



Is Kano's Model Outdated or Still Essential for Understanding Customer Needs in an Era of Unlimited Choice?

O modelo de Kano está desatualizado ou ainda é essencial para compreender as necessidades dos clientes numa era de opções ilimitadas?

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Abstract

A vast supply of products and services can confuse customers, masking their needs and complicating efforts to satisfy them. Kano's model suggests that customers lack clear awareness of their requirements. This study, based on a novel explanation of the interlinearity of quality attributes and its disruption, explores the applicability of Kano's model in measuring today's customer satisfaction. It examines the impact of digitisation on guest satisfaction. Analysing 310 hotel guests in Slovakia during the winter season of 2023/2024, the study identifies quality attributes revealing insights into how selected dimensions affect satisfaction. A two-step cluster analysis reveals four distinct customer segments with unique expectations, highlighting the need for tailored services. Findings indicate that while digital technologies help address staff shortages, they do not enhance guest satisfaction rather, the opposite. The study offers recommendations for hoteliers seeking to improve service quality and technological integration. It bridges Kano's theoretical foundations with practical relevance in the contemporary context, suggesting future research directions for the evolving relationship among customer satisfaction, digitisation, and service quality.

Keywords Current Guest, Customer Satisfaction, Customer Segmentation, Kano's Model, Service Quality.

Resumo

Uma vasta oferta de produtos e serviços pode confundir os clientes, mascarando as suas necessidades e complicando os esforços para satisfazê-los. O modelo de Kano sugere que os clientes não têm uma consciência clara das suas necessidades. Este estudo, baseado numa nova explicação da interlinearidade dos atributos de qualidade e da sua perturbação, explora a aplicabilidade do modelo de Kano na medição da satisfação do cliente atual e examina o impacto da digitalização na satisfação dos hóspedes. Analisando 310 hóspedes de hotéis na Eslováquia durante o inverno de 2023/2024, o estudo identifica atributos de qualidade que revelam visões de como dimensões selecionadas afetam a satisfação. Uma análise de *clusters* em duas etapas revela quatro segmentos distintos de clientes com expectativas únicas, destacando a necessidade de serviços personalizados. As conclusões indicam que, embora as tecnologias digitais ajudem a resolver a escassez de pessoal, elas não aumentam a satisfação dos hóspedes, mas sim o contrário. O estudo oferece recomendações para hoteleiros que procuram melhorar a qualidade do serviço e a integração tecnológica. Faz a ponte entre os fundamentos teóricos de Kano e a relevância prática no contexto contemporâneo, sugerindo direções futuras de pesquisa sobre a relação entre satisfação do cliente, digitalização e qualidade do serviço.

Palavras-chave: Cliente atual, satisfação do cliente, segmentação de clientes, modelo de Kano, qualidade do serviço.

1. Introduction

In the evolving landscape of the hospitality industry, customer satisfaction remains a key factor in business success and sustained growth (Planinc & Kukanja, 2022), and quality, price, and delivery date are crucial factors in purchase decisions (Lanke & Paul, 2022). Today's extensive array of products and services may result in customer confusion, potentially causing them to lose sight of their true needs (Szyndlar, 2023). It is from a comparable premise, that customers fundamentally lack precise awareness of their requirements, that the Kano's model emerges (Slevitch, 2024). Despite the growing complexity of consumer preferences, meeting customers' demanding needs has become more challenging than ever (Islam et al., 2023). In this context, Kano's model, which focuses on understanding customer needs, appears to be an effective tool for measuring customer satisfaction and identifying opportunities for its enhancement (Pandey et al., 2020). While numerous models attempt to assess and enhance service quality (Tehrineshat et al., 2022), Kano's model offers a distinctive approach by categorising customer expectations and their impact on



satisfaction. It has been extensively used to enhance product innovation and improve operational efficiency (Pandey et al., 2022; Pugna et al., 2021).

The contemporary, globalised world is immersed in information and communication technologies (Athanasopoulou et al., 2023), raising the question of whether digitisation contributes to increased guest satisfaction, which, to the authors' knowledge, has not yet been explored in the literature using Kano's model. Additionally, while Kano's model has been widely applied in Asian and Western markets (Pandey et al., 2020), its relevance in Central and Eastern European hospitality sectors, especially in Slovakia, remains insufficiently studied. This research addresses these gaps by investigating how Kano's model can provide deeper insights into current customer requirements, satisfaction, segmentation and digitisation particularly in the context of evolving consumer preferences. By integrating customer segmentation techniques with Kano's model, the study introduces a novel approach to personalising service delivery in the hospitality industry. Additionally, the findings challenge the assumption that digitisation inherently enhances customer satisfaction, offering a nuanced perspective on the role of technology in service encounters.

The paper begins with an overview of relevant literature on quality as a determinant of customer satisfaction and the use of Kano's model to assess customer satisfaction. Then, an outline of the applied methodology is provided, followed by the key findings from the survey aimed at identifying customer needs and customer segments. Lastly, the results are discussed in the context of the existing literature and potential avenues for further research to deepen understanding of the crucial role of measuring and managing customer satisfaction in today's tourism industry. The paper is conceived as a deductive theory-testing case study, which implies that the literature review should include the conceptual, content, and structural features of the literature.

