Original scientific paper
https://doi.org/10.31784/zvr.14.1.13
Received: 6. 5. 2025.
Accepted: 20. 11. 2025.

ANALYSIS OF THE IMPACT OF CUSTOMER SATISFACTION ON ORGANIZATIONAL PERFORMANCE IN THE DENTAL SUPPLY CHAIN

Luka Samaržija
PhD, Associate Professor, University of Rijeka, Faculty of Economics and Business,
Ivana Filipovića 4, 51000 Rijeka; email: luka.samarzija@efri.uniri.hr

Hrvoje Pezo
PhD, Postdoctoral Researcher, Croatian Chamber of Dental Medicine,
Kurelčeva 3, 10000 Zagreb, email: predsjednik@hsk.hr

Nikolina Dukić Samaržija
PhD, Associate Professor, University of Rijeka, Faculty of Economics and Business,
Ivana Filipovića 4, 51000 Rijeka; email: nikolina.dukic.samarzija@efri.uniri.hr

ABSTRACT

The article "Analysis of the Impact of Customer Satisfaction on Organizational Performance in the Dental Supply Chain" presents a study involving participants from various levels of the dental supply chain in the Republic of Croatia. Analyzing customer satisfaction in supply chain management is crucial due to its complexity and multifaceted nature, which varies significantly across different businesses. In the Republic of Croatia, dental care is highly fragmented and dependent on small private clinics; thus, the objective of the study is to determine whether patient satisfaction positively influences the organizational performance of clinics within the dental supply chain. The research instrument used was a questionnaire completed by management personnel of dental clinics and by patients, who are the end users of dental supply chain services. The research sample comprised 102 accurately completed questionnaires from clinic managers and 914 surveys from patients. After the collection of the surveys, the data underwent statistical analysis using SPSS software. In the initial phase of statistical data processing, it was established that customer satisfaction is evaluated based on the relationship between dentist and patient, organizational aspects prior to service provision, satisfaction with pricing and competencies, and overall consumer contentment. In the second phase, the correlation between customer satisfaction and organizational performance was assessed, revealing no positive and significant link between the analyzed variables ($\beta = 0.170$). This study serves as a foundation for future research on the influence of customer satisfaction on organizational performance within dental supply chains.

Keywords: *supply chain management, dental industry, customer satisfaction, organizational performance*

1. INTRODUCTION

The determination of the impact of customer satisfaction on organizational performance has gained significant relevance over the past two decades, due to the intensified integration of enterprises within managed supply chains. The correlation between customer satisfaction and a company's business success within supply chain operations has been extensively studied and validated across various industries, including construction, trade, military, wood, and automotive. This research examined and tested this connection within the dental industry of the Republic of Croatia. The dental industry has evolved significantly over the past decade, now providing not only dental health improvement and maintenance but also ancillary services such as patient transportation, accommodation, and catering. In developing a supply chain management system for the dentistry sector, the critical elements are the capabilities of the service provider (clinic) and the requirements of consumers (patients).

In Croatia, dental care has long been structured within small clinics of the public health network, as well as in traditional small private dental clinics. It may be argued that dental care in Croatia has been highly fragmented for many years and predominantly depends on small dental practices (Crnjak, 2022). Until recently, larger private dental clinics did not exist. This is significant due to the limited funding from the Croatian Health Insurance Institute (HZZO), making it challenging for enterprises to independently finance the substantial investments required in contemporary dental medicine to address the increasing demands of patients. Conventional small dental offices focused solely on tooth restoration and extraction could operate in the market without engaging in complex supplier chains. Currently, small dental offices of this nature are encountering significant challenges in remaining viable in the market and lack competitiveness. In response to increasing client demands, organizations have had to enhance their service levels, leading to the extension of supply chains and the integration of processes among members.

Regardless of company size, the changes occurring in the dental market are rapid and are significantly transforming the industry. These modifications pertain to robotics, digitization, and artificial intelligence, prompting enterprises to allocate substantial expenditures towards production processes, diagnostics, accommodation, logistics, or marketing. All these modifications have been implemented to enhance the quality of dental products, improve laboratory performance, increase treatment safety, reduce inventory expenses, and manage common expenditures, thereby increasing supply chain efficiency and customer satisfaction. Considering its particularities and constraints, the research question is articulated as follows: Does customer satisfaction positively influence the organizational success of enterprises within the dental supply chain? This study will conduct a comprehensive analysis of customer satisfaction and organizational performance as model variables within the dental medicine sector.

2. THEORETICAL FRAMEWORK OF THE RESEARCH

Customer satisfaction is the catalyst of the supply chain, and prior research has demonstrated its significant and favorable impact on organizational performance (Kumar *et al.*, 2023). Tracey, Lim, and Vonderembse (2005) found in their research that there are substantial positive correlations between the use of supply chain management concepts and the business performance of organizations, encompassing both market and financial performance.

Recent research in the dental industry demonstrates a strong and direct correlation between patient satisfaction and organizational performance, encompassing both financial and non-financial outcomes. Studies by Sharka *et al.* (2024) show that key components of patient satisfaction—such as quality of communication, professionalism of dental personnel, and the state of clinical amenities—are closely linked with patients' intentions to return and broader behavioral loyalty, which in turn drive revenue growth and the competitive positioning of dental clinics. Suprayogi *et al.* (2022) reinforce this relationship, demonstrating that satisfied patients are more likely to make repeat visits and recommend dental services to others, thereby increasing patient retention rates and business sustainability. Dewi *et al.* (2011) highlight that responsive and empathetic service can be a central driver of patient loyalty, contributing to long-term organizational viability in dental practices. Furthermore, research by Perez-Campdesuñer *et al.* (2025) finds that clinics systematically investing in patient satisfaction—through technological enhancements, training, and continuous feedback collection—achieve higher brand value and more robust financial results. Amano (2023) confirms that patient satisfaction plays a mediating role in building durable relationships with patients, which is essential for maintaining high organizational performance and securing a steady income stream. Collectively, these studies confirm that improvements in patient satisfaction not only support operational stability and clinic reputation but also underpin long-term profitability and organizational growth in the dental sector.

