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Glavna urednica:

Izv. prof. dr. sc. Iva Gregurec

FOREWORD

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Editor in Chief:

Assoc. Prof. Iva Gregurec, Ph.D.

SADRŽAJ / CONTENTS

THE ROLE OF AI SENTIMENT ANALYSIS IN SHAPING MARKETING DISCOURSE

BRANIMIR KURMAIĆ
Veleučilište "Lavoslav Ružička" u Vukovaru
Blage Zadre 2, Vukovar, Hrvatska
bkurmaic@vevu.hr

IVAN KUNAC
Veleučilište "Lavoslav Ružička" u Vukovaru
Blage Zadre 2, Vukovar, Hrvatska
ikunac@vevu.hr

ABSTRACT

Sentiment analysis, a core capability of AI, involves processing natural language to detect emotions, opinions, and attitudes and, typically, classifying them as positive, negative, or neutral. This technology is used in marketing to analyze big data sets of consumer feedback (reviews, social media posts, survey responses, etc.). The goal of this paper is to examine how sentiment analysis interprets consumer language and influences a company's English-language marketing discourse with an eye on economic outcomes like engagement or sales, through a case study of a single Coca Cola marketing campaign, because Coca-Cola is a company whose use of AI in marketing strategy and real-time consumer engagement is well-documented. This is done through a corpus analysis of English-language consumer texts and Coca-Cola's marketing responses – in order to uncover patterns, shifts, or trends, after which a sentiment analysis is performed on the preprocessed data, which allows for a linguistic analysis of the data than can then be linked to economic outcomes.

KEYWORDS: sentiment analysis, AI, linguistics, marketing, discourse, social media

1. INTRODUCTION

The rise of social networks has transformed online marketing in the past 15 to 20 years and the changes in this area continue to grow with every new technological invention. Of the many inventions that have come about in recent years, the invention of "artificial intelligence" algorithms, or, to be more precise large language models such as Chat GPT and Grok, have taken the world of marketing by storm. Large language models (LLMs) are nowadays used both by consumers and corporations in a variety of ways and the number of specialized tools, as well as their sophistication, is changing online marketing all over again. One such tool that is being used by corporations all over the world is called sentiment analysis. Sentiment analysis, or opinion mining, is "the process of analyzing large volumes of text to determine whether it

expresses a positive sentiment, a negative sentiment or a neutral sentiment" (IBM, 2023) .This technology can be used by corporations to analyze large amounts of data, from tweets (X posts) to online survey responses, chats with customer service and reviews in order to ascertain the response of customers to marketing campaigns in real time, therefore allowing the company to react to the input and, if necessary, correct the course of the campaign. While AI as a technology is still relatively new, many companies have embraced it in recent years, and one example is Coca Cola. Esat Sezer, Chief big data insights officer at Coca-Cola Enteprises, confirms this when he states that "big data has played an essential role in helping us engage with our audiences" (Farley, 2012). This is why, in this paper, we decided to examine how Coca Cola reacts to shifts in sentiment towards one of their marketing campaigns. To accomplish this, we used an open-source sentiment analysis tools called VADER, or Valence Aware Dictionary and sEntiment Reasoner, to analyze hundreds of user comments on Coca Cola's posts on social networks and similar services during a specific marketing campaign. After the analysis, we performed a syntax analysis of Coca Cola's public statements to see if and how their marketing discourse changed after the end of the campaign.

2. SENTIMENT ANALYSIS AND ITS USE IN MARKETING

Sentiment analysis, also known as opinion mining, is a critical task in natural language processing (NLP) that aims to determine the emotional tone behind textual data. It has widespread applications in areas such as market research, social media monitoring, and customer feedback analysis. Over the past decade, the exponential growth of textual data on digital platforms has underscored the need for automated sentiment analysis systems powered by artificial intelligence (AI). In 2010, social network platforms had a combined user base of approximately 970 million, which surged to 5.24 billion users by January 2025, marking an increase of over 440%. Several scientific studies have examined the implications of this data surge. For instance, a comprehensive analysis of text mining applications in big data analytics highlights the expanding role of text mining across various commercial fields and academic disciplines. It highlights the need for rigorous methodologies, multi-platform analysis, and better tools to interpret digital interactions effectively (Strauss, Dominic Harr, & Pieper, 2024). These systems rely on advanced techniques, including rule-based methods, machine learning algorithms, and deep learning models, to classify text into positive, negative, or neutral sentiments. However, despite significant advancements, sentiment analysis faces several challenges, including the detection of sarcasm, handling cultural variations, and resolving contextual ambiguities.

There are various methodologies, each with distinct advantages and limitations in sentiment analysis. Keyword spotting, the most basic technique, detects predefined affective words (e.g., "happy," "sad") but often fails to account for negation or contextual nuances, leading to misinterpretations (e.g., classifying "not bad" as negative). Lexical affinity methods assign sentiment probabilities to words based on their likelihood of expressing emotion, though they struggle with context-dependent phrases (e.g., differentiating "met by accident" from "car accident").

Machine learning-based approaches leverage labeled datasets to identify sentiment patterns, improving accuracy but requiring extensive training data and careful feature engineering. Deep learning models, such as Convolutional Neural Networks (CNNs) and Long Short-Term Memory (LSTM) networks, automatically extract hierarchical features from text, excelling in complex sentiment tasks but demanding substantial computational resources.

A comparative study by Dang et al. (Cach Dang, Moreno-García, & De la Prieta, 2020) evaluated deep learning models across eight datasets, including 1.6 million tweets and IMDB reviews. Findings indicated that LSTM-based Recurrent Neural Networks (RNNs) with word embedding achieved the highest accuracy (87%), albeit with significant computational overhead. In contrast, CNNs offered a more efficient alternative, yielding accuracies between 80% and 86% with reduced training time. The study also highlighted the limitations of Term Frequency-Inverse Document Frequency (TF-IDF), which performed poorly in sequential modeling (accuracy: 50–57%), whereas word embedding better preserved semantic relationships. Additionally, domain-specific datasets (e.g., airline-related tweets) improved model performance, suggesting that relevance to the target domain can mitigate data requirements. These findings underscore the importance of balancing accuracy and efficiency in model selection, advocating for further research into hybrid architectures (Cach Dang, Moreno-García, & De la Prieta, 2020).

Traditional sentiment analysis methods, which rely on lexical patterns, often struggle with nuanced expressions such as sarcasm, irony, or implicit sentiment. Concept-Level Sentiment Analysis (CLSA) addresses these limitations by incorporating semantic networks, commonsense reasoning, and affective ontologies (e.g., SenticNet) to infer sentiment based on conceptual associations rather than surface-level keywords. By integrating computational linguistics, artificial intelligence, and psychological principles, CLSA enhances contextual understanding, improving accuracy in applications like social media monitoring, customer feedback analysis, and market prediction. However, challenges persist, including ambiguity resolution, multilingual scalability, and real-time processing efficiency (Cambria, 2013).

Sentiment analysis is commonly applied "in the domain of reviews of customer services and products" (Lamba & Madhusudhan, 2021), and its primary focus is on social media, because it has an extremely large number of users who are quite vocal about their experiences with brands they purchase and use. It helps to present significant value to candidates running for positions and "helps the managers monitor how voters relate to their speeches, feel about various issues, and relate to the candidates' actions" (Lamba & Madhusudhan, 2021). The above stated illustrates just how wide the applications of this technology are in business, from customer feedback to brand monitoring, market research, and so on.

Sentiment analysis enables "companies with vast troves of unstructured data to analyze and extract meaningful insights from it quickly and efficiently." (IBM, 2023). Such large amounts of data are bound to be overwhelming for human teams, which is why, as we learn from IBM, strong, "cloud-based, AI-enhanced customer sentiment analysis tools help organizations deliver business intelligence from their customer data at scale, without expending unnecessary resources." (IBM, 2023). This is of particular importance to enterprises that need to respond quickly in a crisis on social media, and tools like AI make this possible.

There are many different sentiment analysis tools on the market, such as Empower by Ringover, Lexalytics, IBM's Watson Natural Language Understanding, Google Cloud NL API, Microsoft Azure Text Analytics, and a number of others. We were not able to find exact data on how many companies use sentiment analysis in online marketing, which may be an interesting topic of research on its own, but judging from the fact that both Google and Microsoft, as well as IBM and many others have marketed their own sentiment analysis tools, it is safe to assume that its use is very widespread in today's markets.

3. RESEARCH METHODOLOGY

In this research, we decided to focus on Coca-Cola because of its well-documented use of modern AI technologies, specifically in its latest "Holidays are Coming" campaign in the end of 2024 and early 2025. As we learn from Vyas, "Coca Cola scans media as in what manner its products are presented or marketed in social media", to which she adds that in 2015, "Coca Cola was able to estimate that its products are mentioned somewhere in the media holding an average of one visit every two seconds." (Vyas, Jain, Choudhary, & Chaudhary, 2019). Since then, Coca-Cola has continued to embrace the use of AI and expanded on it, which reached a peak in late 2024 with their Create Real Magic™ campaign. As Coca Cola's Manolo Arroyo, EVP and Global Chief Marketing Officer of The Coca-Cola Company put it, "Our marketing is about creating unique experiences. This year's campaign is a great example of how we're fusing human artistry with creative uses of artificial intelligence and other digital tools." (Coca, groundbreaking digital experience and films fuse holiday heritage with cutting edge tech, 2024). In essence, Coca-Cola created and entirely AI-made commercial and encouraged its customers to use AI to create their own content and publish it on social networks. In this paper we collected hundreds of user comments, posts, and reviews on various social media sites in order to analyze the customer's sentiment towards this campaign and Coca-Cola's response to it in terms of language used in its subsequent marketing messages and public announcements, which leads us to our research methodology.

