Erika Loučanová, Miriam Olšiaková, Hubert Paluš[1]

Consumers' Perception of Eco-Services Innovations Related to Furniture

Percepcija potrošača o ekološkim inovativnim uslugama vezanima za namještaj

ABSTRACT • *Innovations and eco-innovations are effective in building relationships with current and potential customers. One of the possibilities is to innovate in a way that can "materialize" services and at the same time turn them into ecological ones. Such eco-innovations promote sustainable development. The paper focuses on the eco-innovation in services related to furniture. These innovations include ideas such as long-lasting design, maintenance and repair services, remanufacturing of used furniture, and servitization of furniture that includes furniture leasing and renting. The research applied through the Kano model points out the most accepted service innovations in the area of furniture by Slovak respondents. The results present the differences in preferences of customers regarding the individual provided services. It follows that the popularity of individual services is connected with their perception either as traditional innovations or radical ones. Slovak customers prefer financial services supporting purchase of furniture, transport, second chance service, and services related to furniture maintenance and repair.*

KEYWORDS: *innovation; ecological innovation; services; consumers; furniture industry; Kano model*

SAŽETAK • *Inovacije i ekološke inovacije na području proizvodnje namještaja učinkovite su za izgradnju odnosa s postojećim i potencijalnim kupcima. Jedna od mogućnosti inoviranja usluga jest da se one „materijaliziraju" te da istodobno budu ekološke. Spomenute ekološke inovacije promiču održivi razvoj. Ovaj je rad usmjeren na ekološke inovacije usluga vezanih za namještaj. Takve inovacije podrazumijevaju ideje kao što su dugotrajni dizajn, usluge održavanja i popravaka, obnovu rabljenog namještaja te upotrebu namještaja uz plaćanje naknade (npr. leasing i najam). U radu su primjenom Kanoov modela prikazane preferencije inovativnih usluga vezanih za namještaj u Slovačkoj. Rezultati predočuju razlike u preferencijama korisnika glede pojedinih usluga. Pokazalo se da je popularnost određenih inovativnih usluga povezana s percepcijom ispitanika ovisno o tome smatraju li te inovacije tradicionalnima ili radikalnima. Kupci iz Slovačke financijski preferiraju usluge koje podržavaju kupnju namještaja, prijevoz, ponovnu upotrebu te usluge povezane s održavanjem i popravkom namještaja.*

KLJUČNE RIJEČI: *inovacije; ekološke inovacije; usluge; potrošači; industrija namještaja; Kanoov model*

---

[1] Authors are teachers and researchers at Technical University in Zvolen, Faculty of Wood Sciences and Technology, Trade and World Forestry, Department of Marketing, Zvolen, Slovakia.

1 INTRODUCTION
1. UVOD

Many companies providing services significantly contribute to the macroeconomic and social development of society. This is also the reason why many countries currently support entities that focus primarily on service delivery in their activities. Data, information and knowledge are intangible goods produced and provided mainly by the service sector. Effective distribution and use of knowledge is not an automatic process, it requires support functions. This is one of main reasons why the focus has been given to put the services sector and its specificities in the field of innovation in the centre of economic policy research during the previous years. The structural change from a technology-oriented economy made up of industrial production to a company providing services is also reflected in the change in innovation processes. In essence, the innovation process is considered to be a learning process that creates or acquires new knowledge and enables its economic use (Miles, 2008).

The importance of innovation processes, widely recognized at empirical and theoretical levels, and the growing significance of services in productive systems caused a higher attention in the area of services innovation. However, the analysis of innovation in the service sectors is complex in two respects – on one hand, the theory of innovation has evolved with regard to the analysis of technological innovations in manufacturing; on the other hand, it is difficult to measure the specific characteristics of services (especially their output) by traditional economic methods (productivity) and to reveal options how to improve or change them (at a qualitative level) (Gallouj and Weinstein, 1997).

Innovations supported by new technologies are being introduced at an increasing rate (Ringe *et al.*, 2015). Shorter life cycle times point to the importance for the companies to timely make their decisions to innovate. The success of innovation is influenced by the time to embrace innovation, which seems to be an important marketing decision. It is more challenging to be successful with innovation in a market where service companies operate. Service innovation is a challenging concept that is difficult to define unambiguously. This problem is understandable taking into account the size and scope of the service sector.

Service innovation cannot be one-dimensional. Various innovations may serve different objectives and may take various forms: to differ from the competition, provide services more effectively, provide assistance, create a unique experience or achieve results. These objectives help to understand the type of development of service innovation (including service package innovation, process innovation, social innovation, experience innovation or business model innovation). Service innovation also causes changes in consumers' behaviour which may result in a change of brand perception, etc. (Martin *et al.*, 2016; Loučanová *et al.*, 2015).

Technological development is usually used as a means to create new or improve existing products and processes within the services innovations, but it does not offer technological progress itself. Adequate sales and marketing methods are essential, too. The organization of the innovation process focuses not only on the research and development departments that are known in manufacturing companies, but also includes other areas. Information and communication technologies play a central role in the innovation process for service providers due to their orientation to data processing and the resulting intensity of information.