Although previous research has shown a strong and positive relationship between customer satisfaction and organizational performance, it remains an open question which indicators need to be defined and included in the research to repeatedly determine and measure the relationship in the future. Therefore, given the importance of establishing future correlations, it is necessary to redefine the indicators that describe organizational performance in the dental supply chain.

2. 1 Customer satisfaction

Customer satisfaction is based on recognizing and meeting specific customer demands and needs (Samaržija, 2014). There is no universally accepted method or measurement scale for determining customer satisfaction (Nazaria *et al.*, 2014). In the context of this research, customer satisfaction (in this case, patients) represents one of the most important indicators of the success of the application of the supply chain management concept. It can be described as an emotion that arises from the assessment that occurs when using a particular product or service. Accordingly, it can be observed from two perspectives, perceptual and emotional,

which implies that it manifests itself through psychological reactions and the psychological state of the individual (Lin, 2007). Thus, it can be concluded that it is more subjective than objective perception, depending on what is being assessed, which elements of the service, whether the process itself or the outcome of the service provided (Donabedian, 1988).

Satisfied customers are key to a company's long-term success, and business results depend on them (Van der Wiele *et al.*, 2002). Just one bad customer experience can have a negative impact on a company's business, as customers may switch to a competing brand or company (Gupta, 2021). This statement is valid assuming that customers have the option to choose between at least two products or companies. Nowadays, many companies emphasize in their promotional materials that they are oriented towards customer satisfaction, although customer satisfaction surveys indicate the opposite. For this reason, a genuine orientation towards customer satisfaction brings a significant competitive advantage (Huber *et al.*, 2001).

Ilieska (2013) concludes that customer satisfaction has a positive impact on company profitability. It is crucial for success, and a lack of satisfaction can result in negative long-term consequences. Therefore, supply chains that compete with the same or similar products and services must take into account the two most important aspects of satisfaction: the quality of the product or service and the price.

Since customer satisfaction within the supply chain depends largely on the needs, desires, and expectations of customers, which are subjective, it can be viewed from different perspectives and take various forms (Afrashtehfar *et al.*, 2020). In the context of research on customer satisfaction in the dental supply chain, it was found that customer satisfaction is influenced by the skills of the dentist as perceived by the user, interpersonal aspects, the perceived need for prevention, the benefits provided by the service provider, the cost of treatment and the clinical environment (Afrashtehfar *et al.*, 2020; Luo *et al.*, 2018). Considering all these factors, a research model was defined, and the following factors were selected to describe the variable of customer satisfaction (Narayanan and Greco, 2014):

a) user satisfaction with the organization of the service,
b) user satisfaction with the dentist's attitude towards the user,
c) user satisfaction with the dentist, the outcome of the treatment, and the price of the service, and
d) overall user satisfaction.

2. 2 Organizational performance

Organizational performance is a multifaceted concept defined differently by various authors. One group of authors asserts that it reflects the extent to which a business system has achieved its established market and financial objectives, with the primary aim being the improvement of business metrics (Maaz, Ahmad, 2022). The most commonly used indicators are market share, number of users, total revenue, profit, and overall competitive position (Li *et al.*, 2006; Zhang, 2001). According to another group of authors, these indicators provide insight into

how successfully companies have implemented the concept of supply chain management in their operations (Li *et al.*, 2006).

The ability to examine organizational performance from multiple perspectives depends on the research objective (Richard *et al.*, 2009). Researchers typically select metrics such as profit, market share, earnings, growth rate, competitiveness, productivity, service quality, revenue growth, net profit, profit-to-revenue ratio, and return on assets to assess organizational performance (Kumar *et al.*, 2023).

The selection and number of indicators for assessing organizational performance depend on the research objectives and the available information. Furthermore, the metrics used to evaluate organizational effectiveness must be consistent across all research subjects.

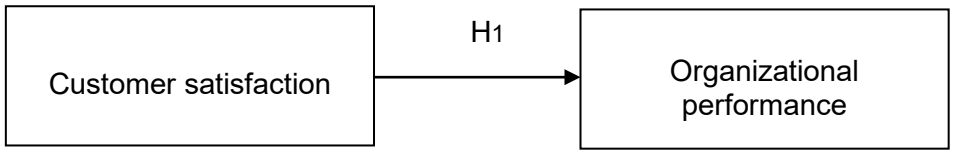
Li *et al.* (2006) demonstrated in their research that supply chain management has a positive and direct impact on organizational performance, as well as an indirect effect by enhancing competitive advantage, evident in price, costs, quality, delivery reliability, product innovation, and time to market.

This study defines organizational performance as comprising market and financial performance. Market performance evaluates the company's market share, user base, and competitive standing, while financial performance assesses income and profit generated. In the survey form, respondents were asked to evaluate their position regarding competition, market share, user base, total income, profit, and overall competitive position. Schneider *et al.* (2009) demonstrated a substantial and positive correlation between customer satisfaction and organizational success.

The arguments presented above lead to the following research hypothesis:

H1: Customer satisfaction has a strong and positive impact on organizational performance.

Scheme 1. Research model



Source: Authors

3. RESEARCH METHODOLOGY

This research employed a quantitative scientific approach using a survey questionnaire and statistical data analysis. Data were collected through two types of structured questionnaires: one for dental clinic managers to assess organizational performance, and another for patients to measure their satisfaction. The results were processed using descriptive statistical

analysis, with mean values and standard deviations calculated for the key research variables. Validation of the questionnaires and identification of latent constructs were achieved through exploratory factor analysis (EFA), while regression analysis was used to test the effect of user satisfaction on organizational success. All collected data were analyzed using IBM SPSS statistical software, and the research process encompassed all phases—from instrument design, data collection, reliability verification of measurement instruments—to hypothesis testing regarding the relationship between the considered variables.