In order to perform our own sentiment analysis of Coca-Cola's consumers, we first had to create a corpus of comments and posts connected to the AI powered marketing campaign "Holidays are Coming" which we manually collected You Tube in the timeframe between October 2024 and January 2025, and put them in a spreadsheet so they can be fed to VADER. For the purpose of the analysis we collected the comments from 3 different Coca-Cola advertisements published within the holiday marketing campaign. From the first video, made entirely with AI, we collected 100 comments, and the other two, which were live commercials, we collected 83 comments combined. In order to get a clearer picture of how these comments differ from the usual comments Coca-Cola receives on social media outside of this campaign, we also collected and analyzed 421 comments from 7 more advertisements Coca-Cola published on You Tube in the following period, from February 2025 to May 2025, which were unrelated to the holiday campaign.

To analyze posts gathered via social network platforms related to Coca-Cola advertisements, this study employed VADER (Valence Aware Dictionary and sEntiment Reasoner). VADER is a sentiment analysis tool that is based on rules, and, as we learn from Swankar, "we see that VADER (0.96) outperforms individual human raters (0.84) at correctly labelling the sentiment of tweets into positive, neutral, or negative classes." (Swarnkar, 2020). It is specifically designed for informal texts like ones from social platforms. It uses a predefined lexicon of more than 7500 words associated with values which applies a set of rules to calculate sentiment scores. According to rules set by the researcher, VADER calculates four sentiment scores for a given statement: positive, negative, neutral and a compound score which is a weighted sum ranging from –1 (most negative) to +1 (most positive). The typical threshold values are >= 0.5 for positive sentiment and <= -0.5 for negative sentiment, and everything in between is considered neutral sentiment (Hutto, 2021). In this research, VADER was used programmatically to weight comments stored in an excel file. The resulting compound scores were used to classify each comment into one of three categories: positive, negative or neutral. After this we looked at Coca-Cola's own marketing language to see if and how it changed from the campaign to after the campaign by first looking at 49 of their own posts on X to see what

sentiment analysis says about them, and in the end by performing a syntax analysis of their official PR statements on their website. We did this by analyzing two of Coca-Cola's statements, one before the "Holidays are Coming" campaign and one after it. The point of this analysis is the try and understand if and how Coca-Cola changed the language it uses in its PR statements based on success and sentiment analysis after the end of their campaign. The syntactic analysis was also performed by an LLM called Grok.

4. RESEARCH FINDINGS

Coca-Cola started the camping by releasing their first commercial on You Tube with the title "The Holiday Magic is coming"[1]. The video itself is completely made with generative AI and was created as an homage to the original 1995 "Holidays are Coming" campaign Christmas ad with big Coca-Cola trucks and polar bears drinking Coca-Cola. The VADER analysis of the 100 manually collected comments with the highest visibility under the video shows that about 54% of the comments were either neutral or negative in sentiment (Fig. 1), with only about 46% of positive comments and as much as 30% of negative comments. The commercial was very badly received in general, with comments ranging from "Coming from a billion-dollar company like Coca-Cola, this is an AI embarrassment, and likely a deliberate marketing strategy" to "The irony of the "Real Magic" tagline at the end of a fake commercial".

Figure 1. - VADER analysis of "The Holiday Magic is Coming"
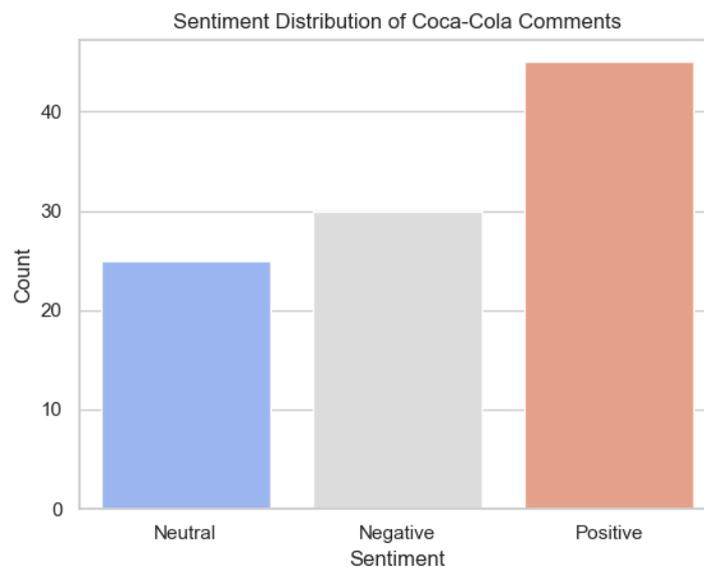
Source: Author(s)

While 45% positive sentiment may seem like a mediocre result, the picture becomes much clearer when contrasted with the sentiment in 83 comments from the second and third commercials which were not made with AI, but with real actors. We analyzed the following two commercials combined, and the results showed (Fig. 2) that close to 60% of the comments were positive, with many commenters still referring to the previous AI-made commercial such as, "Finally, an ad without AI", or "That's how you do it! No AI, only the real stuff", and only

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[1] Source: https://www.youtube.com/watch?v=4RSTupbfGog

about 10% of the comments were negative, which is a marked improvement over the first commercial.

Figure 2. - VADER analysis of comments from 2nd and 3rd commercials
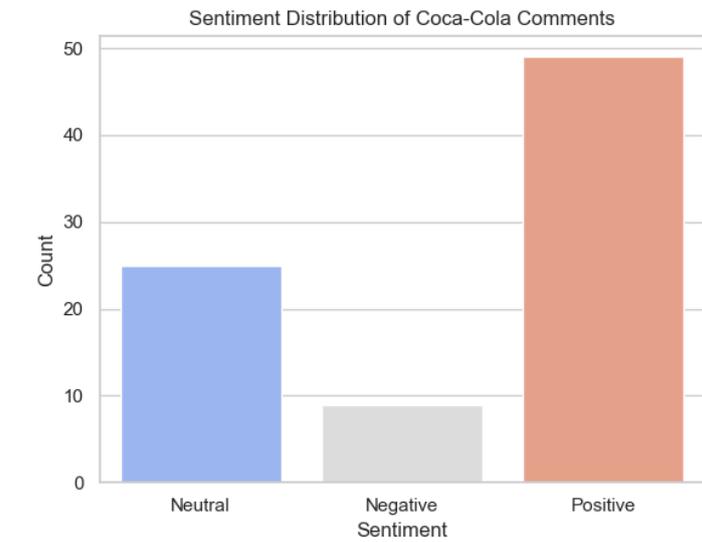
Source: Author(s)

This, on the other hand, should be contrasted with the 421 comments we collected from 7 other You Tube videos in the period from February to May of 2025 (Fig. 3). Out of the 421 manually collected user-generated comments, about 13% were negative in sentiment, which means the response to their second and third commercials was roughly in line with the average sentiment they received after the campaign or even slightly better than that.

Figure 3. - VADER analysis of comments after the campaign
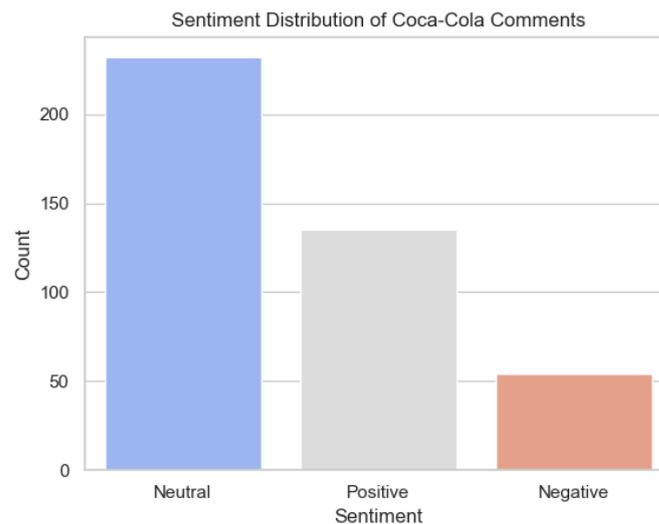
Source: Author(s)

The second part of the research is concerned with the analysis of the language Coca-Cola used in its public statements and customer support at the start of the campaign, during the campaign,

and after the campaign. As far as sentiment of their social media posts goes, Coca-Cola's own social media posts and interactions with customers (Fig. 4) are almost entirely positive in sentiment, which is to be expected, especially because Coca-Cola is likely using AI to respond to customers and create social media posts form prompts in order to be able to respond to such large numbers of customers online. We analyzed 49 of Coca-Cola's posts on X.

Figure 4. - VADER analysis of Coca-Cola's posts on X
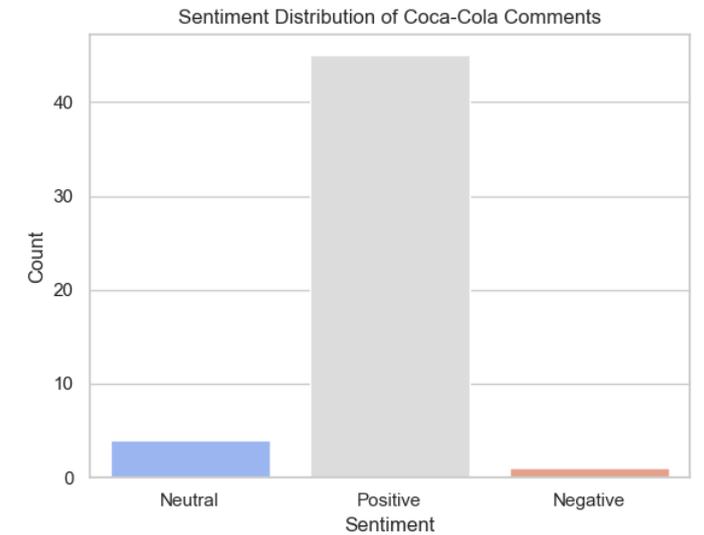
Source: Author(s)

This leads us to our final point; a syntactic analysis of Coca-Cola's public statement language in order to see if and how it changed after the campaign. In order to examine this, we fed two of Coca-Cola's public statements to a large language model, or an AI, called Grok and asked it to perform the analysis. The first corporate statement is titled "Groundbreaking Digital Experience and Films Fuse Holiday Heritage With Cutting-Edge Tech" (Coca, groundbreaking digital experience and films fuse holiday heritage with cutting edge tech, 2024) and was created to introduce the AI Real Magic holidays campaign from December 10, 2024, and the second one is titled "Iconic 'Share a Coke' is Back for a New Generation" (Coca, coca-colacompany.com, 2025) and was published on March 26, 2025.