However, services should consider their specific characteristics, which are also taken into account for the implementation of innovation processes (e.g. services are intangible and thus their properties are not easily explained to the customer). The specificity of some services limits efforts to standardize them. A very significant feature of services is their integration with customers because many services are characterized by very close relations with customers or by the integration of external factors into the production process. The process orientation of most services requires close contact with customers, and this can be considered a success factor for service providing companies. Customer integration is based on the mutual production and consumption of services which is the main characteristic of services. However, information technologies help to reduce the synchronization of time and place between the service provider and the customer, which makes this specific feature irrelevant in some areas (Hipp and Grupp, 2005).

The diversity of services is their typical feature so it follows that service innovation and innovation processes may take various forms. The services sector includes economic activities, which are relatively diverse, and therefore, it is difficult to generalize them.

We can conclude that what applies to the service sector as a whole, does not apply to individual types of services. Den Hertog (2000) presents that services innovations can be better understood from several perspectives:

– In terms of the service concept, which means providing a new service in a particular market or a new value for the customer that is included in this service. Many innovations present new ways to solve potential problems, or for some types of services innovations represent a new arrangement/structure (e. g. possibilities of organizing business in different ways - whether they are more or less specialized, or more or less focused on quality or cost savings).
– In terms of the client interface, changes are obvious in the way clients are involved in service design,

production and consumption of services that are taken into account (e.g. some services offer self-service options for their clients).

– In terms of service delivery system – changes are reflected in the way how service providers distribute their services. Many innovations concern the electronic providing of services, but there are also innovations in the area of transport or packaging.

– In terms of technology that allows better efficiency of information processing, as well as increasing the overall quality and efficiency of provided services.

Many innovations in services represent a combination of four above mentioned perspectives (aspects). Service innovation referring primarily to one dimension may require changes in other dimensions. The first aspect mainly concerns the service itself in its main feature - immaterial, while dimensions 2 and 3 mainly concern the intensity of the client's involvement in the services production. Dimension 4 has more in common with traditional product innovations, with a particular emphasis on new innovations in information technology. Innovations in any of these respects can be more or less complementary or completely radical, requiring more or less new knowledge and reorganization of production processes (Miles, 2008).

There are several ways in which the service innovation process itself can take place. Toivonen and Tuominen (2009) identified five innovation processes with respect to their degree of formality. In the sequence from less to more formal processes, we recognize:

– internal processes without a specific project (i.e. unintentional and incremental innovations related to an existing service),

– internal innovation projects (i.e. intentional projects aimed at improving service production systems and their content),

– innovative projects with pilot customers (i.e. new ideas are tested in cooperation with the customer),

– innovative projects tailored to the customer (i.e. the service provider seeks to solve a specific problem with the client),

– innovative projects funded externally (i.e. research collaboration focused on the generation of new service concepts and / or platforms).

Some authors (Agarwal *et al.,* 2003; Toivonen and Tuominen, 2009) mention that the market is customer orientated when associated with innovation. In times of strong competition in the market, only those who innovate can be successful. The current trend, within the interconnection of innovations and resources, rests in the implementation of eco-innovations, which are based on the principles of sustainable development in terms of socially responsible business. Therefore, in this paper we focus on the consumers'

perception of services innovation and ecological innovation in furniture.

Currently, there is a big progress in servicing. The most significant environmental impacts of furniture are the aspects related to the production of raw materials and the disposal of old furniture (Nickel *et al.*, 2003). Literature suggests two major strategies to tackle the environmental problems associated with furniture consumption: one strategy is to design furniture so that it is more suitable for material recycling (Witte, 2000). The second one is to decrease furniture consumption by e.g. prolonging furniture lifetime (Vollmer, 1999, cited in Besch, 2005). Witte (2000) intensively examined different strategies for the implementation of closed loop recycling in the furniture (including material recycling). A material recycling strategy involves the design of furniture that facilitates dismantling and separation of all materials that are then recycled. This strategy is the most suitable for cheap, mass furniture. He pointed out that the most important aspect of material recycling of furniture is the recycling cost. The sorting and disassembly of old furniture is expensive and it is questionable whether the revenue from the recycled materials can cover these costs. He also assessed the costs for the disassembly and transport of the desk for material recycling and concluded that it is not economically feasible. The profitability of material recycling from furniture is closely dependent on the volume of waste: the more furniture is transported and disassembled together, the more profitable the process becomes. In addition, it is extremely important that furniture is designed for easy dismantling and that all materials are labelled to facilitate the separation. The prices for the recycled materials on the market also heavily influence whether it makes economic sense to recycle. Witte's results (2000) indicated that material recycling for furniture does not seem to be a promising strategy under the current conditions, since the recycling costs will most probably exceed the revenue from the recycled materials.

Several authors (Vollmer, 1999, cited in Besch, 2005; Witte, 2000) have brought forward the idea of prolonging the lifetime of furniture in order to reduce environmental impacts. Lifetime extension strategies for furniture can include one or several of the following elements:

– Design for durability: In order to reduce the environmental impacts of furniture consumption, the furniture should last for long periods. Environmentally proactive manufacturers are committed to product durability (Wilkhahn, 2002). The disadvantage of this strategy is that it undermines the business case for producers: if their products can be used over long periods, they will sell less furniture in the end.

