ACTA FACULTATIS XYLOLOGIAE ZVOLEN, 63(2): 163−173, 2021
Zvolen, Technická univerzita vo Zvolene
DOI: 10.17423/afx.2021.63.2.14

MAPPING THE WOOD COLOUR PREFERENCES AMONG POTENTIAL CUSTOMERS

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ABSTRACT

The knowledge of the requirements and specifications of the current, as well as potential customers, is a necessary condition for the successful operation of enterprises in the market. The goal of this paper is to map and monitor the preference of Slovak customers for colour of wood products. The mapping of the interest in the wood colour among potential customers was carried out using the interrogating method in the form of a questionnaire. The research results were evaluated descriptively and graphically. Respondents stated that they were most affected by quality when buying wood products. Another result is that the respondents focus on domestic rather than tropical woody plants. Although tropical woods are becoming popular since they have a very attractive colour. Most respondents, specifically 80%, focus on the natural colour of wood. Respondents prefer mainly brown matt colours with a distinctive grain, followed by white and grey colours. A smaller number of respondents choose black and yellow colours of wood. Therefore, it is necessary to increase the supply of wood and furniture products with the demanded colours, it means the natural wood colours, grey, white and brown colours. The results of the research represent an opportunity for Slovak wood-processing and furniture manufacturing enterprises to adjust and flexibly react by the range of their products according to the needs and preference of potential customers which can bring them higher revenues and also help them overcome the current problems related to "COVID crisis".

Key words: wood colours, wood steaming, empirical research, customers` preferences.

INTRODUCTION

One of the hardest tasks of an entrepreneur is to meet the requirements of the market which, in other words, means managing supply and demand. How to manage supply and demand is a question that leaves even the best business owners and operation managers flummoxed. Even though there are different methods for estimating preference through forecasts and increasing supply through manufacturing, the matching of supply and demand is never reliable or predictable. In these circumstances, a manager has to work with the best estimation that he has. Thus, there is a need for managing supply and demand.

Meeting the needs and preferences of the customer while making a profit is the key to business success, and the process has become both harder and easier. It is easier in that modern technology makes it easier for businesses to identify, learn about and reach their market, but harder in that customers are becoming more discerning, less loyal and have increasingly high expectations.

If looking at the demand, there are several methods through which demand can be anticipated by both qualitative and quantitative methods. However, there are several instances where demand is not matching the supply. In some cases, there is an increased supply whereas preference is low. Thus, these instances require methods that push up the demand. The most basic one involves establishing price incentives (FERRI and TRAMONTANA 2020). The current authors previously discussed penetration pricing and break-even pricing. What these two models have in common is mainly the purpose of gaining fast market share. These two models can be an example of price incentives. But providing price incentives can be risky due to the customers' perceptions regarding the quality of the product.

Another method of pushing up demand is to provide complementary services. And here is where the family life cycle concept can be considered a relevant technique. KIRMAN *et al*. (2007) stated that by conducting a proper segmentation and taking into consideration the consumers from the different stages of the family life cycle, we can anticipate what the consumers need, besides what they have already been provided. Once the offered product/service accomplishes more of the needs of the customers, the demand is going to grow.

According to CLAVERIA *et al*. (2020), some of the well-known strategies for pushing up the supply consists of using part-time employees, increasing customer participation, cross-training employees and scheduling work shifts. However, one of the major risks in increasing supply is the effect it has on the quality of the product. This is why the operations should be scalable. If in case, the supply is regularly not matching demand, then it is necessary to invest in a new factory or new methods to increase production. This is commonly known as the bottleneck effect. While the demand increases, but the supply doesn't happen, a bottleneck is created which evokes stress at the customer. And the customer then easily shifts to another brand. Thus, managing supply and demand becomes critical.