As can be seen from the table (Figure 5), the pre-campaign statement uses denser, more complex structures to detail AI's role (e.g., "custom tools that power…"), reflecting a focus on technological innovation. The post-campaign statement simplifies syntax with shorter sentences and conversational punctuation (e.g., ellipses in "likes and shares…"), aligning with Gen Z's preference for direct, relatable communication. The pre-campaign statement leans on technical terms ("AI," "programmatic") and holiday imagery ("Santa," "caravan"), while the post-campaign statement prioritizes emotional, nostalgic terms ("friendship," "keepsakes") and youth slang ("crew"). This suggests a pivot from AI-driven novelty to authentic, human-centric connection, possibly in response to the 2024 AI ad's mixed reception (e.g., "uncanny valley" comments on X).

As far as sentiment is concerned, both are highly positive, but the pre-campaign's +0.92 reflects excitement for AI innovation, while the post-campaign's +0.87 balances positivity with neutral terms, indicating a softer, less tech-heavy approach. The pre-campaign targets a broad, tech-savvy audience with AI-driven experiences (e.g., "chat with Santa in 45 languages"). The post-

campaign narrows to Gen Z, emphasizing "real life engagement" and "spontaneous moments," likely adapting to consumer feedback seeking authenticity post-AI backlash.

Figure 5. - Pre-campaign & post-campaign statement

Aspect	Pre-Campaign (Dec 10, 2024)	Post-Campaign (Mar 26, 2025)
Syntax	Complex, with nested clauses and appositives (e.g., "which is accessible…"). High clausal density.	Mix of simple and complex sentences, moderate clausal density, conversational punctuation (ellipses).
Word Choice	Technical ("AI," "platforms"), holiday-specific ("Santa," "polar bears"), emotive ("timeless," "joy").	Emotive ("authentic," "friendship"), nostalgic ("keepsakes"), less tech-focused ("digital hub").
Sentiment (VADER)	+0.92 (highly positive, driven by "happiness," "magic").	+0.87 (highly positive, tempered by neutral "customization").
Customer Approach	Tech-savvy, inclusive, blends heritage and AI innovation for global audience.	Youth-focused (Gen Z), emphasizes authenticity and real-world connection.
Tone	Aspirational, innovative, tradition-rooted.	Warm, nostalgic, relatable, conversational.

Source: Author(s) based on the results of AI Grok

5. CONCLUSIONS

This study's syntactic and sentiment analyses of Coca-Cola's marketing discourse during and after the 2024–2025 "Holidays Are Coming" campaign reveal a strategic linguistic pivot in response to consumer sentiment, underscoring the pivotal role of AI-driven sentiment analysis in shaping online marketing strategies. The December 2024 statement, characterized by complex syntax and technical lexicon (e.g., "cutting-edge AI," "programmatic"), reflected Coca-Cola's initial enthusiasm for AI-driven storytelling, achieving a highly positive sentiment score (+0.92). However, the backlash against the AI-generated holiday commercial, marked by consumer critiques of its "uncanny" and "soulless" feel on platforms like X, prompted a notable shift. The March 2025 "Share a Coke" statement adopted simpler syntax, emotive terms (e.g., "authentic," "friendship"), and a conversational tone, yielding a slightly lower but still positive sentiment (+0.87). This linguistic adaptation, targeting Gen Z's desire for real-world connection, coincided with Coca-Cola's release of two non-AI commercials, including a reissued 2022–2023 ad, signaling a retreat from AI's perceived inauthenticity.

These findings highlight sentiment analysis's dual role in online marketing: as a tool for real-time consumer insight and a driver of linguistic and strategic recalibration. Coca-Cola's response exposes AI's limitations in capturing nuanced emotional cues, such as sarcasm or cultural distaste, as noted in consumer backlash. Economically, the shift to non-AI content likely preserved brand trust, mirroring past campaigns' 7% sales lifts (Kumar & Sharma, 2020), while linguistically the company simplified discourse to resonate with Gen Z, a key

demographic driving beverage sale, which, we find, could be an interesting subject for further research and analysis. For applied linguistics, this underscores how AI reshapes lexical and syntactic choices to align with emotional triggers, though at the risk of oversimplification. Based on our research, we propose that correct use of sentiment analysis can greatly impact a company's ability to adapt their media campaigns as they unfold in real time, thereby improving its effectiveness based on the response of their customers. Furthermore, sentiment analysis tools allow a company to perform an in-depth analysis of their campaigns after they take place and helps them improve future campaigns based on their findings.

Although the analysis was conducted on a substantial number of comments and official statements, the chosen platforms and timeframe may limit the global representation of brand perception, thereby impacting the validity of the results in all markets. Furthermore, automated sentiment analysis tools still struggle with detecting irony, sarcasm, and cultural nuances, which can affect the accuracy of interpretation of the comments, depending on the chosen model for analysis. For future research, we propose exploring cross-cultural sentiment dynamics and multimodal analyses (e.g., text and visuals) to refine AI's role in marketing. Coca-Cola's adaptive strategy exemplifies how sentiment analysis can balance innovation with authenticity, offering a model for brands navigating the digital landscape's emotional complexities.

REFERENCES

[1] Cach Dang, N., Moreno-García, M., & De la Prieta, F. (2020). Sentiment Analysis Based on Deep Learning: A Comparative Study. *Electronics, 9.* doi:https://doi.org/10.3390/electronics9030483

[2] Cambria, E. (2013). An Introduction to Concept-Level Sentiment Analysis. *Advances in Soft Computing and Its Applications*, (str. 478–483). doi:https://doi.org/10.1007/978-3-642-45111-9_41

[3] Coca, C. (12. 10 2024). *groundbreaking digital experience and films fuse holiday heritage with cutting edge tech*. Preuzeto 10. 6 2026 iz coca-colacompany.com: https://www.coca-colacompany.com/media-center/groundbreaking-digital-experience-and-films-fuse-holiday-heritage-with-cutting-edge-tech

[4] Coca, C. (25. 3 2025). *coca-colacompany.com*. Dohvaćeno iz iconic share a coke is back for a new generation: https://www.coca-colacompany.com/media-center/iconic-share-a-coke-is-back-for-a-new-generation

[5] (4. 10 2012). *big companies big data*. Preuzeto 10. 6 2025 iz research-live.com: https://www.research-live.com/article/features/big-companies-big-data/id/4008394

[6] Hutto, C. (2021). *vadersentiment.readthedocs.io*. Dohvaćeno iz vadersentiment: https://vadersentiment.readthedocs.io/en/latest/pages/about_the_scoring.html

[7] IBM. (23. 8 2023). *ibm.com\sentiment analysis*. Preuzeto 10. 6 2025 iz IBM.com: https://www.ibm.com/think/topics/sentiment-analysis

[8] Kumar, A., & Sharma, R. (2020). Impact of AI-driven marketing analytics on campaign efficiency: A case study of Coca-Cola. Journal of Marketing Analytics, 8(3), 145–156.

[9] Lamba, M., & Madhusudhan, M. (31. 7 2021). Sentiment Analysis. *Text Mining for Information Professionals*. doi:https://doi.org/10.1007/978-3-030-85085-2_7

[10] Strauss, C., Dominic Harr, M., & Pieper, T. M. (27. 7 2024). Analyzing digital communication: a comprehensive literature review. *Management Review Quarterly*. doi:https://doi.org/10.1007/s11301-024-00455-8

[11] Swarnkar, N. (21. 5 2020). *vader sentiment*. Dohvaćeno iz blog.quantinsti.com: https://blog.quantinsti.com/vader-sentiment/

[12] Vyas, S., Jain, S. S., Choudhary, I., & Chaudhary, A. (2019). Study on Use of AI and Big Data for Commercial System. *Amity International Conference on Artificial Intelligence*, (str. 737-739). doi:10.1109/AICAI.2019.8701361

SEO EVALUATION WITH AI AND CONVENTIONAL TOOLS: CASE STUDY OF HIGHER EDUCATION WEBSITES IN CROATIA

MATIJA NOVAK
University of Zagreb
Faculty of Organization and Informatics
Pavlinska 2, 42000 Varaždin, Croatia
matija.novak@foi.unizg.hr

MARIJA MAČEK
University of Zagreb
Faculty of Organization and Informatics
Pavlinska 2, 42000 Varaždin, Croatia
marija.macek@foi.unizg.hr

ABSTRACT

This study evaluates the SEO performance of three Croatian higher education websites by comparing conventional SEO auditing tools with generative AI-based analysis. The research identifies key technical and on-page deficiencies such as missing meta descriptions, poor heading structures, and a lack of schema markup and XML sitemaps. While AI tools like ChatGPT and ClaudeAI offer valuable strategic and content-level suggestions, they fall short in technical precision compared to traditional tools like RankMath and SpeedTest Insights. The study also highlights the effectiveness of open-source and free SEO tools in low-resource environments. Results suggest that a hybrid approach, combining AI and conventional tools, provides the most comprehensive SEO evaluation. The paper concludes with suggestions for future research to explore long-term SEO improvements and broader institutional comparisons.