– Maintenance and repair services: Manufacturers can prolong the lifetime of their products by offering

maintenance and repair services parallel to the sale of furniture. Witte (2000) concludes that lifetime extension services for chairs can be economically implemented. Furthermore, manufacturers can gain additional revenue from offering supplementary services to product sales.

– Reuse of furniture parts: This strategy is concerned with reuse of certain furniture parts for the production of new furniture. The main idea of this strategy is that certain parts of used furniture (e.g. metal pillars or desk support frameworks) are still valuable and should be reused and not disposed of. Such utilization of old parts in new furniture could lead to cost reductions of up to 35 %. One problem for the implementation of this strategy is the development of a take back system that ensures producers a constant reflow of furniture or furniture parts in good condition. Witte (2000) suggested a model where producers offer a full-service contract with the product's sale. Within this contract, producers offer maintenance and repair of their products and take back old elements to reintegrate them into the production of new furniture. The risk of this business model is that it could lead to lower sales figures.

– Remanufacturing of used furniture: The take back and remanufacturing of used furniture can facilitate the second or the third usage period. Furniture is a simple product that in principle does not lose its function over many decades. Witte (2000) and Besch (2005) stated that the costs of raw material are a major fraction of production costs for furniture. Therefore, it seems promising to remanufacture furniture. According to a case study, chair remanufacturing could be realized economically but difficulties remained in finding a market for second hand chairs.

– Servitization - leasing or renting: The idea to lease or rent out products instead of selling them evolved from the consideration that this strategy creates more incentives for producers to prolong the lifetime of their products (Besch, 2005). If the ownership of a product stays with the producer, one can directly benefit from the longer usage period. Vollmer (1999, cited in Besch, 2005) examined existing leasing concepts for furniture and concluded that these offers are mainly financial instruments that do not support closed loop recycling. Goedkoop *et al.* (1999) presented an interesting case study where furniture was leased out to customers from a furniture pool that was included in the full-service-package of the building. Servitization is one of the business models of the circular economy, focused on the provision of services both beyond the product itself, as well as the provision of the product as a service, for example in the form of its rental. Surveys show that almost 70 % of manufacturing com-

panies are already working with some form of servitization and many are just starting to work on service innovations. At the same time, the portfolio of services offered is really diverse and many have already reached Slovakia (Sumne, 2019). The trend of servitization is gradually beginning to penetrate into areas not traditionally associated with renting.

The Swedish furniture manufacturer IKEA decided to use this model and started offering its products for rent. It is possible to rent a new kitchen unit and return it after a while. Instead of the furniture being discarded over time, the company will refurbish it a bit when it is returned and can sell it to extend its life cycle. This leasing project is a part of the company's endeavour to develop a business model that will be based not only on sales, but also on the reuse of furniture parts in the production of new ones. The service is currently provided only in selected countries. In addition to the above, the company also implements other projects of eco-innovation in services while, at the same time, supporting the circular economy. As an example either the Recovery Project can be mentioned, which is in charge of repairing and repackaging products that have been damaged during transport, display, or handling or the ecological service project "Second Life of Furniture" that allows customers to bring their old furniture to the IKEA department store and then sell it to other customers at a reduced price. The company is also trying to reduce its climate footprint by 15 % in absolute terms, which would mean a 70 % reduction in emissions per product due to growth by 2030 (Janove, 2019).

From an economic point of view, lifetime extension strategies seem to be a better option to close material loops in the furniture compared to material recycling. Nevertheless, literature has also identified obstacles that limit the implementation of these strategies. The main barrier concerns the lifetime extension strategies that do not match up with traditional business models. The overall objective of product-oriented companies is to sell as many products as possible, which is in a conflict with the strategy of prolonging the usage period of products. Furniture leasing or renting is a way how to solve these contradicting incentives. Existing leasing concepts for furniture do not consider lifetime extension strategies. The furniture market is still lacking a comprehensive service package that combines the different elements of the lifetime extension strategy to facilitate closed material loops.

2 METHODOLOGY
2. METODOLOGIJA

The Kano model (Kano *et al.*, 1984) was used as a primary method to evaluate the consumers' perception of innovation and ecological innovation in servic-

es of furniture. It considers theories of contradiction to identify the differentiation variables of the product by creating its unique position on the market. The analysis is primarily focused on finding the values of the services in furniture that the consumer considers to be a must, attractive and one-dimensional.

The must-be requirements are significant from the consumer point of view because in the case of their non-compliance they cause strong dissatisfaction to consumers. On the other hand, if they are met, they have little effect on consumer satisfaction. It is a basic product criterion that the consumer requires automatically.

One-dimensional requirements are defined as claims, where we can see a linear dependence between their fulfilment and consumer satisfaction. The more requirements are met, the more satisfied the consumer is. Attractive values include requirements that lead exponentially to an increase in consumer satisfaction. Regarding the above-mentioned information these requirements have the most significant impact on consumer satisfaction. In addition to the above explained requirements, there are also identified reverse, questionable and indifferent requirements not influencing the consumers. Of course, it is not possible to strictly separate individual requirements. They overlap and influence each other at the same time (Loučanová, 2021; Loučanová and Olšiaková, 2020).