3. 1 Research instrument

A survey questionnaire was used as the research instrument to conduct the empirical study and collect data. In line with the study objective and the specifics of dental practice, data relating to the operations of dental medicine organizations and information regarding dental clinic users and their satisfaction were collected. Accordingly, two surveys were developed, targeting two distinct respondent groups: one group comprised users of dental polyclinics, i.e. patients, while the other group consisted of managers of dental medicine organizations.

The questionnaire designed for users of dental medical services, specifically for assessing patient satisfaction, comprised two categories of questions. The first set of inquiries related to the sociodemographic characteristics of the respondents, including their age, gender, and educational attainment. The second set of questions covered constructs that assessed user satisfaction across four categories:

1. user satisfaction with the organization of the service
2. satisfaction with the dentist's relationship with the patient
3. user satisfaction with the dentist, the outcome of the treatment, and the price of the service, and
4. overall patient satisfaction.

Respondents rated their satisfaction using a Likert scale, which is one of the fundamental and frequently used psychometric tools in social science research and medicine (Joshi *et al.*, 2015). Respondents indicated their degree of agreement with each statement, with the intensity of the degrees of agreement or disagreement being: 1 – Strongly disagree; 2 – Mostly disagree; 3 – Neither agree nor disagree; 4 – Mostly agree; and 5 – Strongly agree.

The questionnaire created for managers from various dental medicine enterprises comprised two sets of questions. The first set of collected data on the sociodemographic characteristics of the respondents included age, gender, educational qualifications, total work experience, tenure in the current organization, and their positions within the observed organization. The second set of questions collected data relating to the organizational performance of the entities. A five-point Likert scale was used to evaluate the organizational performance of the observed entities.

The levels of intensity of changes were defined as: 1 – Significantly worse, 2 – Worse, 3 – The same, 4 – Better and 5 – Significantly better. In the next step, a second intensity dimension was

added, as respondents provided an estimate of the percentage of this change for each rating. The pilot survey revealed that respondents were unwilling to provide absolute numbers for profit or patient numbers, but were willing to estimate the movement of these quantities. Therefore, the following data were collected in the survey questionnaire: market share, number of users, total revenue, profit, and overall competitive position. However, quantitative data were not expressed in absolute numbers, but as degrees of intensity of changes in these indicators. Both surveys were conducted between March 1, 2021, and January 31, 2022.

3. 2 Research sample

This research employed a purposeful, convenient sample to facilitate the investigation of accessible individuals who are specialists in their respective fields. Specifically, proprietors, executives, clinic administrators, and leaders of the largest dental medicine companies in Croatia were invited to respond to questions concerning the organizational efficacy of their clinics involved in supply chain operations. A survey questionnaire was distributed to 280 dental clinics, yielding 102 accurately completed responses, resulting in a return rate of 36.42%. Table 1 presents the research sample.

Table 1. Descriptive characteristics of the sample

Characteristic	Number	Share (percentage)
Education		
Completed secondary education	2	1.96
Bachelor's degree	2	1.96
Master's degree	69	67.65
PhD degree	29	28.43
Gender		
Male	56	54.90
Female	46	45.10
Number of permanent employees		
1–4	49	48.04
5–9	19	18.63
10–19	7	6.86
20–59	16	15.69
50–100	2	1.96
100 +	9	8.82
Change in the number of the users:		
Increased	67	65.69
Stagnated	22	21.57
Decreased	13	12.75

Source: Research results

A significant proportion of respondents hold a university degree (67.65%) and are male (54.90%). Work experience ranges from 1 to 50 years, with an average of 19 years (19.19), while experience in the current job position ranges from 1 to 32 years, with an average of 12 years (11.92). The age range is 25 to 74 years, with a mean age of 45 years (= 45.19).

Regarding organizational size, as indicated by employee count, the majority of entities in the sample are those with a minimal workforce, specifically those employing 1 to 4 individuals (48.04%), followed by those with 5 to 9 employees (18.63%), and organizations with 20 to 59 employees, which represent 15.69% of the sample. In most dental medicine organizations, user numbers have increased by 65.69%, while 12.75% report a decrease in users compared to the previous year. The predominant positions among respondents are team leader (32.4%), followed by director (8.8%), owner (7.8%), lower manager (4.9%), and senior professional associate (2%). The remaining respondents did not specify their roles within the dental medicine organization.

A total of 1,500 surveys were distributed to patients through dental offices. Of these, 915 correctly completed questionnaires were returned, resulting in a response rate of 61%. The respondents had an average age of 45 years (mean = 44.72), with ages ranging from 18 to 89 years, and the majority were female (53.6%). Their educational attainment included university degrees (33%), associate degrees (28.1%), secondary education (27.3%), and postgraduate studies (master's and doctorate degrees) (11.6%).

4. RESEARCH RESULTS

4. 1 Descriptive statistical analysis

Descriptive statistical analysis was used to calculate the average rating of the examined statements and the standard deviation. The mean scores and standard deviations are presented in Table 2.

Table 2. Results for organizational performance

Variable	Organizational performance	Average score	Strandard deviation
OP_1	Market share	3.46	0.828
OP_2	Number of users	3.63	0.768
OP_3	Total revenue	3.38	0.745
OP_4	Profit	3.23	0.731
OP_5	Overall competitive position	3.41	0.574

Source: Research results

The highest-rated organizational indicator is "number of users," with an average score of 3.63, indicating that respondents perceive themselves as having more patients than their competitors. The lowest-rated organizational characteristic is "profit," with an average score

of 3.23, indicating that respondents perceive their profit levels to be similar to those of their competitors.