KEYWORDS: SEO, generative AI, higher education, Croatia, case study

1. INTRODUCTION

In today's digital landscape, the visibility and performance of a website significantly influence how effectively an institution communicates with its target audience. Although Search Engine Optimization (SEO) is often associated with commercial enterprises aiming to increase web traffic and conversions, it is equally important for public sector entities, including higher education institutions. University websites serve as the primary digital interface for prospective students, researchers, and partners. Therefore, ensuring that these websites are well-optimized, accessible, and aligned with modern SEO best practices is strategically important. As highlighted by [Maček & Novak, 2024], SEO encompasses various techniques aimed at improving digital presence and achieving higher rankings in organic search results, which is equally crucial for academic institutions as it is for businesses.

This paper presents an SEO homepage evaluation of three websites representing Croatian higher education institutions: the Faculty of Organization and Informatics (FOI), the Faculty of Electrical Engineering and Computing (FER), and the Department of Informatics at the University of Rijeka (FIDIT). The analysis was conducted using a combination of publicly available, free tools. The study utilized both conventional SEO tools and specialized AI, including generative AI tools. The main objective is to assess and compare these websites in terms of SEO performance, technical optimization, and adherence to web best practices, and to evaluate how well AI tools perform in comparison to conventional ones. By doing so, we aim to highlight common strengths and weaknesses in the current digital presence of academic institutions in Croatia and suggest pathways for improvement.

The rest of the paper is organized as follows: Section 2 presents related work; Section 3 outlines the methodology; Section 4 reports the results; Section 5 provides the discussion; and Section 6 concludes the paper.

2. RELATED WORK

Search Engine Optimization (SEO) is a set of practices aimed at improving a website's visibility in search engines like Google, which dominates the market [Alfiana et al., 2023; Vinutha & Prajwal, 2023]. The primary goal is to achieve high rankings for specific keywords to increase organic (non-paid) traffic.

The process begins when a search engine indexes web content, which is a prerequisite for appearing in search results [Google, 2019]. Complex algorithms then rank pages based on numerous factors [Sistrix, 2022]. According to [Camossi & Rodas, 2023], the most relevant factors include keyword selection, high-quality content, on-page elements (titles, URLs), link building, mobile responsiveness, technical optimization (e.g., site speed), and overall user experience.

Recent SEO trends emphasize user-centric optimization. Google's Core Web Vitals, metrics for loading speed, interactivity, and visual stability, and the focus on Expertise, Authoritativeness, and Trustworthiness (E-A-T) have become significant ranking signals [Google, 2019; McDonald, 2023]. The rise of voice search and Google's BERT algorithm, which enables better semantic understanding of queries, has also shifted strategies, contributing to the growth of featured snippets and "no-click" searches [McDonald, 2023; Sistrix, 2022].

SEO performance is measured using Key Performance Indicators (KPIs) such as organic traffic, keyword rankings, bounce rate, session duration, and conversions from organic traffic [Xinghai, 2023]. Various tools like Google Analytics, Ahrefs, and SEMrush are used for tracking these metrics [Firstpagesage, 2024].

The impact of SEO is well-documented beyond the commercial sector. For instance, a study at a private university in Sarajevo [Poturak et al., 2022]. found that improving search rankings led to increased site visitors, longer user engagement, and ultimately, higher student enrollment and annual revenue.

3. METHODOLOGY

This study analyzes the homepage websites of three faculties: the Faculty of Organization and Informatics (FOI) at the University of Zagreb, the Faculty of Electrical Engineering and Computing (FER) at the University of Zagreb, and the Department of Informatics (FIDIT) at the University of Rijeka. These institutions were selected to represent Croatia's diverse technical universities, all with a shared focus on informatics, where web visibility is crucial. Their similar structures allowed for direct benchmarking of SEO practices, and their public websites ensured that the analysis could be reproduced.

This study exclusively used free tools such as Rank Math SEO Analyzer, PageSpeed Insights, and Generative AI (ChatGPT, ClaudeAI, DeepSeek) to ensure the methodology is both reproducible and accessible. By avoiding commercial platforms, we demonstrate that web audits can be achieved without financial barriers, offering a cost-effective proof of concept for under-resourced institutions. This approach provides practical, scalable recommendations for organizations with limited budgets.

The case study was designed as follows: First, conventional tools were used to gather as much information as possible regarding SEO, as well as performance and security. Only then were AI tools employed, with the goal of determining what information they can provide, whether it is accurate, and if they can replace conventional tools.

The research questions of this study are:
- What are the strengths and limitations of generative AI tools in SEO analysis compared to conventional auditing methods?
- What are the most critical technical and on-page SEO deficiencies across the evaluated institutional websites?
- What actionable improvements would most significantly enhance the websites' search visibility and usability?
- Additionally by using only free tools we want to answer the question: To what extent can open-source and freely available tools provide actionable insights into institutional SEO and web page optimization?

4. RESULTS

4.1. RANKMATH SEO ANALYZER

Rank Math SEO Analyzer (https://rankmath.com/tools/seo-analyzer/) offers a simple interface that analyzes a web page with 26 different elements divided into Basic SEO, Advanced SEO, Performance and Security. In Table 1 13 of the 26 elements are presented. It calculates an overall score based on the result.

A comparative SEO analysis of the three faculties reveals several shared and some specific weaknesses. Common issues include the absence of XML sitemaps and improper use of meta descriptions, these are entirely missing on the FER and FOI websites, while FIDIT's meta description is excessively long. All sites also lack image alt text, which negatively impacts accessibility. In terms of structure, only FOI uses the H1 tag correctly; FER and FIDIT misuse it by placing multiple H1 tags on a single page. On the technical side, FIDIT is the only faculty

using Schema.org structured data. In contrast, FER is the only one entirely lacking a robots.txt file and canonical tags, both of which are present on the FOI and FIDIT websites.

Table 1. Summary of results by RankMath SEO Analyzer

SEO Aspect	FIDIT	FOI	FER
Meta Description	Present but too long	Missing	Missing
H1 Tags	Too many (4)	Appropriate (1)	Too many (10)
Alt Attributes	1 missing	16 missing	18 missing
Canonical Tag	Present	Present	Missing
Schema.org Data	Present	Missing	Missing
CSS/JS Minification	CSS partially minified, JS minified	Not fully minified	Not fully minified
Number of Requests	Moderate (52)	Moderate (40)	High (55)
Response Time	Good (<0.8 s)	Slower (1.22 s)	Good (<0.8 s)
OpenGraph Tags	Partially missing	Partially missing	Present
Title Length	Good	Good	Good
Internal/External Links Ratio	Good 102 internal 31 external	Good 115 interna 18 external	Good 346 internal 12 external

Source: Authors

In terms of performance, FER and FIDIT have acceptable server speeds, while FOI's is noticeably slower. All three websites suffer from incomplete CSS and JavaScript optimization, with FER generating the highest number of HTTP requests. Among them, only FER utilizes OpenGraph tags for social media sharing. Link distribution is generally well-balanced; however, FER emphasizes internal linking, whereas FIDIT relies more heavily on external links.

In summary, FIDIT performs well in structured data implementation but needs to address issues with meta descriptions and heading usage. FOI should prioritize improving its technical performance and adding OpenGraph support. FER requires more extensive improvements, particularly in metadata, crawlability, and content structure. Resolving these issues would enhance the search visibility and accessibility of all three sites.

4.2. SPEEDTEST INSIGHTS

Although the Rank Math SEO Analyzer provided useful data, its performance insights were limited. Therefore, SpeedTest Insights (https://pagespeed.web.dev/) was used for a more detailed desktop analysis. This tool evaluated performance, accessibility, best practices, and SEO. The performance results are summarized in Table 2, while the other metrics largely aligned with Rank Math's findings.

Table 2. Summary of results by SpeedTest Insights

Largest Contentful Paint (LCP)	1.1 s	1.7 s	1.2 s
Interaction to Next Paint (INP)	48 ms	17 ms	16 ms
Cumulative Layout Shift (CLS)	0.04	0	0.08
First Contentful Paint (FCP)	0.7 s	1.4 s	0.9 s
Time to First Byte (TTFB)	0.3 s	1.0 s	0.5 s
First Contentful Paint (detailed)	0.8 s	0.9 s	1.0 s
Largest Contentful Paint (detailed)	3.6 s	3.0 s	1.8 s
Total Blocking Time (TBT)	270 ms	60 ms	0 ms
Cumulative Layout Shift (detailed)	0	1	123
Speed Index	4.0 s	2.1 s	1.4 s

Source: Authors

PageTest Insights showed that all three sites met Core Web Vitals benchmarks, but with notable differences. FER had the fastest Largest Contentful Paint (1.2 s) and best responsiveness (INP 16 ms), FOI demonstrated perfect layout stability (CLS 0), and FIDIT excelled in initial loading speed with the fastest time to first byte (0.3 s) and first contentful paint (0.7 s)

Among the three websites, FER achieved the highest overall performance score (85), excelling in speed, responsiveness, and minimal Total Blocking Time. FOI followed with a solid score (79), perfect adherence to best practices (100), and strong layout stability. Despite a lower performance score (60), FIDIT stood out in accessibility (96) and SEO (100), reflecting a strong focus on inclusivity and well-structured metadata. In contrast, FOI and FER showed weaknesses in accessibility due to missing alt text and incomplete metadata.