The analysis of parameters, focused on the examined problem, was followed by the methodical procedure to assess the services innovation in furniture by Slovak consumers, such as:

- Creating a 3D furniture design made-to-measure
- Furniture made-to measure
- Furniture financing
- Furniture transportation
- Furniture assembly
- Disassembly of furniture
- Removal of old furniture
- Second chance for furniture
- Maintenance and repair of furniture
- Servitization of furniture

After precisely determining the parameters, a questionnaire was developed respecting the KANO model needs. The questionnaire development involved the generation and formulation of two questions for each examined parameter. In the first case, the question was formulated to detect the consumers´ responses as to whether their requests were met. On the contrary, in the second case, the question was formulated assuming that the consumers' requests were not met. Consumers had the opportunity to express agreement or disagreement with the question or statement on the Likert scale (1 – like, 5 – dislike). Then measures for the questionnaire implementation were determined. The sample consisted of 1335 respondents, so the minimum number of respondents (667) was reached. The minimum number was calculated with respect to the sample size calculation, with the average permanent population in Slovakia, gained from the data presented by the Statistical Office of the Slovak Republic (5,457,873 inhabitants on January 01 2020). The sample was calculated at the 99 % confidence level and margin of error of 5 %.

After performing the questionnaire survey, a database of obtained data was created, where the examined parameters for innovation in services in furniture were defined, and subsequently a numerical expression of consumer agreement or disagreement with the given question concerning the defined parameter was assigned.

The individual answers to the positively and negatively asked question (statement) were evaluated separately for each parameter using the cross rule of the KANO model. Further, individual properties – (attractive (A), must-be (M), reverse (R), one-dimensional (O), questionable (Q) and indifferent (I)) were specified by this determination (Table 1).

The identified consumer requirements were divided into groups and redistributed with regard to the proportions of respondents' sample in percentage. The most represented group of requirements characterized the resulting perception of the examined parameter or value. The derived individual categorizations can be utilized further by aggregating them across all respond-

Table 1 KANO model for evaluation of consumer requirements (Grapentine, 2015; Loučanová, 2021; Loučanová and Olšiaková, 2020)
Tablica 1. Kanoov model za procjenu zahtjeva potrošača (Grapentine, 2015.; Loučanová, 2021.; Loučanová and Olšiaková, 2020.)

Like / *Sviđa mi se*		**Answer to dysfunctional question** / *Odgovori na disfunkcionalna pitanja*				
		Acceptable / *Prihvatljivo*	No Feeling / *Bez dojma*	Must-be / *Obvezno*	Do not like / *Ne sviđa mi se*	
Answer to functional question *Odgovori na funkcionalna pitanja*	Like / *sviđa mi se*	Q	A	A	A	O
	Acceptable / *prihvatljivo*	R	I	I	I	M
	No Feeling / *bez dojma*	R	I	I	I	M
	Must-be / *obvezno*	R	I	I	I	M
	Do not like / *ne sviđa mi se*	R	R	R	R	Q

ents using the customer satisfaction and customer dissatisfaction indices (Berger *et. al*, 1993; Shahin *et al.*, 2013; Beier *et al.*, 2020):

$$Consumer\ satisfaction = \frac{A+O}{A+O+M+I} \quad (1)$$

$$Consumer\ dissatisfaction = -\frac{O+M}{A+O+M+I} \quad (2)$$

The categorization frequencies A, I, M, and O mean the number of respondents who classified the offering as attractive, indifferent, must-be, or one-dimensional.

The indices reflect the proportion of respondents for whom the existence (absence) of an offering attribute influences customer satisfaction (customer dissatisfaction). Additionally, consumer dissatisfaction has a minus sign to emphasize the negative effects on customer satisfaction (for historical reasons). For each offering, the satisfaction index is within the range of [0, 1] and for customer dissatisfaction within [−1, 0]. A value close to 1 of consumer satisfaction indicates a high proportion of customers among whom satisfaction can be generated, and a value close to −1 indicates a high proportion of respondents among whom dissatisfaction can be generated. The scale mean of 0.5 for consumer satisfaction (or −0.5 for consumer dissatisfaction) indicates whether the majority of respondents can be positively (or negatively) stimulated, yielding a two-dimensional grid with four quadrants:

Attractive offerings

, if {0.5 ≤ Consumer satisfaction ≤ 1 and 0 ≥ Consumer dissatisfaction > −0.5

Indifferent offerings

, if {0 ≤ Consumer satisfaction < 0.5 and 0 ≥ Consumer dissatisfaction > −0.5

Mandatory offerings

, if {0 ≤ Consumer satisfaction < 0.5 and −0.5 ≥ Consumer dissatisfaction ≥ −1

One−dimensional offerings

, if {0.5 ≤ Consumer satisfaction ≤ 1 and −0.5 ≥ Consumer dissatisfaction ≥ −1

The respondents classify the offering as reverse (category R, frequency R) or questionable (category Q, frequency Q). Those are not reflected in the consumers´ satisfaction and dissatisfaction indices and in the table because only respondents with "strong" assessments are taken into consideration. Besides the satisfaction indices, the total strength of each offering can be determined, indicating the proportion of attractive, one-dimensional, and must-be assessment of this offering among all assessments:

$$Total\ Strength = \frac{A+M+O}{A+I+M+O+Q+R} \quad (3)$$

Recently, an alternative to the above-described aggregated analysis has been proposed and applied, the so-called segmented Kano perspective, where respondents were grouped according to their assessments using cluster analysis with respect to their answers. When highly innovative offerings are investigated, the segmented Kano perspective is preferable because the usual categorizations such as attractive or indifferent at the aggregated level are reduced. Consumer segments that are highly receptive can be identified (Baier *et al.*, 2005). Therefore, in this paper cluster method was also conducted to gain a better insight into attitude of Slovak customers to services innovation related to furniture using SPSS package.

3 RESULTS AND DISCUSSION
3. REZULTATI I RASPRAVA

After the survey by the Kano questionnaire, a database of acquired data was processed. The database consisted of data from 1335 respondents. Tab. 2 outlines the sample descriptive statistics. The survey was mainly completed by women (56.40 % of responses). Among the considered population, the largest share of respondents (36.40 %) were from 18 to 30 years old, then from 31 to 50 years old (32.73 %), and finally respondents over 51 years old (30.86 %).

From the database of obtained data related to our research, we evaluated the individual answers for each question by cross rule of the Kano model using the Kano table, which is presented in the methodology section. The determined properties were subsequently specified as one-dimensional (O), attractive (A), mandatory (M), questionable (Q), reverse (R) and indifferent (I) requirements.

Table 2 Descriptive statistics of the sample (*n* = 1335)
Tablica 2. Deskriptivna statistika (*n* = 1335)

Demographics *Demografska struktura*	Specification *Kategorija*	Multiplicity / *Višestrukost*	
		Absolute, *n* / *apsolutno, n*	Relative, % / *relativno, %*
Age / starost	18 − 30 years / *18 − 30 godina*	486	36.40
	31 − 50 years / *31 − 50 godina*	437	32.73
	51 years and older / *51 godina i stariji*	412	30.86
Gender / spol	Female / *žene*	753	56.40
	Male / *muškarci*	582	43.60

Table 3 Specific requirements for services innovation in furniture
Tablica 3. Posebni zahtjevi vezani za inovativne usluge glede namještaja

Attributes / Obilježje	Requirements / Zahtjevi													Identified requirements* / Identificirani zahtjevi*
	Attractive / Privlačni		One-dimensional / Jednodimenzionalni		Mandatory / Obvezni (Multiplicity / Višestrukost)		Irrelevant / Nevažni		Reverse / Obrnuti		Questionable / Upitni		
	Absolute / apsolutno, n	Relative / relativno, %	Absolute / apsolutno, n	Relative / relativno, %	Absolute / apsolutno, n	Relative / relativno, %	Absolute / apsolutno, n	Relative / relativno, %	Absolute / apsolutno, n	Relative / relativno, %	Absolute / apsolutno, n	Relative / relativno, %	
Creating a 3D furniture design made-to-measure / 3D dizajniranje namještaja po mjeri	205	15.36	496	37.15	63	4.72	229	17.15	187	14.01	155	11.61	O
Furniture made-to measure / izrada namještaja po mjeri	214	16.03	217	16.25	65	4.87	197	14.76	495	37.08	147	11.01	R
Furniture financing / financiranje namještaja	453	33.93	185	13.86	24	1.80	453	33.93	61	4.57	159	11.91	A, I
Furniture transportation / transport namještaja	886	66.37	65	4.87	165	12.36	87	6.52	124	9.29	8	0.60	A
Furniture assembly / montaža namještaja	81	6.07	404	30.26	289	21.65	515	38.58	27	2.02	19	1.42	I
Disassembly of furniture / rastavljanje namještaja	32	2.40	3	0.22	65	4.87	674	50.49	529	39.63	32	2.40	I
Removal of old furniture / uklanjanje starog namještaja	204	15.28	493	36.93	67	5.02	227	17.00	195	14.61	149	11.16	O
Second chance for furniture / ponovna upotreba namještaja	810	60.67	79	5.92	81	6.07	197	14.76	159	11.91	9	0.67	A
Maintenance and repair of furniture / održavanje i popravak namještaja	451	33.78	204	15.28	25	1.87	436	32.66	62	4.64	157	11.76	A
Servitization of furniture / iznajmljivanje namještaja	213	15.96	217	16.25	69	5.17	193	14.46	495	37.08	148	11.09	R

*Identified requirements: attractive (A), mandatory (M), reverse (R), one-dimensional (O), questionable (Q) or indifferent (I). / Identificirani zahtjevi: privlačni (A), obvezni (M), obrnuti (R), jednodimenzionalni (O), upitni (Q) ili indiferentni (I).