2. Literature review

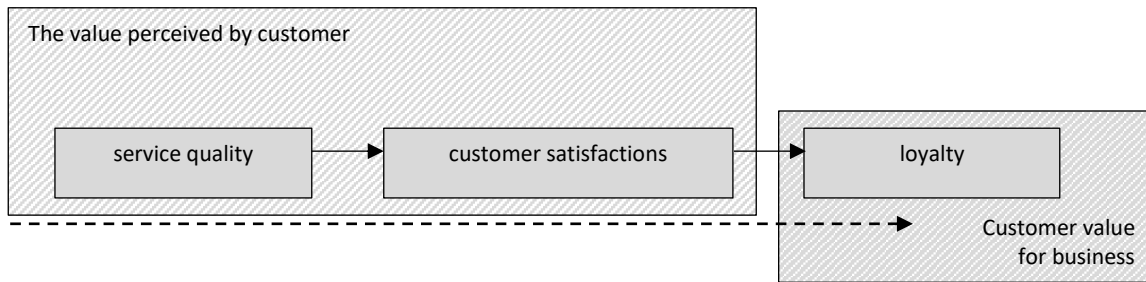
2.1 *The evolving dynamics of customer satisfaction in hospitality*

The existing body of research extensively discusses service quality and customer satisfaction in tourism. However, most studies assume a linear relationship between service quality and satisfaction (Terziyska, 2020), overlooking the potential for non-linearity in consumer expectations. By applying Kano's model to hotel services, this study argues that different quality attributes influence satisfaction in nonlinear ways, highlighting the necessity for targeted service improvements. Additionally, digitisation, while often viewed as an enhancement to customer service (Shafiee et al., 2021; Zhao et al., 2024), does not universally contribute to higher satisfaction levels, particularly in segments where personal interaction is highly valued. Customer satisfaction is a key determinant of success in the hospitality industry (Planinc & Kukania, 2022). The customer in the tourism industry is of strategic importance to the entrepreneur. Lu et al. (2023) emphasise the importance of customers to a business, given its dependence on customer revenue. Early studies on service quality suggested a direct, linear relationship between service quality and satisfaction, if higher service quality leads to greater customer satisfaction. Research on the topic began in the early 1980s and was introduced to hospitality and services industry practitioners as a critical driver of firm performance (Lanke & Paul, 2022). However, more recent research indicates that this relationship is often nonlinear and influenced by various moderating factors, such as expectations, emotional responses, and service context (Reichenbach et al., 2022). By comparing the perceived quality with the expected quality, a feeling of satisfaction or dissatisfaction arises in the customer (Athanasopoulou et al., 2023). Customer satisfaction is perceived as a pillar of prosperity (Shen et al., 2021). Szyndlar (2023) considers customer satisfaction as the most important indicator of purchase intentions and customer loyalty. Also, Garcia et al. (2025) confirmed that satisfaction is an essential mediator between perceived value and loyalty.

Today's customers are well informed; they already assess their preferences, make decisions, and value perceived before buying a product or service. Due to excess supply in the market, customers can choose from a variety of alternatives. Customers are aware of the value they want to obtain from purchasing products and services, and compare it with the value they actually receive. Kano's model differs from traditional service quality models by acknowledging that customer satisfaction is not solely dependent on the absolute quality of service but also on the alignment between customer expectations and actual service performance. This conceptual framework is particularly relevant in dynamic industries such as hospitality, where customer preferences continuously evolve. The visual representation of the principle of interlinearity between quality, satisfaction and loyalty is shown in the following diagram (Figure 1).



Figure 1 - Diagram of the relationship between quality, satisfaction and loyalty



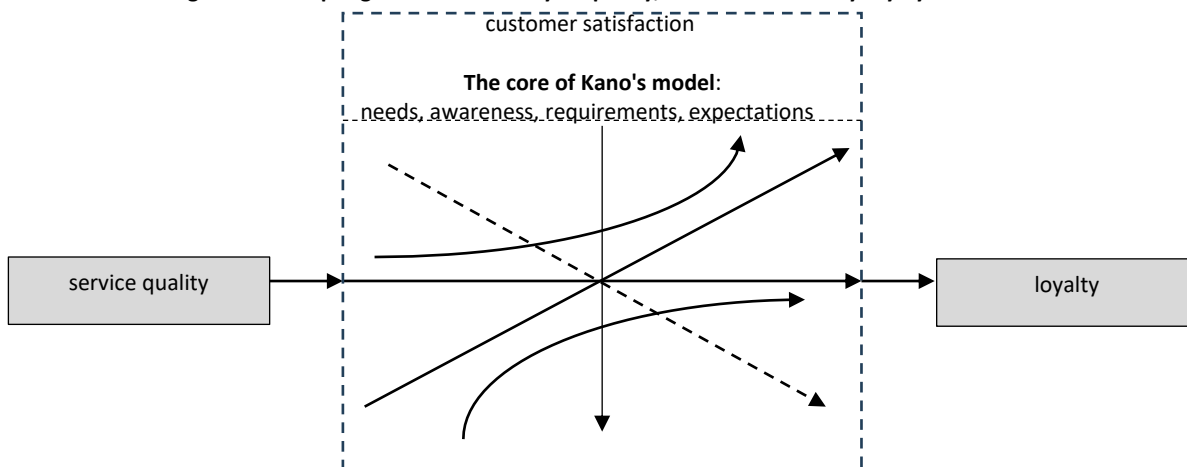
2.2 Disruption of the linear model of satisfaction with Kano's model