Customer behaviour is a set of patterns of customer thoughts and actions that are relevant to marketing in areas such as product design, pricing, promotion, customers experience and sales. Some examples of customer behaviour can be mentioned in the following. Needs represent the process by which customers decide they need something. Motivation is a customer´s fundamental drive. A customer uses the process of search to discover and find products (SHIOZAWA 2020). After that, purchasing decision comes when a customer decides which product to buy. Why customers stick to a product so that they make repeat purchases and why they leave from a particular producer responds to the so-called customer loyalty. Almost every customer has some level of price sensitivity, which means how he/she feels about prices in a particular product category. Then it results in customer´s perception of things such as brand, quality, reputation, value and risk. After the product utilization by a customer, it comes the phase of post-purchase evaluation of a particular product where a customer can share information with others in various product reviews, complaints and recommendations of further and repeated purchase.

As presented by PUAH *et al*. (2017), meeting the customers' preference is a key performance to meet the strategic goal of an enterprise to reach a profit or to increase market share. Isolating the segment of the market appropriate for the product offering and knowing what type of person inhabits is the key to developing an in-demand product. Much money and time have been spent in the past by organizations trying to sell goods to a market before they have properly understood whether there was a serious need for it. Much data is gathered from current and potential customers now due to constant data capture through apps, websites and social networks so it is easier for a business to analyse who their customers are and what they want. Businesses need to understand their customer´s expectations and always

strive to meet or even exceed them. Generating preference for the product requires much more than simply releasing it onto the market. It is necessary to conduct research, determine what consumers´ needs are, establish an enterprise as a leader in the industry and repeatedly prove the product value.

Wood colour is an important material property that has an influence on customers´ decision-making during the purchasing process. It seems that wood colour belongs among the most decisive purchasing criteria. (KADLEČEK 1989). The surface of the wood can be with its natural colour or it can be improved by painting. There are also external features that affect the change of wood colour like moisture content, humidity, UV radiation, thermal conditions etc. The Colour of wood differs not only according to various wood species but also according to various parts in the wood trunk. The most significant colour difference is between sapwood and heartwood (KUBOVSKÝ and KAČÍK 2010). By the steaming process (under demanded specific conditions - time, temperature pressure) of wood, colour can be unified or changed into the colour of tropical wood species. Steaming of wood also supports dimensional stability, wood softening and plasticizing (DZURENDA *et al.* 2020).

According to the research of NGUYEN *et al*. (2020), the colour of wood is an important material property and the first sight that a customer could perceive. So, it can highly impact customer´s decision making. Wood processing and furniture making enterprises should meet various and specific demands of contemporary customers but at the same time, they have to focus on the demands of new potential customers. In order to satisfy market preference, enterprises have to focus on their good reputation, quality of their products, well-managed processes within the supply chain and material flow. At the same time, it is also necessary to take into account the effectiveness and efficiency of all these above-mentioned processes. The focus should be placed also on the latest trends and according to them to diversify the portfolio.

According to STOJANOVIC *et al*. (2020), BUCKINGHAM *et al*. (2009), the market is typical by constant and running changes and enterprises should meet this variable demand. Competitiveness among enterprises depends also on technology equipment, on quality and skills of their employees and finally also on enterprise business policy. Related to the above mentioned, it is necessary to analyse customers´ preferences. The supply of wood products could be in natural colours of native wood. Much more trend is to adjust surface by finishing processes like penetrating, painting and bleaching (ANDAC 2020).

The goal of this paper is to determine principal customers´ preferences of the enterprise supply. The authors analysed, customers preferences for various wood colours. According to the above mentioned assessment, for the business success, a diversified offer for various market segments should be prepared and flexible reactions on changing preferences of demand shall be performed. The specification and structure of the most demanded wood colours are the findings of the research.

METHODOLOGY

The research methodology consisted of several steps. At the beginning, it was necessary to carry out a literary review of domestic and especially foreign authors based on the analysis of secondary sources. Then it was necessary to analyse the primary sources obtained by the empirical research, the method of questioning. The questionnaire was focused on mapping the preference of potential customers for colours of wood. Selected file of respondents was chosen on the base of random stratified choice (KOZEL 2006). Addressing and collecting data from respondents took place electronically, mainly due to

fast feedback and low complexity. The data of the questionnaire survey were evaluated descriptively, numerically and graphically.