Regarding the values presented in Table 3, it can be stated that Slovak respondents perceive the innovation of services provided in furniture as positive. Services provided when purchasing the furniture, such as furniture financing, second chance, furniture maintenance and repair are attractive to respondents. It means that these services are unexpected by customers and they have a significant impact on customers satisfaction. Their significance lies in the fact that if they are not provided, they will not cause customers dissatisfaction. On the other hand, if they are provided, they will significantly influence customers shopping behaviour. The respondents perceive services such as the 3D custom-made furniture design and the removal of old furniture as one-dimensional requirements in the area of service innovations in furniture. These are the innovations of furniture services that lead to customer satisfaction in the case of their fulfilment, but if they are not provided, they cause customers dissatisfaction. However, one-dimensional requirements are not automatically expected. There is a direct relationship between the degree of satisfaction and fulfilment of customers' requirements.

Slovak respondents consider innovations such as the assembly and disassembly of the furniture to be insignificant innovations concerning the furniture services. These services do not affect them. It means that their meeting or not meeting does not affect customers' satisfaction or competitiveness of furniture on the Slovak market. On the contrary, Slovak respondents perceive the production of custom-made furniture and servitization of furniture or furniture rental contradictory. This means that Slovak respondents perceive these innovations exactly in reverse compared to the previous ones and their reaction to them is reverse.

Based on the above findings and requirements identification of Slovak customers regarding services innovations in furniture, the values were calculated of total strength, customer satisfaction and dissatisfaction (Table 4).

Based on the calculated values of total strength, it can be stated that the transport of furniture (0.8360) and the second chance for furniture (0.7266) had the greatest impact on the respondents, while disassembly of furniture had the lowest impact on respondents. This statement also applies in terms of their satisfaction.

The parameters represented by individual services innovations are positioned with respect to their customer satisfaction and dissatisfaction values. The four quadrants visualize the respondents' majorities divided into mandatory, one-dimensional, attractive and indifferent requirement categories (Figure 1).

To obtain further insight as described, a cluster analysis of the data was applied, which identified three clusters. Table 5 provides additional information on categorizations at customers levels for individual clusters.

The specified clusters can be characterized as follows:

– Cluster 1 is represented by attractive requirements of Slovak customers concerning services provided in furniture, such as transport, servitization, made-to-measure production, furniture financing, and maintenance or furniture repair. These innovations are the most attractive for customers at the age of 18-30 years and for men population.

– Cluster 2 is represented by one-dimensional requirements of Slovak customers regarding the services provided in furniture. They include 3D design and removal of old furniture. They are perceived this way by customer at the age category from 31 to 50 years and especially for women population.

– Cluster 3 is represented by indifferent requirements of Slovak customers related to services provided in

Table 4 Indices of customer satisfaction and dissatisfaction with services innovations in furniture
Tablica 4. Indeksi zadovoljstva i nezadovoljstva kupaca inovativnim uslugama vezanima za namještaj

| Parameters / *Parametri*	Total strength *Ukupna jakost*	Customer satisfaction *Zadovoljstvo kupca*	Customer dissatisfaction *Nezadovoljstvo kupca*
Furniture transportation / *transport namještaja*	0.8360	0.7905	-0.1912
Second chance for furniture *ponovna upotreba namještaja*	0.7266	0.7618	-0.1371
Furniture assembly / *montaža namještaja*	0.5798	0.3763	-0.4976
Removal of old furniture *uklanjanje starog namještaja*	0.5723	0.7033	-0.5651
Creating a 3D furniture design made-to-measure *3D dizajniranje namještaja po mjeri*	0.5723	0.7059	-0.5629
Maintenance and repair of furniture *održavanje i popravak namještaja*	0.5094	0.5869	-0.2052
Furniture financing / *financiranje namještaja*	0.4959	0.5722	-0.1874
Servitization of furniture / *iznajmljivanje namještaja*	0.3738	0.6214	-0.4133
Furniture made-to measure *izrada namještaja po mjeri*	0.3715	0.6219	-0.4069
Disassembly of furniture / *rastavljanje namještaja*	0.0749	0.0452	-0.0879
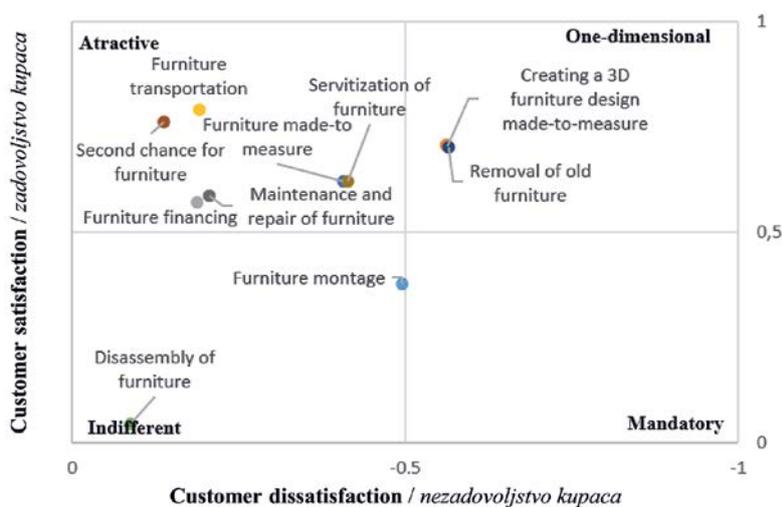
Figure 1 Overall assessment of services innovation in furniture based on indices of satisfaction and dissatisfaction
Slika 1. Ukupna procjena inovativnosti usluga vezanih za namještaj na temelju indeksa zadovoljstva i nezadovoljstva kupaca