The average scores and standard deviations for participants who evaluated their satisfaction with the dental organization service are presented in Table 3.

Table 3. Results for customer satisfaction

Variable	Patient satisfaction	Average grade	Standard deviation
I. Patient satisfaction assessment with the service organization			
OP_1	I am satisfied with the way of communication with the dental clinic.	4.5604	0.66297
OP_2	I am satisfied with the functionality of the appointment scheduling system.	4.5359	0.67762
OP_3	I am satisfied with the assigned appointment time.	4.3300	0.78239
OP_4	I am satisfied with the possibility of emergency intervention.	4.4662	0.70190
OP_5	I am satisfied with the treatment provided while waiting for the service.	4.4216	0.71676
OP_6	I am satisfied with the waiting area.	4.1549	0.90789
OP_7	I am satisfied with the possibility of choosing the time of the visit (morning, afternoon, Saturday).	4.4114	0.65478
OP_8	I am satisfied that the dentist adheres to the agreed appointment times.	4.2358	0.79391
OP_9	I am satisfied with receiving complete medical treatment in one place.	4.6541	0.57390
OP_10	I am satisfied with the additional services in one place (reception transport, café, accommodation, food, organization of free time, etc.).	4.3582	0.78509
OP_11	I am satisfied with the speed of service, taking into account the biological need to wait for the continuation of treatment.	4.5494	0.62098
OP_12	I am satisfied with the equipment used during treatment.	4.6027	0.61017
II. Satisfaction rating with the dentist's relationship with the patient			
OdnosP_13	I am satisfied with the examination I had at the dentist's.	4.7437	1.75017
OdnosP_14	I am satisfied with the kindness of the dentist.	4.7111	0.50420
OdnosP_15	I am satisfied with the willingness of the dentist to listen to me.	4.7500	0.49049
OdnosP_16	I am satisfied with the willingness of the dentist to explain the problem to me.	4.7458	0.49655

Variable	Patient satisfaction	Average grade	Standard deviation
OdnosP_17	I am satisfied with the willingness of the dentist to alleviate my fear.	4.5935	0.61805
OdnosP_18	I am satisfied with the ability of the dentist to relieve my pain.	4.5862	0.59886
OdnosP_19	I am satisfied with the offer of appropriate treatment options.	4.5213	0.63617
OdnosP_20	I am satisfied with the sensitivity of the dentist during the examination.	4.5429	0.65346
OdnosP_21	I am satisfied with the respect the dentist shows me.	4.6541	0.58475
OdnosP_22	I am satisfied with the trust I have gained in the dentist.	4.6398	0.57575
OdnosP_23	I am satisfied with the information the dentist provides about long-term dental care	4.6901	0.51730
OdnosP_24	I am satisfied with the dentist's communication with other staff.	4.6165	0.61961
III. Satisfaction rating with key competencies, treatment outcome, and service price			
ZadV_25	The ability to perform the most complex procedures gives me confidence that less complex procedures will be performed effortlessly and excellently.	4.5321	1.79000
ZadV_26	I believe that routine procedures performed without effort lead to a lower price for services.	4.1088	0.91913
ZadV_27	The process of performing the procedure is well-organized.	4.4477	0.66575
ZadV_28	The use of 3D technology gives me a sense of a high level of competence.	4.4371	0.73251
ZadV_29	The patient can determine a higher or lower price for treatment by personal choice of materials, treatment method, and reconstruction.	4.3673	0.81867
ZadV_30	The quality of performance, applicability and duration of the treatments and work performed were in accordance with patients' expectations.	4.4522	0.69996
ZadV_31	The price of the treatment is in accordance with patients' expectations.	4.4532	0.68875
ZadV_32	After the treatment, there was no need for subsequent interventions.	4.4982	0.67494
ZadV_33	I have the impression that the entire organization is focused on customer satisfaction.	4.5576	0.65403
ZadV_34	I will recommend your services to all my friends.	4.6781	0.62859
ZadV_35	I intend to continue to be your regular patient.	4.7018	0.61411

Source: Research results

In evaluating patient satisfaction with service organization, patients assigned an average score of 4.6541 to the statement "I am satisfied with receiving complete medical treatment." When assessing patient satisfaction with the dentist-patient relationship, the statement "I am satisfied with the willingness of the dentist to listen to me," received the highest average score of 4.7458. In the questionnaire section evaluating satisfaction with essential competencies, treatment outcomes, and service costs, the statement "The price of the treatment is in accordance with patients' expectations," received the highest rating (4.4532). The statement, "I intend to continue to be your regular patient," received the highest rating (4.7018) in the questionnaire section assessing overall user satisfaction.

4. 2 Exploratory factor analysis

An exploratory factor analysis was conducted to assess the validity of the variables. The data were analyzed using the principal axis factor extraction method combined with Varimax rotation.

Table 4. Results of exploratory factor analysis for organizational performance

Particles	Organizational performance	Communality
Market_share	0.847	0.733
Number_of_users	0.889	0.790
Revenue	0.929	0.878
Profit	0.777	0.606
Competitive_position	0.791	0.661

Source: Research results

Organizational performance is described by five factors, all of which have satisfactory threshold values (greater than 0.50) and are suitable for further analysis. Following the exploratory factor analysis, reliability analysis was performed using Cronbach's alpha coefficient. Cronbach's alpha is a statistical measure used to assess the internal consistency or reliability of a set of survey or test items. It indicates how well a group of items work together to measure the same concept, with higher alpha values (closer to 1) indicating more reliable and consistent results.

Table 5. Characteristics of measurement scales for organizational performance

Factor measurement scale	Number of statements (particles) n	Cumulative arithmetic mean M	Standard deviation s	Cronbach's alpha coefficient α
Organizational performance	5	16.94	3.051	0.905

Source: Research results

All reliability coefficients for the extracted factors are above the acceptable level of 0.7 suggested by Peterson (1994), indicating that the factors are reliable.