Further technical analysis reinforced these patterns. FER demonstrated the fastest Speed Index (1.4 s) and the shortest content load time (1.8 s), while FOI performed moderately across key metrics. FIDIT lagged in speed-related indicators, with a Total Blocking Time of 270 ms and the slowest Speed Index (4.0 s), highlighting the need for optimization. In summary, FER leads in speed and responsiveness, FOI excels in layout stability and coding practices, and FIDIT stands out in accessibility and SEO, each showing distinct strengths and areas for targeted improvement.

4.3. AIOSEO

AIOSEO (https://aioseo.com/seo-analyzer/) is an AI tool specialized for SEO. It has a similar interface as the previous two tools. This tool generates a report divided into the same four categories as RankMath SEO Analyzer (i.e., Basic SEO, Advanced SEO, Performance and Security). The tool analyzes 22 elements. All of the elements that the tool reports are also in the RankMath SEO Analyzer. The results are similar but not identical. For example this tool mentioned 411 internal and 8 external links for FER, 121 internal and 20 external links for FOI, and 117 internal links and 18 external links for FIDIT.

The overall score in this tool is: 44 for FER, 68 for FOI and 64 for FIDIT. These differences come from the fact that there is a difference in the number of elements checked but also how the specific element is treated. For example the case of AIOSEO OpenGraph Meta is present but some Open Graph meta tags are missing and this is flagged as critical while the RankMath SEO Analyzer only checks if the meta tags have been found. This show also that AIOSEO does do some deeper analysis but overall, at least in the free version, it is not much better than RankMath SEO Analyzer.

4.4. GENERATIVE AI TOOLS

This study evaluated the SEO analysis capabilities of three generative AI tools: ChatGPT v4 (https://chatgpt.com/), ClaudeAI Sonnet 4 (https://claude.ai/new), and DeepSeek v3 (https://chat.deepseek.com/). To mimic the simplicity of conventional SEO tools, we used a deliberately basic prompt: "Can you do SEO analysis for the following web pages: https://www.foi.unizg.hr/, https://www.fer.unizg.hr/, and https://www.inf.uniri.hr/?" This approach was intended to assess the tools' baseline performance, an issue further examined in the Discussion section.

All three tools successfully queried the web pages and generated reports. ChatGPT provided textual summaries highlighting the strengths and weaknesses of each site. It identified issues related to metadata, heading structures (H1, H2), image alt attributes, and Core Web Vitals. The final summary noted that each institutional site had unique strengths but also shared common weaknesses. For instance, FOI offered strong clarity but had poor metadata; FER conveyed authority but lacked meta descriptions and image optimization; and FIDIT featured a good structure but required improvements in meta tags and schema markup.

While ChatGPT's report was informative, it included only a small fraction of the information gathered by conventional tools. However, it introduced a valuable new element not found in traditional analyses: content improvement suggestions. These included: FOI – The homepage is too generic and should incorporate relevant keywords such as "study programs," "research," and "ICT education Varaždin" to improve SEO. FIDIT – The homepage should feature key terms like "digital technologies," "informatics," and "research" in visible headings and paragraphs. FER – The homepage contains a significant amount of dynamic content, which may impact SEO.

The second GAI tool, DeepSeek, provided a report similar to ChatGPT's. Again, there were comments about titles, metadata, links, and content suggestions. It also included information about speed (e.g., TTFB), which aligned with the data reported by SpeedTest Insights. One improvement suggestion that ChatGPT did not offer was to enable compression and optimize CSS and JavaScript to enhance loading speed. DeepSeek offered simple statements for each

site: FER has the strongest SEO foundation but needs improvement in mobile optimization, FOI lags in meta descriptions and speed, and FIDIT requires a complete redesign and technical upgrade. As with ChatGPT, DeepSeek provided useful basic information and some helpful advice on content improvements. However, many valuable insights, easily obtainable with conventional tools, were missing.

Third GAI tool CloudeAI provided the most detailed report from all three tools. It divided the report in three parts: positive and negative aspects and SEO recommendations. While it did provide suggestions about titles, metadata and links it also gave suggestions about: content hierarchy, readability, mobile responsiveness, use of structured data (schema markup), and the inclusion of clear calls to action. It provided some scores (e.g. content quality, loading speed) and gave an overall conclusion noting the following key recommendations: *Technical Optimization* - Adding meta descriptions, schema markup, sitemap; *Content Structure* - Improved H1-H6 hierarchy, shorter paragraphs; *Local SEO* - Google My Business, addresses, contact information; Mobile *Optimization* - Responsive design, loading speed and *Call-to-Action* - Clearer calls to action for prospective students.

5. DISCUSSION

This study aimed to evaluate the SEO performance of three Croatian higher education institutional websites using both conventional and AI-based tools. The research was guided by five key questions, each of which is addressed below in light of the collected data and comparative analysis.

5.1. TECHNICAL AND ON-PAGE SEO DEFICIENCIES

The second research question: *"What are the most critical technical and on-page SEO deficiencies?"*, was addressed through analysis using tools such as RankMath, SpeedTest Insights, and AIOSEO. The evaluation revealed several recurring issues across the websites. Both FER and FOI completely lacked meta descriptions, while FIDIT's meta description was excessively long, potentially reducing click-through rates. Heading structures were also problematic, with FER and FIDIT using multiple H1 tags per page, which can confuse search engines about the content hierarchy. All three websites had numerous images missing alt attributes, undermining both accessibility and image-based SEO. Furthermore, none of the sites included XML sitemaps, and only FIDIT implemented structured data via Schema.org, which limits their eligibility for enhanced search result features. FOI, in particular, struggled with technical performance, showing the slowest server response time and the highest Total Blocking Time (TBT), making its mobile usability especially poor. Collectively, these deficiencies point to a general lack of technical SEO hygiene, with key weaknesses in areas that affect how websites are crawled, indexed, and displayed in search results.

5.2. ACTIONABLE IMPROVEMENTS FOR VISIBILITY AND USABILITY

To address the third research question: *"What actionable improvements would most significantly enhance the websites' search visibility and usability?"*, the analysis identified several practical steps based on the tool-based evaluations. Implementing schema markup for elements such as courses, events, and organizational information would help improve visibility in search results through rich snippets. Additionally, the creation and submission of XML sitemaps, along with optimized robots.txt files, would facilitate better indexing and crawling by

search engines. Technical enhancements like minifying CSS and JavaScript files and enabling compression, especially on the FOI and FER websites, are crucial for improving page speed and meeting Core Web Vitals standards. Although FER currently performs best in mobile responsiveness, all three sites could benefit from design adjustments to ensure faster loading and a more adaptive layout. Finally, improving the placement of calls-to-action and enhancing navigation, through clearer headings, a more logical internal link structure, and engaging interactive elements, would boost usability, particularly for prospective students. These improvements are largely feasible with modest technical effort, especially when using freely available SEO tools to guide the process.

5.3. AI TOOLS vs. CONVENTIONAL SEO TOOLS

The first research question: "*What are the strengths and limitations of generative AI tools in SEO analysis compared to conventional auditing methods?*", highlighted both the promise and limitations of generative AI in SEO audits. While tools like ChatGPT, ClaudeAI, and DeepSeek produced meaningful insights regarding content structure, readability, and keyword use, they lacked the granularity and precision of conventional analyzers like RankMath or SpeedTest Insights. For example, ClaudeAI provided the most comprehensive AI-based evaluation, with both scoring and actionable recommendations across multiple dimensions (e.g., content quality, local SEO, technical optimization). ChatGPT and DeepSeek were stronger in qualitative assessments, especially in suggesting how to better align page content with user intent. However, AI tools missed crucial technical elements (e.g., sitemap presence, server response time, blocking time), which are core to SEO performance measurement.

Thus, while AI can support high-level SEO diagnostics and strategic content advice, conventional tools remain indispensable for granular technical auditing. There is the possibility to write more detailed prompts to the GAI tools but there are some issues. One issue that was encountered was that the GAI tool did not respond with real data but rather started making conclusions based on general information rather than querying the live web page. Another issue is that unless very specific information is requested (e.g. specific performance metric) GAI will return some performance data but necessarily the most important one. Third is that some metrics the GAI will not provide even if asked and would say the data is not available or point to use some external tools and web pages.

5.4. THE ROLE OF OPEN-SOURCE AND FREE TOOLS

The final research question: "*To what extent can open-source and freely available tools provide actionable insights?*", demonstrated the practicality of using non-commercial SEO tools in academic and institutional contexts. Tools like RankMath, AIOSEO, and SpeedTest Insights yielded robust, actionable data across multiple domains (technical SEO, content structure, accessibility). Even with limitations in free versions, they enabled a comprehensive overview without the need for premium software. This underscores that institutions, especially in resource-constrained environments, can improve their web presence using free tools, provided they invest time in interpretation and implementation.

While performing this study one can see that useful information was obtained and that each of the three institutional websites exhibited a mix of strengths and weaknesses: FER - Strongest in performance and technical speed but lacking in metadata and schema markup; FOI - Good in best practices and layout stability but weak in speed and structured data; and FIDIT - Leading in accessibility and structured content but needs improvement in speed and H-tag structuring.

Integrating AI tools alongside conventional audits provides a well-rounded evaluation framework, especially when free or open-source tools are the primary resource. However, deeper technical issues still require conventional solutions, underlining the importance of hybrid methodologies in SEO evaluation.

Future research could explore longitudinal impacts of these optimizations on user engagement metrics. Comparative studies across multiple Croatian institutions or EU institutions may also contextualize these findings within broader regional trends.

6. CONCLUSION

This study provided a comparative SEO analysis of three Croatian higher education institutional websites using a combination of conventional and AI-based tools. The findings revealed several recurring technical and on-page SEO deficiencies, including missing meta descriptions, improper heading structures, lack of schema markup, and suboptimal performance metrics. While each institution exhibited distinct strengths, FER in technical speed, FOI in layout stability, and FIDIT in accessibility, the overall SEO hygiene remains inadequate for optimal online visibility.