Studies utilising Kano’s model have shown that different quality attributes contribute to satisfaction in varied ways. Kano’s model introduces five categories of quality attributes: must-be, one-dimensional, attractive, indifferent, and reverse. Understanding these categories helps businesses effectively prioritise service improvements. By carefully understanding the attributes that satisfy tourists and offering corresponding services (Islam et al., 2023), an emotional bond is created between the customer and the tourism service provider, which sustains the enterprise's existence. Must-be attributes, when absent, cause dissatisfaction, but their presence does not significantly increase satisfaction. One-dimensional attributes create a direct correlation between performance and satisfaction. Attractive attributes, though not expected by customers, can significantly enhance satisfaction when present. It fosters customer loyalty, which often translates into repeat purchases, positive word-of-mouth recommendations, and a strong reputation in the marketplace (Kaya, 2022). Customer satisfaction has a strong correlation with intention to recommend (Sephehr & Head, 2018). Repeat customers trust the business, its products, and services, so they tend to spend more, which also increases the duration of their visits. They generate financial gains for the business, either from regular purchases made well in advance or from attracting new guests through referrals. Retaining a loyal customer requires dedication and care to ensure that the customer feel a sense of excellence (Ishak et al., 2020). In Kano's model, it is emphasised that not all demands are equally important to customers, and that the relationship between the performance of quality attributes and overall customer satisfaction is defined. Koomsap et al. (2023) evaluate Kano's model as an effective tool for uncovering implicit customer expectations, which are often vague and difficult to identify, by linking the fulfilment of offer quality attributes to customer satisfaction.

In tourism businesses, it is essential to focus on surveying and measuring customer satisfaction (Szyndlar, 2023). Without an effective assessment of customer satisfaction, it is unlikely that management can make informed decisions to retain customers and consistently meet their expectations. Customer satisfaction analysis identifies the value and return on investment customers attribute to the business, enabling the business to make decisions about sales promotion or marketing strategy (Chen et al., 2022).

Kano's model is a tool for analysing and measuring customer satisfaction, derived from Maslow's hierarchy of needs. It looked beyond the linear relationship of service quality and customer satisfaction (Lu et al., 2023). It is a bivariate model that views the relationship between quality and customer satisfaction as nonlinear. This is because another variable (different levels of needs, awareness and expectations) enters the relationship, disrupting the assumed linearity (Figure 2). The nonlinear nature of Kano’s model aligns with contemporary research on service quality, which suggests that emotional and psychological factors beyond basic service performance influence customer satisfaction.

Figure 2 - Disrupting the inter-linearity of quality, satisfaction and loyalty by a new variable





Current research focuses on refining Kano's model by incorporating dynamic elements that account for changing consumer expectations (Bi et al., 2019). Additionally, there is a growing interest in integrating Kano's model with digital service evaluation frameworks to assess the impact of technology on customer satisfaction (Chen et al., 2022).

The Kano's model provides a classification of product or service attributes depending on an attribute's potential to contribute to customer delight (Mikulić & Prebežac, 2016): on the one hand (the first three attributes), and, on the other hand, customer dissatisfaction (the last two attributes). This may result in attributes that used to attract customer attention and interest becoming obsolete, with their absence being perceived unfavourably by customers (Violante & Vezzetti, 2017). It also plays a crucial role in achieving customer loyalty (Goswami & Sarma, 2019).

The Kano model has faced criticism (Mikulić & Prebežac, 2011; Lin et al., 2017; Chen, et al., 2022) primarily due to the complexity of questionnaire completion by respondents and their lack of familiarity with five attributes of the model (Koomsap et al., 2023). Additionally, it has been criticised for numerous other shortcomings (Violante & Vezzetti, 2017). While Kano's model provides valuable insights, critics argue that it does not account for the dynamic nature of customer expectations over time. It can be assumed that attributes currently considered attractive may become must-have attributes in the future. Furthermore, the model's reliance on categorical classification may oversimplify the complexity of consumer preferences. The original methodology lacks operational precision and fails to assess the extent to which attribute performance impacts overall customer satisfaction (Slevitch, 2024). Additionally, we argue that it lacks practical applicability for further hospitality management.

Despite the widespread use of Kano's model in Asian and Western hospitality markets, there is limited evidence of its application in Central and Eastern Europe (Żywiołek et al., 2023), particularly in Slovakia. Besides, prior studies often focus on product-level attributes without integrating customer segmentation or accounting for the moderating role of digitisation. This study addresses these gaps by exploring the applicability of Kano's model in a Central European hospitality context, integrating Kano's framework with cluster-based segmentation to identify heterogeneous customer groups and investigating the impact of digitisation on guest satisfaction.

Considering the strengths and weaknesses of Kano's model, it is useful for the hotel industry in enhancing customer loyalty by identifying attractive quality factors that drive customer delight. The model provides a structured approach to understanding which quality attributes play a key role in shaping customer satisfaction and how managers and marketers can use this knowledge to better tailor offerings to customer requirements. Therefore, the objective of this study is to gain a deeper understanding of how Kano's model can be utilised to enhance the satisfaction of today's customers by exploring the following research questions:

- (1) What quality attributes do customers rank as must-be, one-dimensional, and attractive?
- (2) Is the Kano model suitable for segmenting customers according to their needs?
- (3) How does digitisation impact customer satisfaction?