In the next step, the achieved results from the descriptive and graphic processing of the questionnaire survey, which was carried out on a research sample, i.e. potential customers in Slovakia, were evaluated. From the obtained data, information from customers was processed, which can help wood-processing enterprises in deciding what to focus on in the production of wood products, respectively, what customers are more interested in when buying, or how they should expand their offer. At this stage, the analysis of primary and secondary sources was done and the method of summarization were used.

The questionnaire consisted of two parts, with a total of 20 questions. The first part of the questionnaire contained classification questions, which contained the basic characteristics of the respondents. The classification questions verified the gender, residence, age of the respondents, the region in which they live, their highest level of education as well as their current employment and their monthly income. The second part of the questionnaire consisted of questions to map the interest in the colours of wood. The intention was to find out which of the mentioned factors most influence the purchase of wood products, if the respondents could not choose anything from the given factors, they had the opportunity to express their opinion, or to mark the box "other". The questions were also aimed at whether customers care about the type of woody plant when buying, or whether they prefer solid, chipboard, fibreboard or veneer wood. Other questions concerned the type of woody plants, what woody plants they buy most often, and what colour they prefer. When asked about the type of wood, respondents could mark more than one answer. They had a choice of 12 woody plants or an opportunity to express their opinion in the box "other", if their woody plant was not in the offer. The authors also verified whether the respondents like more gloss or matt wood, wood with a distinctive grain or without a visible grain.

The size of the examined sample was determined according to the following mathematical relation, which is intended for the calculation of the minimum number of respondents (KOZEL 2006):

$$n \geq \frac{z^2 \times p \times (1-p)}{c^2} \quad (1)$$

where:

n – minimum number of respondents;

z – reliability coefficient (at confidence level of 95% the variable z = 1.96);

p – the proportion of the character (for unknown values it is substituted for p = 0.5);

c – acceptable margin of error (significance level was set at 5%).

Using the formula above, it was possible to calculate the minimum sample size for the survey (KOZEL 2006):

$$n \geq \frac{1.96^2 \times 0.5 \times (1 - 0.5)}{0.05^2} \quad \rightarrow \quad n \geq 384$$

The calculation shows that the sample must consist of at least 384 respondents. The survey meets this condition since 570 respondents took part in the survey.

RESULTS AND DISCUSSION

Up to 72.63% of women and 27.37% of men participated in the survey and all age groups were represented. However, 53.33% of respondents live in the town and 46.67% in the village. Other basic characteristics of the respondents are presented in follow table.

Tab. 1 Characteristics of the respondents.

Questions	Answers			
Age of the respondent	0–18 years old	19–25 years old	26–35 years old	36–45 years old
	1.93%	*66.67%*	*19.12%*	*5.44%*
	46–55 years old	56–65 years old	66 and more years old	
	4.91%	*1.23%*	*0.70%*	
Permanent resident of the respondent	Bratislava region	Trnava region	Trenčín region	Nitra region
	9.12%	*6.49%*	*8.95%*	*7.89%*
	Žilina region	Banská Bystrica region	Prešov region	Košice region
	11.93%	*36.67%*	*12.46%*	*6.49%*
Education	primary education	secondary education without GCSE	secondary education with GCSE	university degree
	2.11%	*3.51%*	*46.14%*	*48,24%*
Employment of the respondent	student	an employee in the private sector	employee in the public sector	sole trader
	59.65%	*25.44%*	*9.65%*	*1.05%*
	entrepreneur	unemployed	retired	other
	1.93%	*1.40%*	*0.88%*	*0%*
Monthly income of the respondents	max. 400 €	401–600 €	601–800 €	801–1,000 €
	52.81%	*9.65%*	*12.63%*	*12.28%*
	1,001-1,200 €	1,201 € and more	-	-
	6.14%	*6.49%*	-	-

Source: authors.

