW Statistics 17.0* and became subject to regression and correlation analyses. Finally, the results of the analyses and the relevant pictures were analysed integrally. Then the guidelines for the development of desirable to drive roadscape were proposed. This stage of the methodology rests on the brief descriptive analysis. Descriptive statistics method was used for the identification of the most and least desirable to drive road landscape in Lithuania.

3. Results and findings

3.1. Identification of factors affecting willingness to drive

Willingness to drive on a road is presented here through the variable *Would like to drive*. First of all, it was identified on which variables and how strongly the variable *Would like to drive* depended. Eight models of regression equations were proposed. With reference to the coefficients' and ANOVA tables, all the β-coefficients, except for constants in the 2nd ($p = 0.857 > α$), 3rd ($p = 0.209 > α$) and the 4th ($p = 0.079 > α$) models, were statistically significant ($p = [0.000; 0.045] < α = 0.05$). The partial correlation

coefficients showed that only the 1st– 5th models had no coefficients which do not improve the equation statistically significantly. Based on the findings above, only the 1st and the 5th models are selected for further analysis.

According to the table of model summary, the 5th model has a bigger adjusted determination coefficients $r^2_{adj} = 0.602$ and a smaller standardized error of the estimate $S^2_e = 0.5528$ in comparison to the 1st model ($r^2_{adj} = 0.431$, $S^2_e = 0.6605$), therefore the 5th model was selected for the analysis.

The linearity of the regression equation was confirmed (according to ANOVA table, $p = 0.000 < α = 0.05$), and the hypothesis about the equality of the coefficients to zero was denied ($p = 0.000 < α = 0.05$). The dispersion of the residuals was analysed through a scatter-plot and appeared to be constant. The normality of distribution of the residuals was verified by histogram, normal P-P plot and Kolmogorov-Smirnov test ($p = 0.328 > α = 0.05$), and appeared to be consistent with normal distribution. The problem of multicollinearity was absent in the model because all the variance inflation factors (VIF) for multicollinearity were below 4 ($VIF_{β1} = 1.679$, $VIF_{β2} = 1.623$, $VIF_{β3} = 1.675$, $VIF_{β4} = 1.660$, $VIF_{β5} = 1.404$). Autocorrelation was absent, which was confirmed by Dubrin-Watson statistical value 1.950 ~ 2. There were no outliers in the data because moduli of all the standardized residuals were <3.5.

Thus, the regression equation is suitable for making forecasts:

$$\textit{Would like to drive} = -0.515 + 0.393\,(\textit{Elements Match}) + 0.234\,(\textit{Left Positive Impression}) + 0.231\,(\textit{Pleasant}) + 0.169\,(\textit{Sophisticated}) + 0.147\,(\textit{Skittish}).$$

With reference to the equation and the confidence intervals for β coefficients, the forecast with a 95% guarantee was made:

- if tune of elements of a road landscape increases by 1 conditional unit, the willingness to drive on the road will increase by 0.307–0.480 conditional units;
- if positive impression left by a road landscape increases by 1 conditional unit, the willingness to drive on the road will increase by 0.154–0.313 conditional units;
- if pleasurability of a road landscape increases by 1 conditional unit, the willingness to drive on the road will increase by 0.147–0.315 conditional units;
- if sophistication of a road landscape increases by 1 conditional unit, the willingness to drive on the road will increase by 0.079–0.260 conditional units;
- if skittishness of a road landscape increases by 1 conditional unit, the willingness to drive on the road will increase by 0.076–0.218 conditional units.

Fig. 2 illustrates unstandardized predicted values for the variable *Would like to drive*, their means and confidence intervals. Fig. 2a shows the mean values of unstandardized predicted values, lower mean 95% confidence intervals, upper mean 95% confidence intervals, lower

mean individual 95% confidence intervals and upper mean individual 95% confidence intervals for the variable *Would like to drive*. Fig. 2b shows the unstandardized predicted values for lower mean 95% confidence intervals, upper mean 95% confidence intervals, lower mean individual 95% confidence intervals and upper mean individual 95% confidence intervals for the variable *Would like to drive*.