Generative AI tools demonstrated promising capabilities in high-level content evaluation and strategic guidance, but they currently lack the precision and data access necessary for detailed technical audits. Conventional tools remain indispensable for diagnosing and resolving core performance issues, particularly in areas such as server responsiveness, Core Web Vitals, and structured data implementation.

The effective use of open-source and freely available SEO tools suggests that resource constraints need not be a barrier to meaningful optimization. However, the successful application of these tools depends heavily on human interpretation and consistent implementation.

A hybrid methodology that combines AI-driven strategic insights with the technical depth of traditional SEO tools emerges as the most balanced approach. Future research could extend this analysis by tracking changes in web performance post-implementation or by expanding the sample size to include a wider range of academic institutions within Croatia or the EU. Such studies could further illuminate the role of SEO in enhancing institutional digital presence and accessibility in higher education.

REFERENCES

[1] Alfiana, Fifin, Nimatul Khofifah, Tarisya Ramadhan, Nanda Septiani, Wahyuningsih Wahyuningsih, Nadia Nur Azizah, i Nova Ramadhona. 2023. „Apply the Search Engine Optimization (SEO) Method to determine Website Ranking on Search Engines". Int. Journ. of Cyber and IT Service Management 3(1):65–73. doi: 10.34306/ijcitsm.v3i1.126.

[2] Camossi, Gustavo, and Cecilio Merlotti Rodas. 2023. „Contributions of search engine optimization techniques to information findability". Encontros Bibli: rev. eletrôn. bibliotecon. cienc. inf. 28. doi: 10.5007/1518-2924.2023.e93371/54069.

[3] Critchlow, Will. 2015. „SEO Split-Testing: How to A/B Test Changes for Google". Accessed 07. July 2025. (https://moz.com/blog/seo-split-testing-a-b-test-changes-google).

[4] Firstpagesage.com. 2024. „Top SEO Tools Comparison 2024". Accessed July 7, 2025. (https://firstpagesage.com/seo-blog/top-seo-tools-comparison/).

[5] Google. 2019. „Search Engine Optimization (SEO) Starter Guide". Accessed July 7, 2025. (https://developers.google.com/search/docs/fundamentals/seo-starter-guide).

[6] Maček, Marija and Novak, Matija. 2024. "*Measuring the success of search engine optimization in business*", CASE 2024, Rijeka, pp. 2.65-2.72

[7] McDonald, Jason. 2023. SEO Work Book. JM Internet Group.

[8] Poturak, Mersid, Dino Kečo, i Eldar Tutnić. 2022. „Influence of search engine optimization (SEO) on business performance: Case study of private university in Sarajevo". *International Journal of Research in Business and Social Science* 11(4):59–68. doi: 10.20525/ijrbs.v11i4.1865.

[9] Sistrix. 2022. „Google-Index, Google-Bot and the Crawling Process". Accessed July 7, 2025. (https://www.sistrix.com/ask-sistrix/google-index-google-bot-crawler/).

[10] Vinutha, M. S., i M. R. Prajwal. 2023. „A Survey on Search Engine Optimization-Types,Techniques and Factors". International Journal of All Research Education and Scientific Methods 11(8).

[11] Xinghai, Wang. 2023. „Reimagining Website Usability: A Conceptual Exploration of SEO and UX Design Integration". Journal of Digitainability, Realism & Mastery 2(03):60–66. doi: 10.56982/dream.v2i03.99.

CYBERBULLYING AMONG YOUTH: THE ROLE OF SNAPCHAT IN THE EXPERIENCES OF GENERATION Z

DIJANA VUKOVIĆ
Sveučilište Sjever
Jurja Križanića 31b, 42000 Varaždin, Hrvatska
dvukovic@unin.hr

ANTE RONČEVIĆ
Sveučilište Sjever
Jurja Križanića 31b, 42000 Varaždin, Hrvatska
aroncevic@unin.hr

MARIJA ZAVACKI KLJUČAR
Sveučilište Sjever
Jurja Križanića 31b, 42000 Varaždin, Hrvatska
mazavackikljucar@unin.hr

ABSTRACT

The paper aims to investigate how parents perceive the presence and impact of cyberbullying on the social network Snapchat in the everyday lives of minors of Generation Z, and how informed they are about potential risks and protective mechanisms.

***Methodology** - A quantitative research method was used through a structured survey questionnaire. The research was conducted on a sample of parents of children under the age of 18 who use social networks, with an emphasis on the Snapchat application. the survey included a sample of 450 respondents.*

***Findings** - The results indicate that parents are not sufficiently informed about the specific characteristics and risks of cyberbullying on platforms such as Snapchat, particularly due to its ephemeral nature and perceived privacy among youth. While the majority of parents express significant concern regarding their children's exposure to online violence, they simultaneously acknowledge a lack of active engagement in monitoring or guiding their children's digital behaviour. Many do not use available protection tools or parental control features, and a large portion report feeling inadequately equipped to recognise early signs of cyberbullying. Furthermore, the findings reveal a gap between parental awareness and concrete preventive actions, highlighting the need for more accessible resources, education, and communication strategies to empower parents in the digital environment.*

***Contribution** – The paper contributes to understanding the role of parents in preventing and recognising cyberbullying among young people, with a particular emphasis on digital platforms such as Snapchat, which are characterised by ephemeral content and limited monitoring capabilities. The research indicates the need for systematic education of parents, not only about the forms of cyberbullying themselves, but also about the technical possibilities of monitoring,*

setting limits and open communication with children about online risks. The paper also contributes to identifying gaps in parents' knowledge and encouraging the development of digital literacy programs in family and school contexts.

KEYWORDS: Cyberbullying, Snapchat, Generation Z, Parental involvement, Digital literacy, Online safety

1. INTRODUCTION

The modern digital space offers young people a range of opportunities for connection, communication and expression, but at the same time brings significant challenges, among which cyberbullying occupies a particularly prominent place. Cyberbullying, defined as intentional, frequent and aggressive behaviour that takes place via digital technologies, social networks or applications, is extremely present among the younger population, especially members of Generation Z. Snapchat, as one of the leading platforms for communication among young people, is characterized by specific features such as the temporary nature of content, direct messages and apparent anonymity, which potentially facilitates the emergence and spread of cyberbullying. Young people are often unaware of the long-term consequences or underestimate the emotional impact of content that is shared in a short time and disappears quickly, which can lead to serious psychological consequences such as anxiety, depression, social isolation and, in more severe cases, suicidal thoughts and behaviour. At the same time, although Gen Z is adept at using technology, they lack the experience and maturity needed to recognize and effectively deal with potential threats.. Parents' digital literacy, i.e. their ability to understand and use technology, recognize online threats, and effectively communicate with their children about the dangers of the internet, is a key factor in preventing cyberbullying. Furthermore, research shows that parental involvement, in addition to supervision, should also include education, open dialogue, and trust between parents and children in order to ensure a safe digital environment. The aim of this paper is to explore the dynamics of cyberbullying among Gen Z youth on Snapchat, determine the level of parental involvement, and explore their digital literacy as an important factor in preventing online violence. Also, this paper aims to propose practical guidelines and strategies for improving the online safety of young people, with the effective involvement of parents as key actors in shaping a safer digital space for future generations. Most authors today indicate that there is a risk of a greater likelihood of engaging in risky and violent behaviors in the virtual environment and developing Internet addiction [Athanasiou et al., 2018; Cataldo et al., 2021; Tandon et al., 2021] .

2. THE ROLE OF SNAPCHAT IN SHAPING THE IDENTITY AND INTERACTION OF GENERATION Z

Snapchat is a social network based on sharing photos and videos that disappear after a short period of time [usually 24 hours] . This platform was launched in 2011 and, due to its specific dynamics, quickly became popular among younger users, especially members of Generation Z [Yau & Reich, 2020] . According to a report by Datareportal [2024] , Snapchat currently has over 750 million active users worldwide, with the majority of users aged 13 to 24. Snapchat differs from other social networks such as Facebook, Instagram or TikTok due to several unique characteristics: Content transience: The main feature of Snapchat is the disappearance of content after a limited time, usually 24 hours. This is precisely why users often feel a lower

level of inhibition and are more free to share content that may have risky consequences [Alhabash & Ma, 2021] . Focus on visual communication:

- Communication is primarily based on photos and videos, which further increases the appeal of the platform to younger users [Hu et al., 2020] .
- Privacy and anonymity: Snapchat allows users to communicate with a relatively high level of privacy control, which is both positive and can lead to abuses, such as cyberbullying or sharing inappropriate content [Vaterlaus & Barnett, 2022] .
- Research shows that young Snapchat users prefer this platform because of the sense of privacy, immediacy, and dynamism of the content. In their study, Yau and Reich [2020] identified the main motives for using Snapchat among Generation Z, including communicating with peers, self-presentation, and having fun by sharing everyday activities.
- However, despite the appeal of the platform, Snapchat has been recognized as a potentially risky social network due to certain behavioural patterns. Research indicates a connection between the use of Snapchat and an increased tendency towards risky behaviors, such as sharing inappropriate content or cyberbullying [Alhabash & Ma, 2021; Vaterlaus & Barnett, 2022] . Also, Hu et al. [2020] state that the temporary nature of the content additionally encourages young users to more impulsive behaviour that can have long-term consequences.