In addition to the questionnaire conducted among the management of dental organizations, a questionnaire was also conducted among the users of their services. The principal components method in SPSS, with oblimin rotation and Kaiser normalization, was also used. The Kaiser-Meyer-Olkin (KMO) test checks whether data are suitable for factor analysis by measuring whether variables have enough in common to form reliable factors. High KMO values (above 0.6) indicate that factor analysis is appropriate, while low values suggest the data are not suitable. After analysis, it was found that the following items had communalities below 0.5, as suggested by Field (2013), and were excluded from further analyses: "I am satisfied with the possibility of choosing the time of the visit (morning, afternoon, Saturday)" (OP_7); "I am satisfied that the dentist adheres to the agreed appointment times", (OP_8); "The ability to perform the most complex procedures gives me confidence that less complex procedures will be performed effortlessly and excellently", (ZadV_25); "I am satisfied with the examination I had at the dentist's", (OdnosP_13); "After the treatment, there was no need for subsequent interventions", (ZadV_32); "The quality of performance, applicability and duration of the treatments performed and work performed were in accordance with patients' expectations", (ZadV_30); "I am satisfied with the dentist's communication with other staff" (OdnosP_24).

The analysis of the results with respect to the Kaiser-Meyer-Olkin (KMO) sample adequacy measure and the value of Bartlett's test of sphericity yielded KMO = 0.904, or $\chi 2 = 5616.767$ ($p < 0.05$), indicating that further data processing could proceed. In accordance with Field (2013), all factor loadings below 0.3 are not shown. However, in order to obtain a parsimonious solution for the factors extracted by exploratory factor analysis, items that loaded significantly on multiple factors or had low communality were removed. Thus, the following items were removed from the original factor solution: "I am satisfied with the information the dentist provides about long-term dental care" (OdnosP_23); "The process of performing the procedure is well-organized" (ZadV_27); "I am satisfied with the ability of the dentist to relieve my pain" (OdnosP_18); "I am satisfied with the equipment used during treatment" (OP_12); "I am satisfied with the waiting area" (OP_6); "I am satisfied with receiving complete medical treatment in one place", (OP_9); "I am satisfied with the speed of service, taking into account the biological need to wait for the continuation of treatment" (OP_11).

The final factorial solution has a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and a Bartlett's test of sphericity value is KMO = 0.902, or $\chi 2 = 4740.358$ ($p < 0.05$), indicating that the basic conditions are met and the analysis can proceed. Exploratory factor analysis suggests a five-factorial solution that explains 59.252% of the extracted variance in the results. The final factorial solution is shown in table 6.

Table 6. Results of exploratory factor analysis for user satisfaction

	Factors			
Particles	**Dentist's relationship with the patient**	**Service organization before service**	**Price/competence satisfaction**	**User satisfaction**
I am satisfied with the way of communication with the dental clinic.		0.857		
I am satisfied with the functionality of the appointment scheduling system.		0.781		
I am satisfied with the assigned appointment time.		0.811		
I am satisfied with the possibility of emergency intervention.		0.454		
I am satisfied with the speed of service, taking into account the biological need to wait for the continuation of treatment.				−0.537
I am satisfied with the kindness of the dentist.	0.743			
I am satisfied with the willingness of the dentist to listen to me.	0.822			
I am satisfied with the willingness of the dentist to explain the problem to me.	0.822			
I am satisfied with the willingness of the dentist to alleviate my fear.	0.530			
I am satisfied with the offer of appropriate treatment options.	0.585			
I am satisfied with the sensitivity of the dentist during the examination.	0.718			
I am satisfied with the respect the dentist shows me.	0.769			
I am satisfied with the trust I have gained in the dentist.	0.647			
I believe that routine procedures performed without effort lead to a lower price for services.			0.803	
The use of 3D technology gives me a sense of a high level of competence.			0.653	
The patient can determine a higher or lower price for treatment by personal choice of materials, treatment method, and reconstruction.			0.801	
The quality of performance, applicability, and duration of the treatments and work performed were in accordance with patients' expectations.				−0.705

	Factors			
Particles	Dentist's relationship with the patient	Service organization before service	Price/competence satisfaction	User satisfaction
I have the impression that the entire organization is focused on customer satisfaction.				–0.710
I will recommend your services to all my friends.				–0.817
I intend to continue to be your regular patient.				–0.799

Source: Research results

After an exploratory factor analysis, four factors were identified: dentist's attitude towards the patient, organization before providing the service, satisfaction with the price/competencies, and user satisfaction.

Table 7. Characteristics of measurement units for user satisfaction

Factor measurement scale	Number of particles (n)	Cumulative arithmetic mean M	Standard deviation σ	Cronbach's alpha coefficient α	Explained variances %	Eigenvalue
Dentist – patient relationship	7	33.177	2.513	0.861	34.924	6.985
Organization before service provision	4	17.913	2.129	0.753	10.337	2.067
Satisfaction with price/competence	3	12.895	1.928	0.675	7.724	1.545
User satisfaction	5	22.925	2.423	0.812	5.972	1.194

Source: Research results

Reliability analysis was also conducted using Cronbach's alpha coefficient. The results of the analysis are shown in Table 7. All reliability coefficients for the extracted factors are above the acceptable level of 0.6 suggested by Pallant (2001), indicating that the factors are reliable for further analysis.

4. 3 Regression analysis

A regression analysis was conducted to assess the effect of customer satisfaction, the independent variable, on organizational performance, the dependent variable. Organizational

performance, as a variable, encompasses a consolidated scale of evaluations relating to competitiveness, market share, user base, revenue, profit, and competitive standing. The model accounts for only 2.9% of the variance. The findings of the analysis are presented in Table 8.