However, it is important to emphasize that other factors which were not included in the research have a greater impact on the willingness to drive on a certain road ($|-0.515| > |0.393| > |0.234| > |0.231| > |0.169| > |0.147|$). Moreover, the unknown variables reduce the willingness. The provided regression equation accounts for 60.2% of the total dispersion, while other factors determining the willingness to drive on a certain road remain trackless and reach 39.8% of the total dispersion. Thus, tracking the missing factors and forming a refined regression equation is a challenge for further research in the area.

The equation was also verified. The performed regression analysis rests on an assumption that intervals between values of all the variables are equal, therefore the ordinal variables were assimilated with interval ones, thus making implementation of regression analysis possible. However, additional measures, aimed at ordinal variables, help to indicate if the equation is valid. Table 1 shows rank (Kendall r_{tau_b}) and monotony (Spearman r_s) correlations of relevant variables with *Would like to drive*. All the variables are considered to be relevant, except for demographic characteristics which showed no or very weak correlation with *Would like to drive* ($r_{tau\_b} = [|-0.003|; |0.134|]$, $r_s = [|-0.003|; |0.153|]$).

Data in the Table 1 confirms not only the comparatively stronger correlations between the variable *Would like to drive* and other variables in the equation, but their sequence as well: *Elements Match*, *Left Positive Impression*, *Pleasant*, *Sophisticated* and, finally, *Skittish*. Thus, the equation is valid.

3.2. Guidelines for development of desirable to drive road landscape

It is also important to define how the descriptive variables are treated. The three best and the three worst evaluated pictures (means) of road landscape were distinguished by the independent variables in the equation. Based on them, some guidelines for the development of desirable to drive road landscape which satisfies aesthetic needs of consumers are provided (Table 2).

As the Table 2 shows, the guidelines based on the analysis of the selected pictures are alike, though the pictures are different. The best visual examples of the respective aspects are shown in the Table 2. However, despite the different sceneries with varying trees, buildings, waters and supporting engineering infrastructures, the guidelines are universal to a large extent regardless of the certain scenery on a certain picture.
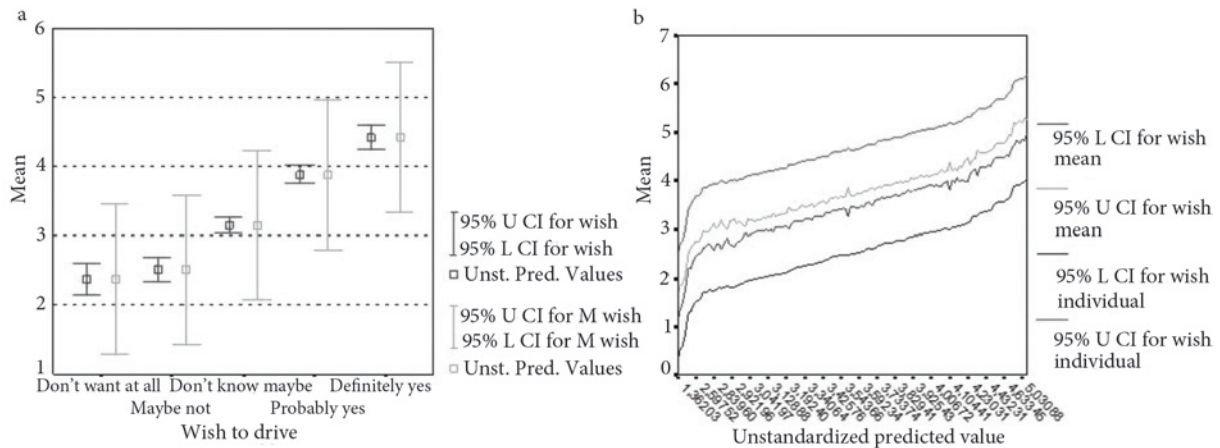

Fig. 2. Unstandardized predicted values for the variable *Would like to drive*, their means and confidence intervals:
a – mean values of confidence intervals; b – predicted values and confidence intervals