In the digital age, platforms such as Snapchat—characterized by ephemeral content, direct messaging, and limited parental oversight—have become fertile grounds for cyberbullying, harassment, and other forms of digital aggression. Generation Z, as digital natives, extensively use Snapchat not only for communication but also for constructing social identity, making them particularly vulnerable to online victimization. Parents play a critical role in mitigating these risks. However, research suggests that digital literacy among parents often lags behind that of their children, creating an intergenerational digital divide that limits the effectiveness of parental mediation [Šimunić & Marković, 2022] . Effective prevention requires not only technical supervision, such as monitoring apps or screen time controls, but also the development of trust-based communication, where adolescents feel safe disclosing problematic interactions.

3. VIOLENCE ON SNAPCHAT: THE ROLE OF PARENTS IN PREVENTING DIGITAL VICTIMIZATION OF GENERATION Z

Snapchat is a platform where cyberbullying often occurs precisely because of the apparent anonymity and transience of the content. Research conducted by Vaterlaus and Barnett [2022] indicated a significant occurrence of cyberbullying among adolescents on this social network. According to the results of their study, adolescents often underestimate the emotional impact of negative content shared via Snapchat, which can cause serious psychological consequences, including anxiety, depression, and reduced self-esteem. In addition, a study by Alhabash and Ma [2021] confirmed that young Snapchat users, due to a feeling of reduced responsibility due to the short-term display of content, often engage in behaviors that can be harmful to themselves or other users. However, research shows that it is very easy to save content permanently through screenshots, which enables the further spread of inappropriate content, further traumatizing the victim [Alhabash & Ma, 2021] . In addition to sharing offensive images and videos, a common form of violence on Snapchat is verbal abuse, threats, blackmail and harassment via private messages ["snaps"] or group messages. This type of violence is particularly problematic because it often takes place outside the sight of adults, which makes detection and timely

intervention difficult [Vaterlaus & Barnett, 2022] . Another specific form of Snapchat violence is ostracism, the intentional exclusion of individuals from group communications or social activities on the platform, resulting in feelings of isolation and rejection among victims. This form of violence particularly affects adolescents because their social identity is being intensively formed at this developmental age, and a sense of belonging to a peer group is crucial for emotional health and self-esteem [Mishna et al., 2021] . Cyberbullying on Snapchat can lead to a number of serious psychological consequences for young users. According to recent research, the most common consequences include increased anxiety, depression, low self-esteem, sleep problems, as well as reduced academic performance and avoidance of social activities [Hinduja & Patchin, 2021; Vaterlaus & Barnett, 2022] . In more severe cases, frequent and intense cyberbullying can lead to suicidal thoughts and behaviour in victims, which requires timely response from parents, schools, and mental health professionals. Specifically for Snapchat, the problem is that cyberbullying often occurs hidden from the eyes of parents and teachers due to the ephemeral content and lack of clear clues, which makes it even more difficult for victims to seek help [Mishna et al., 2021] . Victims often feel misunderstood, fear additional stigmatization, or the inability to prove the violence, which is why they do not report incidents. Snapchat's ephemeral content can create a false sense of security and anonymity among users, leading them to engage in risky behaviors such as sharing inappropriate photos or engaging in negative peer communication [Alhabash & Ma, 2021] . The misconception that content disappears permanently can lead young users to engage in behaviors they would not otherwise engage in on other social networks with permanent content such as Instagram or Facebook. However, content can often be preserved, which can lead to further abuse or blackmail in the future. Also, the anonymity that Snapchat partially enables can empower aggressors, giving them a sense of security that they will not be identified or punished for their actions, further exacerbating the intensity and frequency of violence [Mishna et al., 2021] . Although parental controls have limited options on Snapchat, research shows that parental awareness of this social network and active involvement in children's digital lives is one of the most important factors in preventing cyberbullying [Rashid & Ramey, 2023] . Parents should be educated about the specific risks of Snapchat so that they can recognize signs of violence in a timely manner and intervene before the consequences become more serious. Parental education should include understanding the specifics of Snapchat, recognizing changes in children's behaviour, creating an open and supportive atmosphere for talking about online experiences, and encouraging children to report any negative incidents without fear. In addition, it is important to educate young Snapchat users about the possibilities of reporting violence within the platform itself, in order to develop a sense of responsibility for their online activities [Šimunić & Marković, 2022].

4. METHODOLOGY AND DISCUSSION OF RESEARCH RESULTS

Modern society is characterized by the increasing use of digital technologies, especially among adolescents, who carry out a significant part of their daily activities in the online environment. Despite the numerous advantages of digital communication, the risks associated with electronic peer violence [cyberbullying] are increasing, especially through popular social networks such as Snapchat. Although young users are very familiar with the functions of social networks, their emotional and social maturity is often not sufficient to recognize, prevent or adequately deal with violence in virtual space. In this context, parental involvement and parents' digital literacy can play a key role in preventing cyberbullying among adolescents. Although there is a lot of research on the impact of young people's digital literacy on safety in virtual space, the impact of parents' digital literacy has been less investigated, especially with regard to their ability to

recognize, prevent and intervene in cases of violence via Snapchat. Therefore, this research aims to determine how the level of parents' digital literacy and their involvement in adolescents' digital activities affect the prevention and reduction of cyberbullying among young people, with a special emphasis on Snapchat as a specific platform with pronounced risks for this type of violence. In accordance with the above, the research objectives were defined:

- to determine the relationship between digital literacy and parental involvement and the prevention of cyberbullying among adolescents on Snapchat;
- to analyse the level of digital literacy of parents of adolescents who actively use Snapchat;
- to determine parents' perceptions of the risks of using Snapchat among adolescents. To examine the impact of parental involvement and open communication on the frequency and consequences of cyberbullying on Snapchat;
- to identify obstacles that make it difficult for parents to effectively monitor and respond to online bullying on Snapchat. Based on the set research objectives, the following hypotheses were formulated.

Hypothesis H1: There is a statistically significant positive relationship between the level of digital literacy of parents and their ability to recognize cyberbullying on Snapchat among adolescents.

Hypothesis H2: Parents who have a higher level of digital literacy are more likely to actively communicate with their children about online safety, which leads to a lower frequency of cyberbullying on Snapchat.

Hypothesis H3: Open and ongoing communication between parents and adolescents is associated with greater willingness of adolescents to report cyberbullying on Snapchat.

Hypothesis H4: Lack of parental digital literacy is associated with higher frequency of cyberbullying among adolescents on Snapchat, as well as more severe consequences of this violence.

A total of 300 respondents participated in the survey. While the sample is demographically diverse in terms of age, gender, education, and employment status, an important limitation emerges: respondents are not parents of teenage children, and thus do not represent the primary parental demographic targeted by studies on adolescent digital safety and parental mediation. Furthermore, respondents were active users of Snapchat, which suggests that the findings reflect perspectives of individuals with firsthand experience of the platform, rather than those concerned with monitoring or mediating its use by minors. This is particularly relevant when analyzing phenomena such as cyberbullying, privacy risks, or the role of parental control, as the insights provided may lean more toward user experience rather than parental attitudes or behaviors.Despite this, the socio-demographic diversity of the sample—particularly in terms of education and urban/rural distribution—offers valuable insights into general attitudes toward social media and perceptions of digital environments..

Table 1. Socio-Demographic Characteristics of Respondents

Variable	Category	Frequency [%]
Gender	Female	62.3
	Male	37.7
Age Group	18–29	15.2
	30–44	28.4
	45–59	32.6

	60+	23.8
Education	Primary	12.5
	High School	34.2
	Bachelor's	28.9
	Master's or higher	24.4
Marital Status	Single	21.5
	Married	56.7
	Divorced/Widowed	21.8
Residence	Urban	64.1
	Rural	35.9
Employment	Employed	48.6
	Unemployed	12.3
	Retired	28.5
	Student	10.6

Source: Author's own work"

The socio-demographic analysis provides important insights into the composition of the respondent group. A majority of participants were female [62.3%] , indicating potential gender-based perspectives in the dataset. Age-wise, the largest proportion of respondents were aged between 45–59 [32.6%] , followed by those in the 30–44 [28.4%] and 60+ [23.8%] age groups, reflecting a sample dominated by mature individuals likely to have stable life experiences. retired [28.5%] , which may influence their views on stability, healthcare, and social services. Students and unemployed individuals comprised a smaller but relevant segment. Overall, the diversity across age, education, and residence location allows for a comprehensive analysis of social and economic perspectives among the respondents.

Table 2. Summary of Research Results Related to Snapchat Usage and Violence

Question	Response Category	Frequency [%]
Child's Daily Use of Snapchat	Half an hour	93 [45.4%]
	One hour	51 [24.9%]
	Several hours	55 [26.8%]
	Half a day	3 [1.5%]
	All day	3 [1.5%]
Child Owns Technical Devices	Yes	197 [96.1%]
	No	8 [3.9%]
Child Uses Snapchat	Yes	180 [87.8%]
	No	25 [12.2%]
Parent Uses Snapchat	Yes	17 [8.3%]
	No	188 [91.7%]
Child Victim of Online Violence	Yes	17 [8.3%]
	No	188 [91.7%]
Parent Witnessed Violence on Snapchat	Yes	49 [23.9%]
	No	156 [76.1%]

Source: Author's own research using IBM SPSS Statistics.

The results of this study provide a comprehensive overview of parental observations and experiences related to Snapchat use among children. The data suggest that Snapchat is a widely used platform by minors, with 87.8% of parents reporting that their children use the platform. In terms of daily usage, a significant proportion of children spend 30 minutes [45.4%] , one hour [24.9%] , or even several hours [26.8%] on Snapchat, indicating the platform's high level of engagement among youth. Although smaller in number, the presence of responses indicating usage for half a day [1.5%] or the entire day [1.5%] raises concerns about potential overuse and digital dependency. A notable 96.1% of children possess personal digital devices such as smartphones, laptops, or tablets, confirming the widespread accessibility of technology that facilitates unregulated access to social networks. This discrepancy highlights a generational and technological gap that may hinder effective parental oversight and limit their understanding of how Snapchat operates and the potential risks it entails. These findings underscore the urgent need for targeted digital education programs for both parents and children. It is clear that while access to technology and social platforms is widespread, the capacity to monitor, guide, and protect children in these digital environments is uneven. Future research should aim to incorporate longitudinal designs and direct feedback from adolescents to triangulate parental reports and capture a more holistic picture of youth digital experiences and vulnerabilities.