3. Methodology

This study examines the applicability of Kano's model in the tourism sector, specifically focusing on enhancing customer satisfaction in Slovakia. While previous studies have primarily focused on regions like Taiwan, the USA, and the UK (Pandey et al., 2020). Selecting Slovakia as the study area aligns with the authors' geographical presence, enabling localised insights. By addressing the geographical gap, the research not only extends the model's geographical scope but also validates its robustness in a new cultural and economic context. The chosen methodology emphasises a systematic approach, adapting Kano's model to contemporary customer behaviour through purpose-designed questionnaires, pre-testing, incorporating current quality attributes into the original Kano model, and using innovative segmentation techniques.

The study targeted hotel guests in Slovakia during the winter season of 2023/2024, aiming to explore the applicability of Kano's model across different customer segments and levels of digitisation. A total of 310 respondents participated in the survey. Potential participants were approached via two methods: (1) QR codes displayed in the hotel rooms or common areas, and (2) printed surveys distributed at check-in or check-out. This approach allowed guests to respond independently, minimising staff influence and ensuring the authenticity of responses. Data collection considered guest demographics (Table 1) such as age, gender, purpose of visit, and travel companions (family, friends, business, or alone). This allowed for both a nuanced understanding of customer needs and for subsequent cluster-based segmentation based on Kano's model attributes. The study was conducted in one hotel as a dedicated case study to explore the application of Kano's model in depth. While this limits generalizability, the methodology provides a foundation for future multi-hotel studies that can validate and extend these findings. Guest participation was voluntary, and the hotel had no influence over which guests were invited to complete the survey to avoid selection bias.

**Table 1 - The characteristics of the research sample**

Participant Demographics (310)	Age	No	%	Recreation		Business travel	
				(No)	%	(No)	%
Men	<30	30	9.7	27	8.7	3	1.0
	31 – 45	51	16.5	39	12.6	12	3.9
	46 – 60	51	16.5	45	14.5	6	2.0
	60>	12	3.8	21	6.8	0	0
Total		144	46.5	132	42.6	21	6.9
Women	<30	48	15.5	42	13.5	6	2
	31 – 45	48	15.5	45	14.5	3	1
	46 – 60	66	21.3	66	21.3	3	1
	60>	4	1.2	25	8.1	0	0
Total		166	53.5	178	57.4	12	4

Source: survey's data.

The questionnaire was constructed in accordance with Kano's model requirements, drawing on insights from Mikulić and Prebežac (2016), Lin et al. (2017), Chen et al. (2022), and Slevitch (2024), who critically examine a common misconception and flaws in Kano's model. The questionnaire was created on the assumption that a product need not include all functions, but only those that contribute to customer satisfaction. Therefore, customer surveys are the most important data source for using the Kano model. In general, research using the Kano model examines the effect of visitor satisfaction, using the Service Quality variable to determine the attributes of questionnaire statements as dimensions of service and service quality (Tehranneshat et al., 2022). The questions are closed-ended, strictly formulated, with single-response options, ensuring focus on individual attributes. Each question allowed respondents to express their feelings and independently evaluate specific service attributes, thereby mitigating overall bias in the views. Each question focuses on a single attribute, allowing the respondent to evaluate their feelings associated with it.

Before full deployment, a pre-test was conducted with ten respondents to identify ambiguities in question formulation and answer options. Adjustments were made to align the language and structure with contemporary consumer behaviour and preferences. Transforming Kano's model attributes into guest-friendly response scales (Table 2) reflects the necessary change prompted by contemporary consumer behaviour and consumer characteristics, as well as improved respondent comprehension and data quality. The goal of modifying the questionnaire is to improve the empirical study's outcomes. Once it was determined that the pre-test sample understood the questionnaire and could respond, the questionnaire was distributed.

Table 2 - Transformation of Kano's Model Attributes into Guest-Friendly Response Scales

Kano's model quality attribute	Questionnaire's response scale
Must-be	I expect it
One-dimensional	I explicitly want it
Attractive	I am excited
Indifferent	I don't care
Reverse	It makes me angry

Source: own elaboration.

Content validity was ensured by grounding the questionnaire in established literature, aligning it with Kano's theoretical framework, and integrating modifications recommended by prior critiques. Reliability was addressed through pre-testing, ensuring a consistent understanding among respondents. Further, the structured design of the questionnaire and use of SPSS for data analysis bolstered the reliability of findings.

The collected data were sorted, recoded, and analysed using SPSS. A Two-Step Cluster analysis was employed, focusing on three variables: averages of positive attributes derived from Kano's model. This method categorised respondents into four clusters based on similar characteristics. Through cluster analysis, customer segments are characterised, allowing the businesses to focus their activities on enhancing customer satisfaction. Regarding Kano's model, many research methods have been employed (Pandey et al., 2020; Slevitch, 2024); however, this study proposes a unique approach to customer segmentation based on Kano's model criteria using cluster analysis. We introduce a new methodology to address current customers' needs requirements. So far, the approaches described in the Kano model have not been able to identify its various quality categories, service levels, and overall satisfaction (Mikulic & Prebezac, 2016; Slevitch, 2024). Respondents' difficulty in understanding the quality attributes of Kano's model prevents many studies from being practically applied (Violante & Vezzetti, 2017). By transforming the attributes, we focused on making Kano's model useful for analysing satisfaction, sorting customers into groups according to similar characteristics, and subsequently enabling the creation of products at the business level. This study builds on prior research by translating Kano's model attributes into easily understood terms, ensuring practical application and enabling targeted service improvement through segmentation.