Table 1. Correlations between *Would like to drive* and other relevant variables

	Pleasant–Unpleasant	Relaxing–Aggressive	Safe–Unsafe	Skittish–Monotonous	Interesting–Boring	Outstanding–Ordinary	Harmonious–Chaotic
r_{tau_b}	0.525	0.401	0.271	0.479	0.430	0.394	0.339
r_s	0.566	0.438	0.295	0.525	0.465	0.425	0.365
	Majestic–Modest	Natural–Artificial	Beautiful–Nasty	Sophisticated–rough	Impression positive–Not at all	Elements match–Do not	
r_{tau_b}	0.356	0.263	0.456	0.509	0.568	0.648	
r_s	0.388	0.288	0.488	0.551	0.608	0.692	

Table 2. Factors affecting consumer satisfaction, their specifications and visual examples

Factor	Range of means	Guidelines	The best evaluated picture by aspect
Elements Match	1.82–4.33	– No less than 60% of nature elements; – flexuous, but well-seen roads; – either natural or ornamental water is desirable; – short corridors of trees; – middle-sized visual spaces; – avoid conspicuous objects with sharp angles; – avoid engineering gear and wiring supporting constructions.	Landscape of the road A16
Left Positive Impression	2.11–4.44	– No less than 70% of nature elements; – flexuous roads; – either natural or ornamental water is desirable; – short corridors of trees; – asymmetric sceneries; – middle-sized visual spaces.	Landscape of the road A6
Pleasant	2.44–4.67	– No less than 78% of nature elements; – flexuous, but well-seen roads; – either natural or ornamental water is desirable; – short corridors of trees; – asymmetric sceneries; – middle-sized visual spaces.	Landscape of the road A16
Sophisticated	2.17–4.75	– No less than 64% of nature elements; – flexuous, but well-seen roads; – either natural or ornamental water is desirable; – short corridors of trees; – asymmetric composition is prioritized; – middle-sized visual spaces.	Landscape of the road A6
Skittish	1.89–4.56	– No less than 64% of nature elements; – urban dominant is desirable (a living house, road-service infrastructure, a historic or sacramental building); – either natural or ornamental water is desirable; – short corridors of trees; – middle-sized visual spaces.	Landscape of the road A5

Further analysis of the data made it possible to select 25% of road landscape which was evaluated by respondents as the most *Would like to drive* (Fig. 3).

The mean evaluation measures of the pictures vary from 4.67 to 4.15, and the content is consistent with the guidelines derived from the analysis of the pictures by aspects.

3.3. Identification of *Would like to drive* road landscape

For the identification of *Would like to drive* road landscape (the case of the main Lithuanian roads), the method of descriptive statistics was applied. Table 3 demonstrates distribution of roads' landscape into five groups according to the respondents' opinion: from *Would not like to drive* to *Would like to drive*. The marked cells indicate the highest response percentages for each road.