Figure 1 shows that most respondents are affected by the quality of the products when buying wood products, 42.28% respondents think so. These results also correspond to the results of the authors GOLD and FUBIK (2009), VEISTEN (2002). The second factor that influences purchasing decisions according to the respondents is the price of products with a share of 26.67%. Furthermore, 19.12% of respondents stated that their purchase is influenced by the colour of the wood and 10.35% chose the type of woody plant. Respondents also had a choice of product gloss, but none of the respondents marked this option. 1.58% of the total number of respondents marked the option "others". For example, 0.70 % of respondents stated that the appearance of wood influences them at the purchase and 0.35 % marked a combination of all offered options. The achieved results are supported by the research of several authors like DZURENDA and DUDIAK (2020), BAUMGARTNER *et al.* (2013) and DZURENDA (2014).

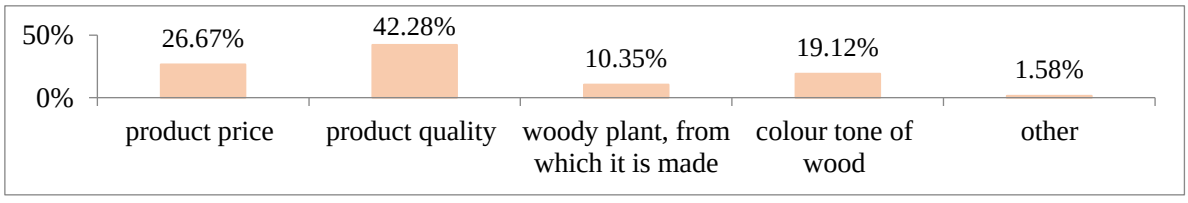

Fig. 1 Factors influencing the purchase of wood products. Source: authors

The gender and residence of the respondents is compared based on the percentage of answers (Figure 2).

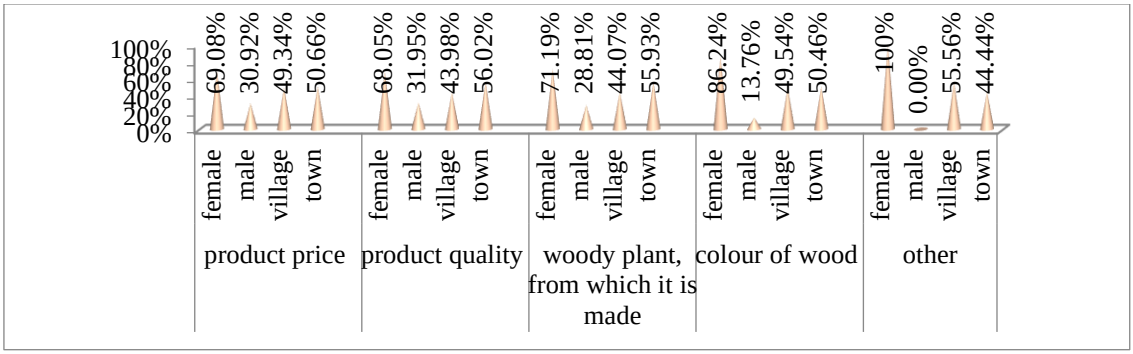

Fig. 2 Comparison of selected classification questions. Source: authors

Figure 2 shows that up to 100% of women expressed the option "other" and stated the above-mentioned options, while no man (0%) marked this option. The second largest proportion of women, – represented by 86.24%, indicated the option of the colour of the wood, while men accounted for 13.76%. Based on this, the colour of wood affects women the most when buying wood products, and men are most affected by the quality of products according to the Figure 2, with a share of 31.95%. Regarding the comparison of residence, most respondents from the town, 56.02%, chose the option of product quality. The respondents from the village reached the smallest percentage, namely 43.98% at this question. It is possible to state and it is also confirmed by the results of the authors KAUSTIA *et al*. (2008), SCHEER *et al*. (2020), ANTOV *et al*. (2020a), ANTOV *et al*. (2020b), ANTOV *et al*. (2021), that respondents from the town prefer the quality of products more than respondents living in the village.

The evaluation of woody plants that most respondents buy is shown in Figure 3. The authors NYRUD *et al.* (2008), DZURENDA (2018) also evaluated these dependencies in their works and achieved similar results.