Table 8. Multiple regression analysis for organizational performance

Variable	B	β	t–value
Constant	1.980 (0.820)		2.468
User satisfaction	0.314 (0.183)	0.170	1.714*
Multiple regression coefficient R^2	0.029 (0.477)		
R^2 (corrected)	0.019		
F-value	2.939*		

Remark: POL = Supply chain performance; ***$p < 0.001$, **$p < 0.05$, *$p < 0.10$. Standard errors and standard error of the R^2 estimate are in brackets.

Source: Research results

After data processing, it was determined that the dependent variable 'user satisfaction' does not have a statistically significant effect on the organizational performance variable ($\beta = 0.170$), and the above hypothesis is therefore rejected.

Within the scope of this research, validation of the hypothesis was anticipated; nevertheless, the result obtained contradicts this expectation. This outcome is consistent with studies conducted by Yeung and Ennew (2000) and Sterman *et al.* (1997) at different times. Research conducted by these authors indicates that customer satisfaction does not significantly impact company business outcomes. Possible reasons for this include: the temporal gap between assessing customer satisfaction and business outcomes, inadequate measurement of customer satisfaction, neglect of other internal factors influencing organizational performance such as sales, margins, location, and technology, as well as external factors such as transportation, taxation, or the pandemic. Given that the research was conducted during the Covid-19 pandemic, it is plausible that the enforced business constraints influenced the performance outcomes of the examined companies.

4. 4 Research results and discussion

Implications of the study for theory and practice

The implications of this research for clinic managers are that focusing solely on patient satisfaction with dental services, while important for market survival and reputation, may not be sufficient to ensure continuous improvement in organizational performance. Clinic managers and owners should also consider external factors such as market fragmentation, expanding offerings to include hospitality services, selecting reliable suppliers who can provide new technology, lending institutions that offer access to credit lines, etc. All these factors can positively influence business results in the long term, even when patient satisfaction with

dental services is low. Therefore, practitioners are encouraged to maintain a high standard of patient care, but also to complement this with strategic management of financial, operational, and technological resources, and to monitor the combined impact of these variables on the success of their clinic.

For scholars, the study highlights the need for more robust and multifaceted research designs when examining the relationship between customer satisfaction and organizational outcomes in the dental industry. Researchers should consider longitudinal studies, use more comprehensive measurement instruments, and analyze additional variables such as innovation, competitive intensity, and external market shocks that could influence the relationship between satisfaction and performance. The findings of this study suggest that the impact of customer satisfaction on clinic performance may be less direct or immediate than previously assumed and may be context-specific. Comparative research with clinics from other European countries (Germany, Austria, Italy), as well as real-time and lagged analyses, is recommended to improve theory and inform evidence-based practice in dental supply chain management.

Recommendations for future research

Future research should aim to broaden the analysis by including a more diverse sample of companies at various stages of the supply chain and from other countries, to determine the extent to which the current findings can be generalized. Researchers are also encouraged to develop and validate more detailed instruments for measuring customer satisfaction and organizational performance, potentially employing longitudinal or real-time data collection to capture the dynamic nature of these relationships. Additional factors, such as technological innovation, labor availability, and external market influences, should be investigated and incorporated into the research to better understand their impact on the relationship between customer satisfaction and organizational performance. Comparative studies across countries or regions could reveal the effects of different market structures, health policies, and cultural backgrounds on supply chain efficiency and patient satisfaction outcomes. Furthermore, there is considerable potential to examine how technological trends such as digitalization and artificial intelligence influence patient satisfaction and business outcomes in dental and related supply chains. Finally, future research should consider the possible time lag between increases in customer satisfaction and observable improvements in organizational performance, using advanced statistical methods such as time series analysis to better determine the nature of these relationships.

5. CONCLUSION

The concept of supply chain management, a relatively recent phenomenon used in industries such as construction, wood, trade, food, and textiles, has recently been adopted in the dental sector. The dental supply chain comprises a network of process-oriented entities, including suppliers, manufacturers, distributors, and other intermediaries involved in the manufacturing, distribution, sale, and use of dental products and services. The dental

supply chain is a complex system that requires deliberate organizational design and ongoing systematic improvements, due to its multi-phase production process and the multitude of partners involved. Management seeks to improve operations by integrating specific methods, elements, and practices to achieve optimal satisfaction for the end user or patient.

Patient satisfaction is a critical factor in the sustainability and growth of firms within the supply chain; therefore, significant emphasis is placed on its causes and manifestations. The dental industry is a specialized field that relies heavily on patients' subjective perceptions, in contrast to other sectors (e.g., automotive, construction) that use objective customer satisfaction metrics. One objective of this research is to identify more precise indicators of satisfaction that collectively constitute overall customer satisfaction. A survey was administered to patients of dental clinics to assess customer satisfaction. After collecting 915 accurately completed surveys, statistical data processing revealed that customer satisfaction as a research variable includes satisfaction with service organization, satisfaction with the dentist-patient relationship, satisfaction with the dentist, treatment outcomes, service pricing, and overall customer satisfaction. These findings are significant as they provide a foundation for further research on customer satisfaction within the dental sector, which is continually evolving due to technological advancements and changing consumer preferences.

The second variable examined was organizational performance. Market and financial performance were analyzed using a questionnaire completed by the management of the polyclinics. A total of 102 questionnaires were collected, from which the research findings were derived. Respondents evaluated market success by comparing their business metrics with those of competitors. The market metrics compared were market share, user count (patients), and competitive standing. Revenue and profit were used as financial metrics.

After conducting factor analysis and defining model variables, a multivariate regression analysis was performed. Evaluation of the model showed that customer satisfaction does not enhance organizational performance. Disproving this theory is important as it demonstrates that, even when companies have highly satisfied customers, this does not significantly improve their business performance. This relationship, while unexpected and unusual, is not unique. Previous research has shown that customer satisfaction does not always positively affect organizational success, with the underlying reasons potentially arising from both internal firm characteristics and external influences beyond the company's control.