Obviously, the landscape of all the roads is neutrally or positively evaluated. There is no road landscape which was distributed into *Would not like to drive* or *Would better not drive* groups. This phenomenon is explained by the cultural features of Lithuanian consumers: they are not keen to evaluate items very badly in order to avoid extremeness. A typical Lithuanian consumer evaluates an unlikely item as *I don't know* or *I have no opinion on this case* instead of *I don't like it*. Supposedly, a part of road landscape which was distributed into the group *Neither would like nor would not like to drive* has to be in the group *Would better not drive* or even *Would not like to drive*. The landscape of A6 road (Kaunas–Zarasai–Daugpilis) is identified as *Would like to drive* road landscape. It is a historic road and it was a very important post road of the 19th century between St. Petersburg (Russia) and Warsaw (Poland). Still some buildings of post stations, pikes, passengers' houses and lodges of the 19th century are located along the road. In Zarasai region the road is surrounded by lakes. This road landscape has a great aesthetic, cultural and economic potential. The case of A13 road landscape demonstrates the equal amount of percentage in both *Neither would like nor would not like to drive* and *Would better drive* groups. However, the fact that this road landscape has 9.0% in the group *Would like to drive* distributes A13 road landscape into the group *Would better drive*.
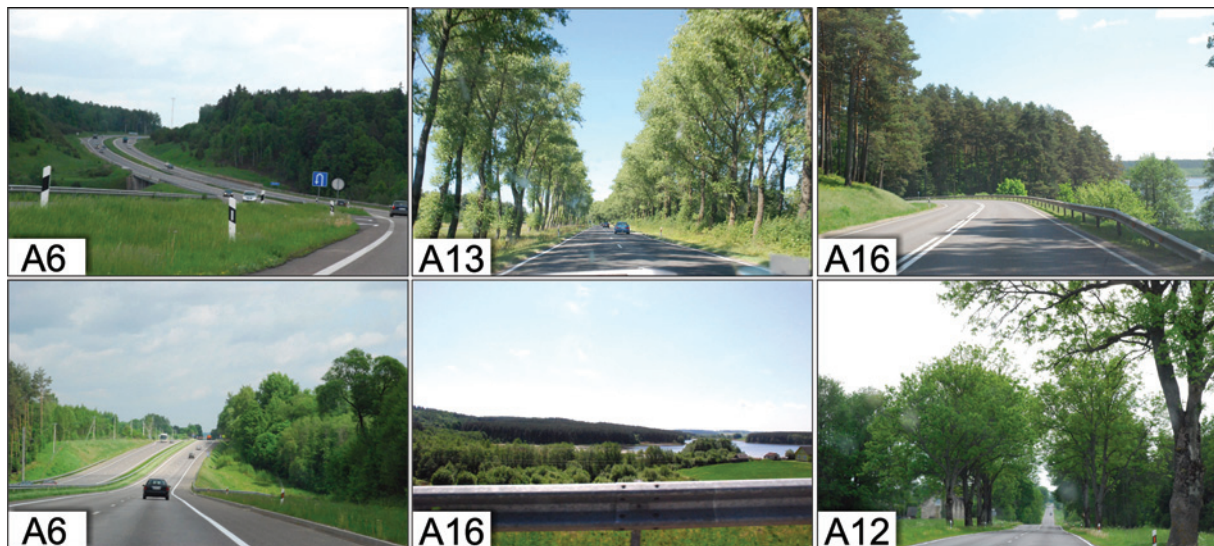

Fig. 3. The most *Would like to drive* road landscape (by respondents). *Note:* road number is shown in the lower left corner of each picture

Table 3. Distribution of roads' landscape into groups and % within a group

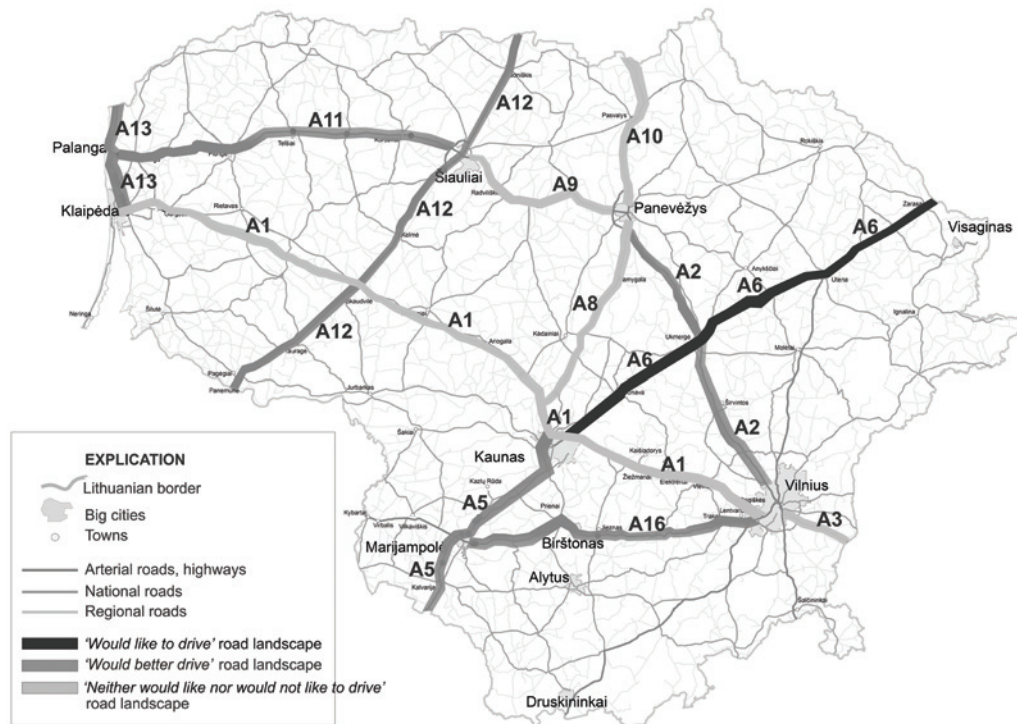| Groups / Landscape of road	Would not like to drive	Would better not drive	Neither would like nor would not like to drive	Would better drive	Would like to drive
A1	4.8%		52.4%	33.3%	9.5%
A2			28.6%	57.1%	14.3%
A3		4.8%	47.6%	38.1%	9.5%
A5		25.0%	25.0%	40.0%	10.0%
A6			22.2%	33.3%	44.5%
A8		15.0%	40.0%	35.0%	10.0%
A9	10.0%	15.0%	35.0%	25.0%	15.0%
A10		15.0%	45.0%	30.0%	10.0%
A11	10.5%	10.5%	36.8%	42.2%	
A12			28.6%	71.4%	
A13			45.5%	45.5%	9.0%
A16		5.0%	25.0%	50.0%	20.0%