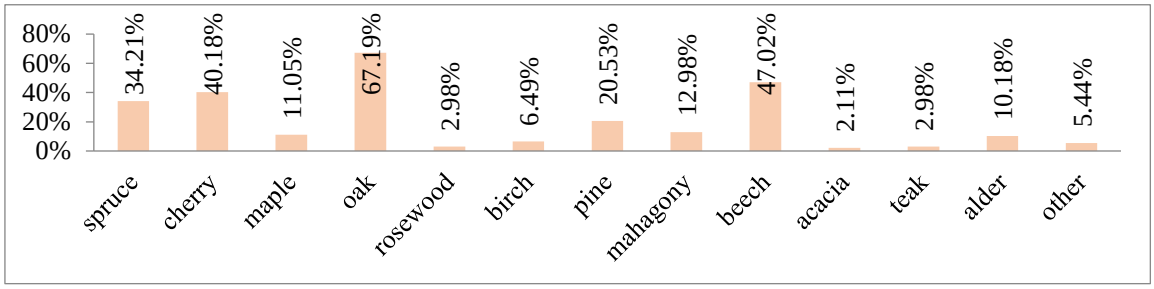

Fig. 3 The most frequently purchased woody plants. Source: authors.

Figure 3 shows the most frequently purchased woody plants. Respondents chose oak as the most frequently purchased wood species, which corresponds to 67.19%. The second most purchased wood species is Beech with a percentage of 47.02%, the third most preferred wood is cherry with 40.18% and finally spruce with 34.21%. This is followed by pine, which is purchased by 20.53% of respondents, mahogany with 12.98%, maple with 11.05% and alder with 10.18%. 6.49% of respondents buy birch, rosewood and teak had the same percentage, namely 2.98%. This is followed by acacia, which accounted for 2.11%. Similar results are confirmed and presented in the work of NORDVIK *et al*. (2010).

Subsequently, the gender and residence of the respondents were compared through classification questions in order to find out which woody plant was the most popular among women and men, and then which trees are preferred by the respondents living in the town and village. SEDLIACIKOVA *et al*. (2020) also dealt with similar sociological factors. As it was possible to choose more options, a summary Figure 4 presents the results.