4. Results

4.1. Quality attributes

By comparing the guests' expectations with reality, the hotel guests determined the importance of the studied requirements (Table 3). Based on the questionnaire results, quality attributes were assigned to the offered services.

Table 3 - Examined quality attributes

Hotel departments and respective services	Kano's model attributes				
	M	O	A	I	R
Reception					
booking services (fast and hassle-free)	✓				
accommodation prices commensurate with the quality of products and services	✓				
initial contact with the staff (friendly, welcoming)			✓		
comprehensive information provided upon arrival		✓			
arrival at the hotel (smooth, the route to the hotel is adequately marked)	✓				
parking included in the accommodation price	✓				
hotel cleanliness			✓		
atmosphere (music, scent, decor) in common areas			✓		
replacement of reception staff with self-service kiosks				✓	
no direct contact with reception staff					✓
Accommodation					
the furnishing of the hotel room corresponds to the hotel's class		✓			
room atmosphere (scent, first impression)			✓		
cosmetic and hygiene products		✓			
the execution of ongoing room cleaning corresponds to the hotel's class			✓		
towel exchange is well managed considering sust. and environ. protection			✓		
a non-smoking balcony is considered an advantage of the hotel		✓			
well-stocked minibar	✓				
accommodating pets in the hotel is considered accommodating and sufficient	✓				
staying with children aged 0-3 years did not cause any complications	✓				
staying with children aged 4-12 years did not cause any complications	✓				
Restaurant					
the serving staff acts professionally, can advise guests, and strives to help			✓		
the restaurant's furnishings and table settings		✓			
the atmosphere in the restaurant (music, themed decor, candles)		✓			
the quality of services provided in the restaurant			✓		
the variety of dishes offered on the menu			✓		
the concept of the dishes is focused on a healthy lifestyle		✓			
the prices on the menu are appropriate for the quality, portion size, and design	✓				
the variety of dishes offered at the buffet tables			✓		
the hotel provides suitable meals for people with food intolerances					✓
picture-based drink menus (persuade me to try something new)	✓				
if the meal preparation were done in front of the guest				✓	
ordering food and drinks online through own device (mobile, tablet, etc.)				✓	
ordering food and drinks via digital boards (without staff)				✓	
Additional services					
program at the night bar	✓				
program offerings at the night bar (Friday - live music, Saturday - disco)			✓		
concerts, discussions, and others as primary reason for visiting the hotel			✓		
room with billiards, table tennis, and a children's corner		✓			
daily press in traditional printed form	✓				
Wellness					
atmosphere in the wellness centre			✓		
offer of wellness procedures			✓		
quality of the procedures provided			✓		
wellness centre staff and their work organisation			✓		
purchasing massages according to your preferences		✓			
designated time for children in the pool	✓				
opening hours (14:00-20:30) of the sauna world					✓
paying for the use of multiple towels	✓				
sale of additional products at the wellness reception				✓	
payment only in cash or charged to the hotel account	✓				
safety in the wellness centre		✓			

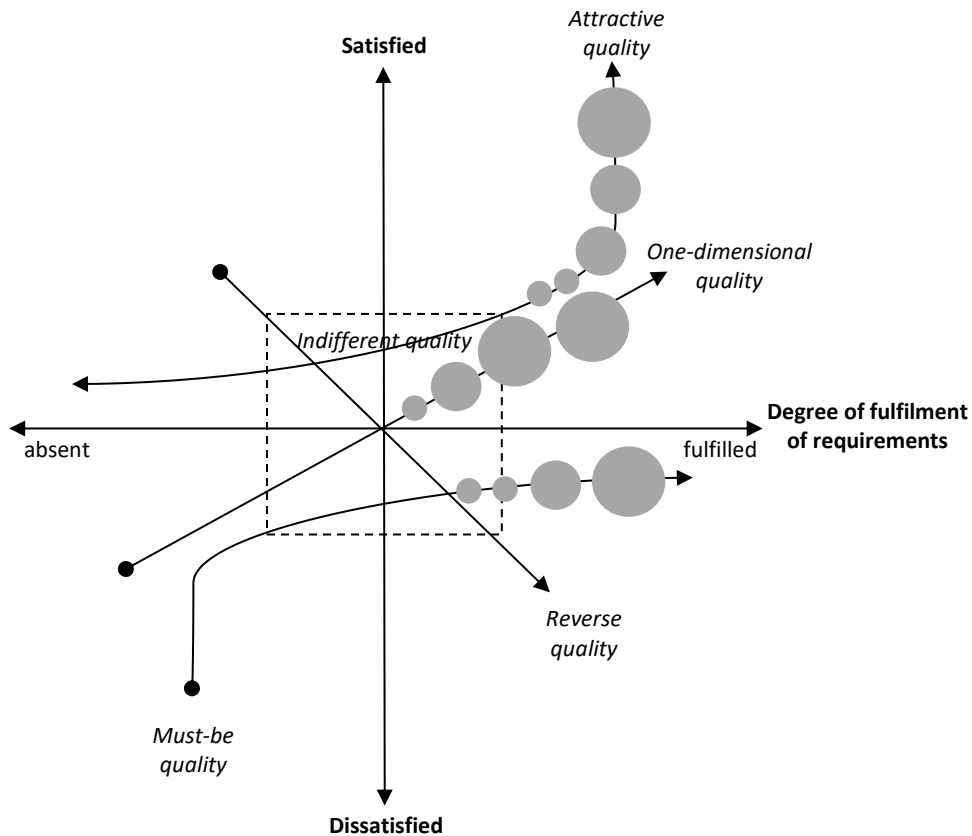
Source: survey's data.