Fig. 4. Distribution of landscape of the main Lithuanian roads according to the willingness to drive on them

According to the Table 3 the map of distribution of neutral, *Would better drive* and *Would like to drive* road landscape is presented (Fig. 4). The map demonstrates the consumers' opinion about the product, i.e. the landscape of the main Lithuanian roads.

4. Conclusions

1. Today, consumers cannot be simply seen as agents looking for individual economic benefit. Instead, they are satisfied with products that are not harmful to their social interactions and actors within them. Moreover, contemporary consumers, referred to as generalized consumers, more than ever before are concerned with intangible elements, such as aesthetics. Road users are now also seen as consumers looking for aesthetics while driving. In addition, aesthetics within the area of land management is supposed to be one of the necessary elements in creation of road landscape.

2. In this paper, an equation is provided for building or restructuring roads in such a way which would satisfy their users and cause their willingness to drive on them. The willingness to drive on a road is dependent on the level of tune of all the elements comprising a road landscape, amount of positive impression which the road landscape leaves to its users, as well as the road landscape's pleasurability, level of sophistication and skittishness. These factors affect the willingness to drive on a certain road to varying extents which are reflected in the equation. For further evaluation of roadscape just the independent variables from the equation have to be used.

3. Desirable to drive road landscape which satisfies aesthetic needs of consumers includes at least 60% of nature elements, flexuous but well-seen roads, either natural or ornamental water, short corridors of trees, middle-sized visual spaces and, preferably, asymmetric sceneries and historic or sacramental buildings in places. In addition, conspicuous objects with sharp angles, as well as engineering gear and wiring supporting constructions alongside roads reduce the willingness to drive on the roads. The guidelines are useful for the planners of new and existing roads.

4. The research confirmed the great aesthetic, cultural, touristic and economic potential of the A6 road (Kaunas–Zarasai–Daugpilis) landscape. The spirit of the road, its landscape and infrastructure of the 19th century are attractive factors for the development of tourism in this area. The landscape of A2, A5, A11, A12, A13 and A16 roads, which is marked as *Would better drive*, have less but still enough potential for making it desirable to drive and attractive for a strict consumer's aesthetic needs.

5. However, the paper poses some questions for further research. The equation accounts for 60.2% of all factors influencing consumers' willingness to drive on a certain road. Moreover, in the equation, the influence of unknown aspects is bigger than the influence of the known factors, taken separately. In addition, it is important to assess how road landscape is accepted by road users during different seasons of the year. These questions are challenges for further research, and the equation, thus, remains open for refinement. Finally, the equation is inevitably influenced by

Lithuanian cultural peculiarities, therefore it is necessary to perform similar research in other cultural environments and compare the results.

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