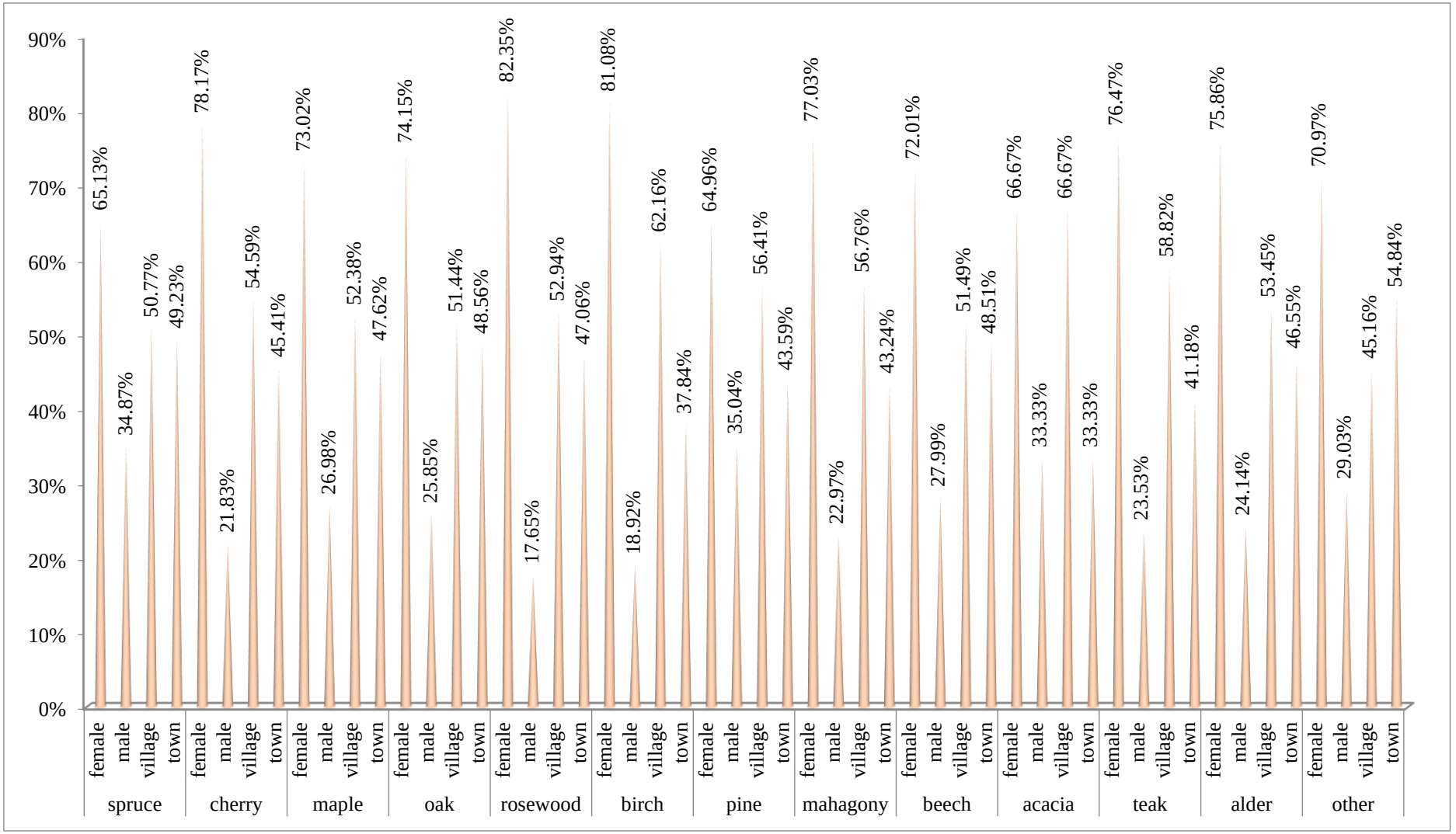

Fig. 4 Comparison of selected classification questions. Source: authors

Figure 4 presents the results, how is each woody plant preferred concerning gender and residence. Women most prefer rosewood, accounting for 82.35%, followed by birch with 81.08% and cherry with 78.17%. For men, pine was the most preferred, accounting for 35.04%, followed by spruce with 34.87%. The least preferred tree species for women was pine with 64.96% and for men, it was rosewood with 17.65%. Respondents who live in the town most often marked acacia, which reached a share of 66.67% and mahogany with a share of 56.76%. On the contrary, among the respondents living in the village, the preferred woods were spruce with 49.23% and beech with 48.51%. Even though the box "other" presented 54.84%, it included various woody plants. The least percentage in the town was reached in the box "other" and in the case of a specific woody plant, spruce was most represented, with 50.77%. Concerning village, acacia had the least percentage of answers, 33.33%. Also, authors like AXELSSON *et al.* (2007) and BECKER *et al.* (2005) claim that social inequalities and quality of life significantly influence the choice of various products.

One of the most important questions in the second part of the questionnaire was the question of which colours the respondents prefer. CROSON and TREICH (2014) also examined these correlations in their research. There was a choice of five basic colours and of course the box "other" to express their preferred colour (Figure 5).

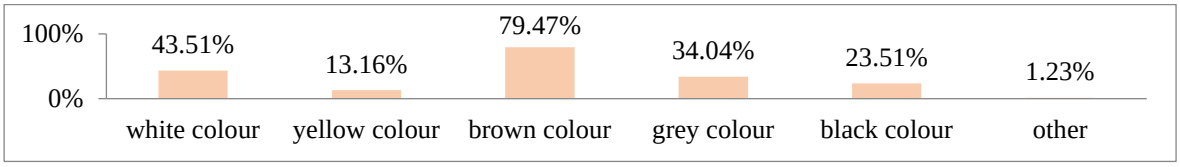

Fig. 5 Preferred colours. Source: authors.