Table 5 Specific descriptive statistics of customers clusters
Tablica 5. Specifična deskriptivna statistika klastera kupaca

Aspect / *Aspekt*	Specifications *Kategorija*	Overall, % *Cjelokupno, %*	Cluster - *Segment 1, %* *Klaster – dio 1., %*	Cluster- *Segment 2, %* *Klaster – dio 2., %*	Cluster - *Segment 3, %* *Klaster – dio 3., %*
Age / *starost*	18 – 30 years *18 – 30 godina*	36.4	43.27	34.31	31.12
	31 – 50 years *31 – 50 godina*	32.73	27.13	41.72	27.13
	51 years and older *51 godina i stariji*	30.86	29.60	23.98	41.76
Gender / *spol*	Female / *žene*	56.4	47.93	54.91	62.72
	Male / *muškarci*	43.6	52.07	45.09	37.28

furniture, such as furniture assembly and disassembly. This cluster includes mainly customers dominated by women older than 51 years.

The Kano model monitoring the perception of service innovations in furniture has shown that Slovak respondents perceived positively the services provided in furniture, but they saw obstacles in the area of radical services innovations in furniture such as the renting or removing old furniture, which could hinder their successful implementation in the country. The research pointed to a phenomenon that manifests in the implementation of all new ideas. People are resistant to change. They are afraid to abandon traditional business models. Generally, Slovaks are conservative and strongly loyal to the familiar structures and could not imagine a change in these structures. As Besch (2005) stated, radical innovations in furniture services must propose explicit advantages compared to traditional business model to get attention. Therefore, consumers will be willing to take risks and abandon traditional business models of buying furniture only when they expect significant benefits or profit. A general problem of environmentally innovative approaches to services (eco-innovation services) may be that their benefits are not explicit for most businesses and customers. As

many environmental impacts are still not included in market prices in the economy, company leaders do not logically consider the environmental decisions of product and system designs (Mont, 2003, Loučanová, Nosáľová, 2020). Renting furniture can be difficult because people are not willing to rent furniture. This result may also illustrate the general problem of our society that hinders sustainability efforts. As Besch (2005) presents, this trend cannot be doubted in furniture either, but from the investment point of view, furniture does not represent such a high investment and therefore its rent is not as attractive as other innovations in offered furniture services.

Based on the above findings, we can list the services characteristics in furniture, which appear to be advantageous for successfully addressing Slovak customers. The results of the research support findings by Tischner (2002) that the products have one or more characteristics that appear to be particularly suitable for successfully reaching customers or implementing furniture sales strategy. Specifically, Slovak customers should be provided by:
– a way to finance their purchase of furniture,
– transport,
– second chance service,

– services related to furniture maintenance and repair.

The results show that furniture services in Slovakia are not strongly influenced by fashion or trends, as also stated by Tischner (2002).

4 CONCLUSIONS
4. ZAKLJUČAK

At present, service companies have to constantly renew their processes and service offerings in order to remain competitive. Advanced modern economies are increasingly specializing in services. As the level of services provided in the economy reflects its maturity, society should create the conditions for their further development, including the support of innovative activities of service companies.

The paper presents the results of the survey focused on evaluating the attitude of Slovak customers to services innovation related to furniture. Slovak furniture customers do not consider any of the furniture purchase services to be mandatory. They consider furniture transportation, second chance for furniture, furniture financing and maintenance and repair of furniture as attractive services. Satisfaction is growing for customers in offering services such as creating a 3D furniture design made-to-measure and removal of old furniture. Other innovative forms of providing services in the sale of furniture are perceived by customers as indifferent, or they have the opposite attitude to these services.

Many of these innovations are eco-innovations and they aim to reduce the negative impact on the environment. They are also provided to increase the comfort and satisfaction of customers not only while buying but also while using furniture and solve their problem how to arrange subsequent disposal. If customers use efficiently these services, they not only satisfy their various needs, but also actively and naturally participate in achieving sustainability.

5 REFERENCES
5. LITERATURA

1. Agarwal, S.; Erramilli, M. K.; Dev, C. S., 2003: Market orientation and performance in service firms: role of innovation. Journal of Services Marketing, 17 (1): 68-82. https://doi.org/10.1108/08876040310461282

2. Baier, D.; Rausch, T. M.; Wagner, T. F., 2020: The drivers of sustainable apparel and sportswear consumption: A segmented Kano perspective. Sustainability, 12 (7): 2788. https://doi.org/10.3390/su12072788

3. Berger, C.; Blauth, R.; Boger, D.; Bolster, C.; Burchill, G.; Dumouchel, W.; Pouliot, F.; Richter, R.; Rubinoff, A.; Shen, D.; Timko, M.; Walde, D., 1993: Kano's methods for understanding customer-defined quality. Center for Quality Management Journal, 2: 3-36.