The study highlights the complexity of directly linking patient satisfaction to organizational performance in the dental industry. Although patient satisfaction is important for retention, reputation, and long-term success, the research found no significant statistical connection between satisfaction and clinic performance in Croatia. This suggests that dental practitioners should also address external factors such as market changes, innovation, and operational challenges. Managers should continue to improve the patient experience while monitoring market, financial, and technological trends. For researchers, the findings indicate that more advanced and diverse methodologies are needed. Future studies should include new variables,

more robust measurement tools, and consider lagged effects. Comparative and longitudinal research is encouraged to better understand satisfaction and outcomes.

ACKNOWLEDGMENTS

This scientific paper was prepared and financially supported by the University of Rijeka as part of the project "People-centred and integrated care: a solution for the sustainable health and well-being" (ZIP-UNIRI-2023-5), with financial support from the Faculty of Economics and Business, University of Rijeka.

REFERENCES

Afrashtehfar, K. I., Assery, M. K. A. and Bryant, S. R. (2020) "Patient Satisfaction in Medicine and Dentistry." *International Journal of Dentistry*, Article ID 6621848, 1–10.

Amano, N. (2023) Factors Influencing Customer Retention and Loyalty in Dental Services. Westcliff *International Journal of Applied Research*, 7(2), 98–113. https://wijar.westcliff.edu/wp-content/uploads/2023/12/Amano.pdf

Beamon, B. M. (1999) "Measuring supply chain performance." International Journal of Operations & Production Management, 19(3), 275–292.

Chong, A. Y. L., Chan, F. T. S., Ooi, K. B. & Sim, J. J. (2011) "Can Malaysian firms improve organizational/innovation performance via SCM?" *Industrial Management & Data Systems*, 111(3), 410–431.

Crnjak, M. (2022) "Okrupnjavanje se tek zahuktava, Schengen i euro ubrzat će procese." Available at: https://www.poslovni.hr/hrvatska/okrupnjavanje-se-tek-zahuktava-schengen-i-euro-ubrzat-ce-procese-4365685 (accessed: 31. 03. 2022).

Dewi, R. *et al.* (2011) Patient satisfaction analysis on service quality of dental care. *Journal of International Dental and Medical Research*, 4(3), 103–110. https://pmc.ncbi.nlm.nih.gov/articles/PMC3221083/

Donabedian, A. (1988) "The Quality of Care: How can it be assessed?" *Journal of American Medical Association*, 260, 1743–1748.

Field, A. (2013) "Discovering statistics using IBM SPSS statistics." Sage, London.

Gómez-Cedeño, M., Castán-Farrero, J. M., Guitart-Tarrés, L. and Matute-Vallejo, J. (2015) "Impact of human resources on supply chain management and performance." *Industrial Management & Data Systems*, 115(1), 129–157.

Gupta, C. (2021) "What is customer satisfaction? (And how to achieve it)" Customer Service Enthusiast. Available at: https://www.zendesk.com/blog/3-steps-achieving-customer-satisfaction-loyalty/ (accessed: 31. 03. 2021).

Huber, F., Herrmann, A. and Morgan, R. E. (2001) "Gaining competitive advantage through customer value-oriented management." *Journal of Consumer Marketing*, 18(1), 41–53.

HZJZ (2022) "Korištenje zdravstvene zaštite u djelatnosti dentalne medicine u Hrvatskoj u 2021. godini." Available at: https://www.hzjz.hr/wp-content/uploads/2023/02/Bilten-DM-2021..pdf (accessed: 03. 11. 2022).

Ilieska, K. (2013) "Customer Satisfaction Index – as a Base for Strategic Marketing Management." *TEM Journal*, 2(4), 327–331.

Joshi, A., Kale, S., Chandel, S. and Pal, D. K. (2015) "Likert scale: Explored and explained." British Journal of *Applied Science & Technology*, 7(4), 396–403.

Kumar, A., Singh, R. K. and Modgil, S. (2023) "Influence of data-driven supply chain quality management on organizational performance: evidences from retail industry." *The TQM Journal*, 35(1), 24–50.

Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S. & Rao, S. S. (2006) "The impact of supply chain management practices on competitive advantage and organizational performance." *The International Journal of Management Science, Omega*, 34, 107–124.

Lin, W-B. (2007) "The exploration of customer satisfaction model from a comprehensive perspective." *Expert Systems with Applications*, 33(1), 110–121.

Luo, J. Y. N., Liu, P. P., and Wong, M. C. M. (2018) "Patients' satisfaction with dental care: a qualitative study to develop a satisfaction instrument." *BMC Oral Health*, 18, 15.

Maaz, M. A. M. and Ahmad, R. (2022) "Impact of supply chain performance on organizational performance mediated by customer satisfaction: a study of dairy industry." *Business Process Management Journal*, 28(1), 1–22.

Narayanan, A. M. and Greco, M. (2014) "The Dental Practice Questionnaire: a patient feedback tool for improving the quality of dental practices." *Australian Dental Journal*, 59, 334–348.

Nazaria, M. *et al.* (2014) "Impact of Price fairness on Price Satisfaction, Customer Satisfaction and Customer Loyalty in Iran Telecommunication Market (Case: MTN Irancell Company)." *Asian Journal of Research in Marketing*, 3(1), 131–144.

Pallant, F. (2001) "SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS." Allen & Unwin.

Perez-Campdesuñer, R. *et al.* (2025) Evaluating patient satisfaction with dental services: Models and strategic implications. *Patient Preference and Adherence*, 19, 453–470. https://www.dovepress.com/perceived-importance-vs-performance-in-dental-care-exploring-patient-s-peer-reviewed-fulltext-article-PPA

Peterson, R. A. (1994) "A Meta-analysis of Cronbach's Coefficient Alpha." *Journal of Consumer Research*, 21(2), 381–391.