Table caption: M: Must-be; O: One-dimensional; A: Attractive; I: Indifferent; R: Reverse.



The representation of selected services and their assignment to individual quality attributes is provided in Figure 3. The first level reflects the expected customer needs. Among the essential requirements for ensuring customer satisfaction are fast, hassle-free booking services, fair accommodation prices, smooth hotel check-in, and parking included in the accommodation price. Regarding accommodation, guests consider a well-stocked minibar and the ability to accommodate children without any complications as must-haves. This group also includes the hotel's pet-friendly facilities. To ensure the restaurant meets basic customer expectations and does not cause dissatisfaction, it should offer menu prices appropriate to the quality, portion size, and design, as well as picture-based menus. A basic requirement for supplementary services is a program at the night bar and the availability of daily newspapers. At the wellness centre, this includes designated pool time for children, payment for multiple towels, and payment in cash or to the hotel account. Similarly, all five quality attributes can be analysed as shown in Table 3.

Figure 3 - Identified customer requirements shown in Kano's model



Source: own elaboration.

4.2. Cluster analysis

To segment hotel guests, the quality attributes must be, one-dimensional, and attractive was found to be the most relevant for classification. Based on the results of the two-step cluster analysis (Table 4), four customer groups were identified (BIC change ratio = 0.001; distance measure ratio = 2.012).

Table 4 - Criteria to choose the number of clusters

Number of Clusters	Schwarz's Bayesian Criterion (BIC)	BIC Change ^a	Ratio of BIC Changes ^b	Ratio of Distance Measures ^c
1	255,438			
2	168,656	-86,782	1,000	1,738
3	168,586	-,070	-0,57	1,049
4	173,549	4,963	,001	2,012
5	196,214	22,665	-,261	1,013
6	221,470	25,256	-,291	1,175

Source: own elaboration.

a. The changes are from the previous number of clusters in the table.

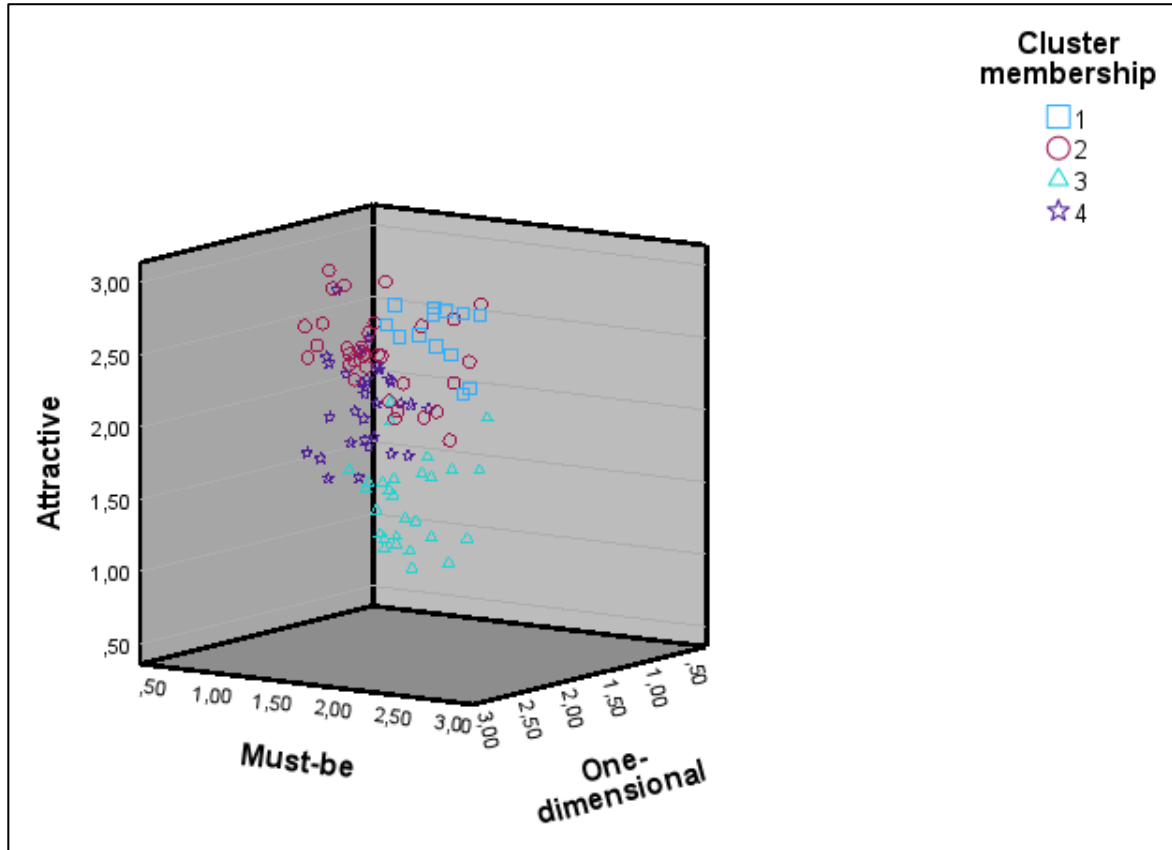
b. The ratios of changes are relative to the change for the two-cluster solution.

c. The ratios of distance measures are based on the current number of clusters against the previous number of clusters.