Figure 5 shows that the most preferred colour of wood according to the respondents was brown, confirmed by up to 79.47%. Respondents ranked white as the second most popular colour with a percentage of 43.51%, followed by a grey colour, which accounted for 34.04%. With a share of 23.51%, respondents focused on black colour of wood and 13.16% respondents prefer yellow colour. It can be seen that 1.23% of the respondents complemented their opinion in the box "other". NIJDAM (2009) also presents similar results.

The preferences concerning colours were studied in more detail. The results are shown in Figure 6.

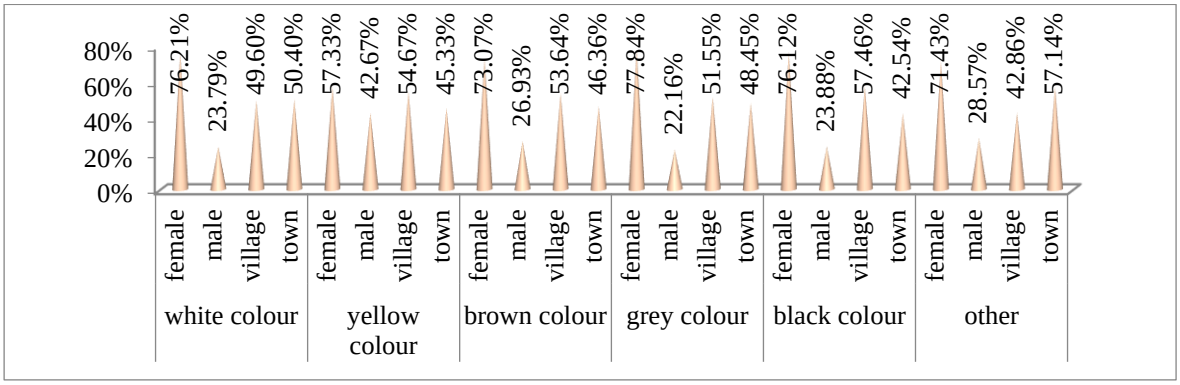

Fig. 6 Comparison of selected classification questions. Source: authors.

Figure 6 shows that women prefer mainly grey colour, which represents the highest percentage of 77.84 % and men prefer yellow colour, namely 42.67%. Respondents living in the town opt for the black colour of the wood, which accounts for 57.46%. Respondents

from the village reached the biggest percentage share in the box "other" and regarding the specific colour, they prefer white colour with a share of 50.40%. Figure 6 shows that respondents focus on all offered colour shades, but women at least on yellow shades and men on grey shades.

CONCLUSION

In the empirical survey, the research sample consisted of 570 respondents living in Slovakia, the aim of which was to map their interest in the colours of wood. The results showed that the quality and type of woody plant are very important for the respondents, even more than the price of these products. Within the comparison of classification questions, interesting results have been obtained. Women are most influenced by the colour of the wood, and this answer reached the highest percentage, namely 86.24%. On the other hand, men especially prefer the quality of wood products. It results that the quality of the products and the type of wood are essential for men, the quality also for women but they do not focus so much on the type of woody plant as on its colour. Respondents prefer mostly oak, followed by woody plants such as beech and cherry. Concerning tropical woods, respondents preferred mostly mahogany. Regarding colours, most respondents, up to 80% prefer the natural colour of the wood. Out of the modified colours of wood, the greatest preference is for a brown colour, followed by white and grey colour. There is less preference for black and yellow colours of wood. Again, the results were compared by gender, where it was found that women prefer grey, white and black colours of wood. For men, the order is yellow, brown and black colours of wood.

The main goal of the paper was to map the preference for colours of wood at the potential customers in Slovakia. The results of the research can serve as a basis for companies operating in the wood-processing industry. It is important for the success of wood-processing enterprises that they take into account, first and foremost, the diverse and specific requirements, both of loyal and regular customers, but especially of potential customers.

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ACKNOWLEDGEMENT

The authors are grateful for the support of the Slovak Research and Development Agency, grants number APVV-18-0520, APVV-18-0378, APVV-17-0456, APVV-17-0583 and APVV-20-0004.

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