Richard, P. J., Devinney, T. M., Yip, G. S. and Johnson, G. (2009) "Measuring organisational performance: towards methodological best practice." *Journal of Management*, 35, 718–804.

Samaržija, L. (2014) "Optimizacija drvnih klastera primjenom koncepta menadžmenta opskrbnog lanca", Doktorska disertacija, Ekonomski fakultet Sveučilišta u Rijeci, Rijeka.

Schneider, B., Macey, W. H., Lee, W. C., and Young, S. A. (2009). "Organizational Service Climate Drivers of the American Customer Satisfaction Index (ACSI) and Financial and Market Performance." *Journal of Service Research*, 12(1), 3–14.

Sharka, P. *et al.* (2024) Measuring the impact of dental service quality on revisit intention: Evidence from dental clinics. *Frontiers in Oral Health*, 5, 1362659. https://doi.org/10.3389/froh.2024.1362659.

Sterman, J. *et al.* (1997) "Unanticipated Side Effects of Successful Quality Programs: Exploring a Paradox of Organizational Improvement." *Management Science*, 43(4), 503–521.

Suprayogi, B. *et al.* (2022) A case study on dental clinics in Bandung City: Factors affecting patient satisfaction and loyalty. *Journal of Eastern European and Central Asian Research*, 9(1), 176–187. https://www.ieeca.org/journal/index.php/JEECAR/article/download/1061/430.

Tracey, M., Lim, J.-S. and Vonderembse, M. A. (2005) "The impact of supply-chain management capabilities on business performance." *Supply Chain Management: An International Journal*, 10(3), 179–191.

Van der Wiele, T., Boselie, P. and Hesselink, M. (2002) "Empirical evidence for the relationship between customer satisfaction and business performance." *Managing Service Quality: An International Journal*, 12(3), 184–193.

Yeung, M. C. H. and Ennew, C. T. (2000) "From customer satisfaction to profitability." *Journal of Strategic Marketing*, 8(4), 313–326.

Zeithaml, V. A. (2000) "Service quality, profitability, and the economic worth of customers: What we know and what we need to learn." *Journal of the Academy of Marketing Science*, 28(1), 67–85.

Zhang, Q. Y. (2001) "Technology infusion enabled value chain flexibility: a learning and capability-based perspective." Doctoral dissertation, University of Toledo, Toledo, OH, USA.

Izvorni znanstveni rad
https://doi.org/10.31784/zvr.14.1.13
Datum primitka rada: 6. 5. 2025.
Datum prihvaćanja rada: 20. 11. 2025.

ANALIZA UTJECAJA KUPČEVOG ZADOVOLJSTVA NA ORGANIZACIJSKE POKAZATELJE DENTALNOG OPSKRBNOG LANCA

Luka Samaržija
Dr. sc., izvanredni profesor, Sveučilište u Rijeci, Ekonomski fakultet Rijeka, Ivana Filipovića 4, 51 000 Rijeka, Hrvatska; *e-mail*: luka.samarzija@efri.uniri.hr

Hrvoje Pezo
Dr. sc., med. dent. spec., postdokorant, Hrvatska komora dentalne medicine, Kurelčeva 3, 10 000 Zagreb, Hrvatska ; *e-mail:* predsjednik@hsk.hr

Nikolina Dukić Samaržija
Dr. sc., izvanredna profesorica, Sveučilište u Rijeci, Ekonomski fakultet Rijeka, Ivana Filipovića 4, 51 000 Rijeka, Hrvatska; *e-mail:* nikolina.dukic.samarzija@efri.uniri.hr

SAŽETAK

U članku pod nazivom „Analiza utjecaja kupčevog zadovoljstva na organizacijske pokazatelje dentalnog opskrbnog lanca" prikazano je istraživanje koje uključuje sudionike s različitih razina lanca opskrbe dentalne medicine u Republici Hrvatskoj. Analiza zadovoljstva korisnika u upravljanju opskrbnim lancem ključna je zbog svoje složenosti i višestruke prirode, koja se značajno razlikuje od poslovanja u različitim djelatnostima. U Republici Hrvatskoj dentalna djelatnost je fragmentirana i primarno se oslanja na male privatne klinike; stoga je cilj ovoga istraživanja utvrditi utječe li zadovoljstvo pacijenata pozitivno na organizacijske pokazatelje klinika unutar stomatološkog opskrbnog lanca. Kao istraživački instrument korišten je anketni upitnik koji je ispunjavalo rukovodeće osoblje stomatoloških klinika, kao i pacijenti koji su krajnji korisnici usluga lanca opskrbe. Uzorak istraživanja čine 102 upitnika koje su ispunjavali rukovodeći kadrovi poliklinika i 914 anketnih upitnika koje su ispunili pacijenti. Nakon prikupljanja anketa podaci su podvrgnuti statističkoj analizi korištenjem softvera SPSS. U početnoj fazi statističke obrade podataka utvrđeno je da se zadovoljstvo korisnika ocjenjuje na temelju odnosa stomatologa i pacijenta, organizacijskih aspekata prije pružanja usluge, zadovoljstva cijenom i kompetencijama te ukupnog zadovoljstva korisnika. U drugoj fazi testirana je korelacija između zadovoljstva kupaca i uspješnosti organizacije, pri čemu nije utvrđena pozitivna i značajna veza između analiziranih varijabli ($\beta = 0{,}170$). Ova studija služi kao temelj za buduća istraživanja o utjecaju zadovoljstva korisnika na organizacijske pokazatelje u dentalnim opskrbnim lancima.

Ključne riječi: upravljanje opskrbnim lancem, dentalna industrija, zadovoljstvo korisnika, organizacijski pokazatelji