4. Besch, K., 2005: Product-service systems for office furniture: barriers and opportunities on the European market. Journal of Cleaner Production, 13 (10-11): 1083-1094. https://doi.org/10.1016/j.jclepro.2004.12.003

5. den Hertog, P., 2000: Knowledge-Intensive Business Services as Co-Producers of Innovation. International Journal of Innovation Management, 4 (4): 491-528.

6. Gallouj, F.; Weinstein, O., 1997: Innovation in services. Research Policy Elsevier, 26 (4-5): 537-556.

7. Goedkoop, M.; Van Halen, C.; Te Riele, H.; Rommens, P., 1999: Product service systems, ecological and economic basics. The Netherlands: Pre consultants (online). http://www.pre.nl/ pss/default.htm (Accessed Dec. 10, 2020).

8. Grapentine, T., 2015: Why the Kano model wears no clothes. Quirks Marketing Research Media 34 (online). http://www.quirks.com/articles/2015/20150407.aspx (Accessed Dec. 20, 2020).

9. Hipp, Ch.; Grupp, H., 2005: Innovation in the service sector: The demand for service-specific innovation measurement concepts and typologies. Research Policy, 34 (4): 517-535. https://doi.org/10.1016/j.respol.2005.03.002

10. Janove, Z., 2019: Ikea začne prenajímať nábytok. Pilotný projekt spúšťa vo Švajčiarsku (online). https://www.aktuality.sk/clanok/664503/ikea-zacne-prenajimat-nabytok-pilotny-projekt-spusta-vo-svajciarsku/ aspx (Accessed Dec. 21, 2020).

11. Kano, N.; Seracu, N.; Takahashi, F.; Tsuji, S., 1984: Attractive quality and must-be quality. Hinshitsu. The Journal of Japanese Society for Quality Control, 14: 39-48.

12. Loučanová, E.; Nosáľová, M., 2020: Eco-innovation performance in Slovakia: Assessment based on ABC analysis of eco-innovation Indicators. BioResources, 15 (3): 5355-5365. ttps://doi.org/10.15376/biores.15.3.5355-5365

13. Loučanová, E.; Olšiaková, M., 2020: Identification of customers' drivers for the wood building as an ecological innovation in building construction in Slovakia. Acta Facultatis Xylologiae Zvolen, 62 (1): 177-188.

14. Loučanová, E.; Parobek, J.; Kalamarova, M.; Paluš, H.; Lenoch, J., 2015: Eco-innovation performance of Slovakia. Procedia Economics and Finance, 26: 920-924. https://doi.org/10.1016/S2212-5671(15)00906-5

15. Loučanová, E., 2021: Perception of zero waste in the context to environmental innovation in Slovakia. Studia Universitatis Vasile Goldiş, Arad-Seria Ştiinţe Economice, 31 (1): 22-33.

16. Martin, D.; Gustafsson, A.; Choi, S., 2016: Service innovation, renewal, and adoption/rejection in dynamic global contexts. Journal of Business Research, 69: 2397-2400. ttps://doi.org/10.1016/j.jbusres.2016.01.008

17. Miles, I., 2011: Service Innovation in the Twenty First Century. Foresight Russia, 5 (2): 4-15.

18. Mont, O.; Lindhqvist, T., 2003: The role of public policy in advancement of product-service systems. Journal of Cleaner Production, 11 (8): 905-914. https://doi.org/10.1016/S0959-6526(02)00152-X

19. Nickel, R.; Verkuijl, M.; Tischner, U., 2003: SusProNet Report e Product Service Systems to Offices e State of the Art Study. Econcept, Cologne, Germany (online). www.suspronet.org (Accessed Jun. 4, 2021).

20. Shahin, A.; Pourhamidi, M.; Antony, J.; Park, S. H., 2013: Typology of Kano models: A critical review of literature and proposition of a revised model. International Journal of Quality & Reliability Management, 30: 341-358.

21. Štatistický úrad SR., 2020: Počet obyvateľov (online). http://statdat.statistics.sk (Accessed Jan. 2, 2021).

22. Tischner, U.; Verkuiji, M.; Tukker, A., 2002: Product service systems: best practice document: SusProNet. Proceedings, pp. 133.

23. Toivonen, M.; Tuominen, T., 2009: Emergence of innovations in services. The Service Industries Journal, 7 (29): 887-902.
https://doi.org/10.1080/02642060902749492

24. Witte, K.-W., 2000: Buromobel fur die Zukunft: wandlungsfahig elanglebige kreislauftauglich. Aachen: Shaker Verlag.

25. ***Sumne.sk., 2019: Požičiavanie je nové nakupovanie (online). https://www.sumne.sk/l/poziciavanie-je-nove-nakupovanie/ (Accessed Jan. 5, 2021).

26. ***Wilkhahn, 2001: Environmental Statement 2001. Bad Munder, 2002.

Corresponding address:

Assoc. Prof. HUBERT PALUŠ, PhD
Technical University in Zvolen, Faculty of Wood Sciences and Technology, Trade and World Forestry,
Department of Marketing, T. G. Masaryka 24, 96001 Zvolen, SLOVAK REPUBLIC, e-mail: palus@tuzvo.sk