The silhouette score for cohesion and separation in the two-step cluster analysis was 0.51, indicating good cluster quality. The classification was based on the fundamental characteristics of the respondents and their preferences in the quality attributes. Specifically, retreat enthusiasts, adventurous customers, family comfort seekers and elite business & leisure travellers. To visually represent the differences between segments based on quality attributes, a 3D scatter plot was employed (Figure 4).

Figure 4 - The visualisation of clusters



Source: own elaboration.

The largest customer segment is Retreat enthusiasts (No. 1). These are predominantly female guests aged 46 to 60, who often visit the hotel with a friend for recreation or rejuvenation and are particularly interested in high-quality wellness services. They contribute to a positive atmosphere and mutual understanding, leading to satisfaction with the hotel's products and services. This customer segment can be characterised as stable, creating a positive environment where other guests also feel comfortable and can fully enjoy their stay. Adventurous customers (No 2) expect a unique or intense experience linked to emotion. This segment consists of men aged 31 to 45 who come to stay at a hotel with their partner, without children. These guests seek relaxation combined with active rest. They enjoy adventure, like trying new products, and are attracted to new activities. They are ideal guests for a hotel that offers experience-based vacation packages aimed at exceeding customer expectations. Group of family comfort seekers (No 3) is primarily composed of young women under 30 who have decided to use a hotel's services with their families and children. They expect a package of services designed to meet the needs of the entire family, including children. The hotel should provide appropriate facilities for children and offer family activities or special services. This customer segment requires a comfortable environment where the whole family can have fun and relax together. Elite business & leisure travellers (No 4) are people aged 46 to 60 who travel with their family but without children. Their reason for visiting a hotel is not only recreation but also work-related purposes. Elite business & leisure travellers expect excellent materials and technical facilities that ensure maximum comfort, as well as high-quality premium services, for which they are willing to pay higher prices.

**Table 5 - Description of clusters according to preferences for quality attributes**

Case Summaries				
TwoStep Cluster		must-be	one-dimensional	attractive
Retreat enthusiasts (1)	Mean	1,92	1,88	1,92
	Median	1,90	1,89	1,90
	Std. Error of Mean	0,02	0,03	0,02
Adventurous customers (2)	Mean	3,08	3,11	3,08
	Median	3,00	3,00	3,00
	Std. Error of Mean	0,05	0,06	0,08
Family comfort seekers (3)	Mean	2,50	2,48	2,50
	Median	2,50	2,45	2,50
	Std. Error of Mean	0,03	0,03	0,03
Elite business & leisure travellers (4)	Mean	1,23	1,24	1,23
	Median	1,30	1,33	1,30
	Std. Error of Mean	0,04	0,04	0,04
Total	Mean	2,12	2,10	2,12
	Median	2,10	2,05	2,09
	Std. Error of Mean	0,05	0,06	0,06

Source: own elaboration.

Table 5 summarises the average ratings for the must-be, one-dimensional, and attractive quality attributes across the four identified customer clusters. The results reveal differences in preference intensity between the segments. Cluster 2 (Adventurous customers) shows the highest mean scores across all attribute categories, indicating that the provided services are attractive and exceed their expectations. In contrast, Cluster 4 (Elite business & leisure travellers) reports the lowest mean values, suggesting more demanding expectations regarding quality and indicating that they consider most of the provided services and their features to be expected and standard. Clusters 1 (Retreat enthusiasts) and 3 (Family comfort seekers) fall in the middle range, showing balanced perceptions of the evaluated attributes. Overall, the variation in mean values confirms that quality preferences differ substantially among the identified customer groups, supporting the effectiveness of the segmentation based on Kano's model. It has been demonstrated that Kano's model can be utilised for customer segmentation based on individual quality attributes. This approach allows for the creation of high-quality, tailored products, which, in turn, positively influence customer satisfaction and, according to the principle of interlinearity, subsequently enhance loyalty. Although certain services may be universally applicable, each segment has its own distinct preferences and expectations.

4.3. Impact of digitisation on customer satisfaction

Another part of the study investigated the potential impact of digitisation on customer satisfaction in the hospitality sector, as well as customers' willingness to adopt technological innovations in hotels. Specific elements related to digital technologies were selected from the quality attributes (Table 6).

Table 6 - Quality attributes related to digital technologies

Offered services	Kano's model attributes				
	M	O	A	I	R
initial contact with the staff (friendly, welcoming)			✓		
replacement of reception staff with self-service kiosks				✓	
no direct contact with reception staff					✓
ordering food and drinks online through own device (mobile, tablet, etc.)				✓	
ordering food and drinks via digital boards (without staff)				✓	
daily press in traditional printed form	✓				

Source: own elaboration.

Initial contact with staff upon arrival at the hotel is considered an attractive service that directly increases satisfaction. This argument suggests that removing staff from the front desk would not increase guest satisfaction. This is confirmed by the fact that replacing reception staff with digital technology, as well as ordering food and beverages via mobile devices, is classified as a 'indifferent' quality attribute, i.e., it does not affect guest satisfaction. Thus, there is no need for the hotel to replace front desk staff with self-service kiosks in terms of satisfaction. The absence of direct contact between guests and reception staff has the reverse effect, i.e. it leads to dissatisfaction.

The findings were confirmed by a second validation question, which asked respondents whether they would be willing to accept the introduction of digitisation and robotisation, and thus the replacement of staff by modern technology. The majority of respondents expressed disagreement, with the most common responses being: "nothing can replace human contact", or "the staff is important", "I like the welcoming smile", "It is a good opportunity of practice for young people, who our society needs to develop into qualified professionals". A minority of respondents agree that staff could potentially be replaced by technology; however,



some express that they cannot envision a full replacement: “without direct interaction with staff, the hotel would lose its soul and unique character”.

5. Discussion and conclusions

A long-term lack of customer satisfaction results in economic damage as customers are not tied to the company, the company's reputation suffers from adverse customer behaviour, and unsatisfied customers may seek compensation for the damage. To successfully implement product changes, it is important to tailor the offering to each customer segment's needs. In line with previous research emphasising customer delight through attractive quality attributes (Pandey et al., 2020), this study confirms that personalised services, seamless processes, and well-targeted experiences are critical drivers of satisfaction in hospitality. These findings complement and extend the works of Planinc and Kukanja (2022) and Lanke and Paul (2022), who also demonstrated the need for differentiation in service experiences.

Despite criticism of the Kano model's limited scope (Mikulić & Prebežac, 2011; Lin et al., 2017; Violante & Vezzetti, 2017; Chen, et al., 2022; Koomsap et al., 2023), the present research successfully applies it to contemporary hospitality conditions. By integrating Kano's framework with cluster analysis, the study provides a nuanced understanding of visitor segments and their preferences, thus expanding the model's practical applicability. Moreover, the study bridges the linear quality model (Terziyska, 2020) with its nonlinear dynamics, showing how customer perceptions shift as services evolve. The Kano model offers several advantages when applied as a segmentation framework. Unlike traditional segmentation criteria based on demographics or purchase behaviour, the Kano model identifies customers according to their satisfaction structures. This allows for a more nuanced understanding of customer needs and expectations. By combining Kano classification with cluster analysis, this study captures the heterogeneity of satisfaction drivers across customer groups, revealing deeper motivational and perceptual distinctions.

Digitisation increasingly influences customer expectations in the hospitality industry (Athanasopoulou et al., 2023; Chen et al., 2022). The results showing that guests perceive digital features as indifferent or even dissatisfying can be interpreted through the lens of digital service experience (Huang & Rust, 2020) and emotional value, as emotions influence tourists' consumption experiences as a resource for value creation (Malone et al., 2017). While digitalisation enhances efficiency, it often reduces opportunities for interaction, which is an important component of perceived service quality in hospitality. Emotional value arises from empathy and personalised human attention. The finding aligns with the concept of service humanisation (Khan et al., 2025), which emphasises that emotional engagement remains central to memorable experiences even in technologically advanced environments. This highlights the need for a balanced integration of digital tools that enhance, rather than replace, personal service.

5.1 Theoretical Implications

The result of this study advances the theoretical understanding of customer satisfaction in the hospitality industry by revisiting and extending the applicability of the Kano model in a contemporary digitalised context. It provides empirical evidence supporting the nonlinear relationship between service quality attributes and customer satisfaction, thereby challenging the traditional linear quality-satisfaction paradigm still prevalent in hospitality research. By analysing how different quality attributes affect satisfaction in distinct ways, the study refines the theoretical notion of interlinearity and its disruption within the framework of service evaluation. The findings introduce digitisation as a moderating variable within the Kano framework, offering a nuanced perspective on the relationship between technological innovation and customer satisfaction. The study bridges the gap between Kano's theoretical foundations and contemporary service research, reinforcing its value as an analytical tool for understanding dynamic consumer expectations.

5.2 Practical Implications

Managerial implications arise from both the model's application and the segment-specific findings. Kano's model remains a valuable managerial tool for identifying essential versus delighting service attributes (Islam et al., 2023). The segmentation results offer clear guidance for hotel managers, and by prioritising quality attributes according to customer needs, hoteliers can allocate resources more efficiently, improve customer loyalty, and enhance profitability. This aligns with findings by Ishak et al. (2020) and Pugna et al. (2021), who argue that strategic service differentiation leads to stronger brand performance. Ultimately, the study provides a roadmap for transforming customer expectations into operational strategies that sustain competitive advantage.

5.3 Limitations and Suggestions for Future Research

Although the study offers meaningful insights, several limitations must be acknowledged. The research was conducted in Slovakia, which may limit the generalizability of the findings to other regions with different cultural and market dynamics. Future research should therefore include broader, international samples to test the model's universality.

The use of the Kano model for segmentation also has limitations. Its structure may oversimplify customer preferences, as some attributes could simultaneously play different roles (e.g., both must-be and performance features). Furthermore, the model



assumes relatively stable relationships between attribute performance and satisfaction, which may not hold in dynamic contexts, such as those in tourism services.

The study employed a cross-sectional design, capturing preferences at a single time point. Longitudinal studies would be better suited to tracking how customer satisfaction evolves alongside technological or market changes. External contextual factors, such as global economic shifts, sustainability trends, and post-pandemic behaviour, were not explicitly examined. Incorporating these dimensions would yield a more holistic understanding of satisfaction dynamics. While this study addressed basic technological features (e.g., self-service kiosks, online check-ins), it did not explore advanced technologies such as AI-driven personalisation, augmented reality, or blockchain-based loyalty programs. Future research should examine how these innovations reshape customer satisfaction in the digital era. By addressing these limitations, subsequent studies can strengthen the theoretical and empirical foundations of Kano's model, contributing to a more dynamic and comprehensive understanding of service quality in modern hospitality.

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Credit author statement

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