Table 3. Item-Level Pearson Correlation Analysis for Hypothesis H1

Digital Literacy Item	Recognition Item	Pearson r	p-value
DL1: I know how to adjust privacy settings on social media platforms.	RC1: I can identify signs that my child is being bullied online.	0.738	0.0
DL2: I can recognize fake profiles or suspicious behavior online.	RC2: I understand the types of cyberbullying common on Snapchat.	0.668	0.0
DL3: I know how to report inappropriate content on Snapchat.	RC3: I can distinguish between harmless jokes and harmful behavior online.	0.675	0.0
DL4: I am confident in guiding my child in safe online behavior.	RC4: I feel capable of intervening if my child experiences online abuse.	0.673	0.0

Source: Author's own research

All four pairs demonstrate correlation coefficients above 0.66 with p-values less than 0.001, supporting Hypothesis H1. This suggests that individual aspects of digital literacy—such as privacy management, identifying suspicious content, reporting mechanisms, and guiding children—are positively associated with specific capabilities to detect, understand, and act on cyberbullying threats on Snapchat. A simple linear regression was conducted to examine whether digital literacy predicts parents' ability to recognize cyberbullying. The results indicate a statistically significant positive relationship [$\beta = 0.661$, $p < 0.001$] , supporting Hypothesis H1. The regression equation is:

$$\hat{Y}=0.217+0.661 \cdot X$$

where $\hat{Y}$ represents the predicted value of cyberbullying recognition and X represents the digital literacy score.

Table 4. Table Mediation Analysis Summary Table and SEM Notation

Model	Equation	R-squared	Coefficient[s]	p-value[s]
Model 1	CyberbullyingFreq = α + β1·DigitalLiteracy	0.064	β1 = -0.206	0.0002
Model 2	Communication = α + β2·DigitalLiteracy	0.358	β2 = 0.521	0.0000
Model 3	CyberbullyingFreq = α + β3·DigitalLiteracy + β4·Communication	0.178	β3 = -0.002, β4 = -0.391	0.9753, 0.0000

Source: Author's own research

Figure 1. SEM Diagram Illustrating How Parental Communication Can Reduce Cyberbullying on Social Media
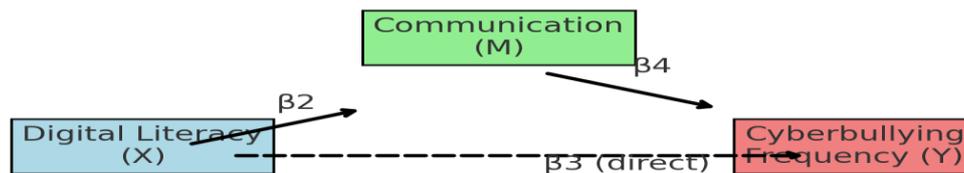
Source: Author's own research

Understanding the complex relationships between digital competencies, communication practices, and problematic online behaviors is becoming increasingly important in the context of cyberbullying prevention among youth. The structural model presented in this research is based on a conceptual framework in which digital literacy is defined as a fundamental competency for the critical and responsible use of digital technologies. This skill not only enables functional internet use but also shapes the way individuals communicate and participate in digital communities. In this model, communication is positioned as a mediating variable that transmits the effect of digital literacy on the frequency of cyberbullying behavior. It is assumed that higher levels of digital literacy enable more advanced communication strategies grounded in respect, empathy, and social responsibility. Consequently, individuals with higher digital literacy are more likely to avoid aggressive and violent forms of digital interaction. In this context, β2 represents the positive relationship between digital literacy and the quality of communication, while β4 examines the negative relationship between communication and the frequency of cyberbullying. The analysis of the direct effect **[β3]** makes it possible to detect the extent to which digital literacy alone can reduce the likelihood of cyberbullying, independent of communication patterns. If β3 remains statistically significant in the presence of the mediator, it indicates partial mediation; if it becomes insignificant, this suggests full mediation.

Table 5. Summary of Regression Coefficients

Predictor	B [Unstandardized]	p-value	Interpretation
Constant [Intercept]	-0.058	0.7948	Baseline level of reporting when communication = 0
Communication	0.628	0.0000	Effect of communication on willingness to report

Source: Author's own research

$$\text{Reporting} = -0.058 + 0.628 \times \text{Communication}$$

The regression model demonstrates a statistically significant positive relationship between communication and adolescents' willingness to report cyberbullying. For each one-point increase in communication [on a 1–5 Likert scale] , the reporting score increases by 0.628 units. The model explains 32.8% of the variance in the dependent variable [$R^2 = 0.328$] .

Table 6. Descriptive Statistics

Variable	Mean	SD	Min	Max
Digital Literacy	3.48	0.65	1.67	5.40
Cyberbullying Frequency	-1.01	0.61	-2.93	1.31
Severity of Consequences	-1.42	0.67	-3.15	0.45

Source: Author's own research

Table 6 presents the descriptive statistics for the three variables included in the analysis. Digital literacy scores among parents had a mean of 3.48, indicating a moderately high level. Cyberbullying frequency and severity of consequences were normally distributed, with comparable ranges and standard deviations.

Table 7. Pearson Correlation

Variable Pair	Pearson r	p-value	Interpretation
Digital Literacy ↔ Cyberbullying Frequency	-0.290	0.0000	Negative and significant
Digital Literacy ↔ Severity of Consequences	-0.387	0.0000	Negative and significant

Source: Author's own research

Table 7 shows that digital literacy is negatively correlated with both the frequency of cyberbullying and the severity of its consequences. The correlations are statistically significant [*p* < 0.001] , indicating that as digital literacy decreases, both outcomes increase.

Table 8. Regression Analysis Summary

Model	Equation	B [slope]	p-value	R-squared
Model 1	Digital Literacy → Frequency	-0.272	0.0000	0.084
Model 2	Digital Literacy → Severity	-0.397	0.0000	0.150

Source: Author's own research

Table 8 summarizes the results of two linear regression models. Model 1 confirms that digital literacy significantly predicts the frequency of cyberbullying [*B* = -0.272, *p* < 0.001] , while Model 2 shows a similar significant negative effect on the severity of consequences [*B* = -0.397, *p* < 0.001] . In both cases, lower parental digital literacy is associated with worse outcomes. The findings provide strong empirical support for Hypothesis H4. All three analytical approaches—descriptive analysis, correlation, and regression—point toward a consistent pattern: parents with lower digital literacy levels tend to have adolescents who experience more frequent and more severe cyberbullying on Snapchat.

5. CONCLUSION

This study highlights the critical role of digital literacy and parental communication in preventing adolescent cyberbullying on Snapchat. Findings confirm that parents with greater digital competence are better able to recognize online risks and foster open dialogue with their children, which significantly reduces the likelihood and severity of cyberbullying. Effective communication also increases adolescents' willingness to report harmful incidents, allowing for earlier and more effective... Despite these contributions, the study has several limitations. Reliance on parental self-report data introduces potential bias, while the cross-sectional design limits causal interpretations. The absence of adolescent perspectives limits a more comprehensive understanding of family dynamics in digital spaces. To address these shortcomings, future research should adopt longitudinal and mixed methods approaches, include the voices of both parents and adolescents, and evaluate the effectiveness of targeted digital literacy programs. Such programs should go beyond technical skills to include strategies for building trust and empathetic communication. In an increasingly digital world, parents must move from passive observers to active digital mentors. Strengthening their digital and emotional literacy is not only crucial for protecting young people, but also for fostering resilience and well-being in the online environment.

REFERENCES

[1] Alhabash, S. & Ma, M. [2017] . A tale of four platforms: Motivations and uses of Facebook, Twitter, Instagram, and Snapchat among college students? SocialMedia + Society, 3 [1] . https://doi.org/10.1177/2056305117691544 ; downloaded:[01.07.2025]

[2] Alhabash, S., Ma, M. [2021] . Snapchat use and risky behaviors: Examining associations among college students. *Computers in Human Behavior,* 123, 106889.

[3] Cataldo, I., Lepri, B., Neoh, M. J. Y. & Esposito, G. [2021] . Social media usage and development of psychiatric disorders in childhood and adolescence: A review. Frontiers in Psychiatry, 11, 508595. https://doi.org/10.3389/ fpsyt.2020.508595 downloaded:[01.07.2025]

[4] Hinduja, S., Patchin, J. W. [2021] . *Bullying Beyond the Schoolyard: Preventing and Responding to Cyberbullying* [3rd ed.] . Corwin Press.

[5] Hu, Y., Manikonda, L., & Kambhampati, S. [2020] . Snapchat's temporal communication and its effects on user engagement. *Journal of Computer-Mediated Communication*, 25[3] , 165–181.

[6] Mishna, F., Sanders, J. E., McInroy, L. B., Fearing, G. [2021] . Technology-mediated sexual violence and harassment: The role of social media. *Journal of Interpersonal Violence*, 36[7–8] , NP4025–NP4045.

[7] Rashid, A., Ramey, K. [2023] . Digital literacy of parents and its impact on children's online safety. *Journal of Family Studies,* 29[1] , 45–62.

[8] Šimunić, D., Marković, J. [2022] . Utjecaj digitalne pismenosti roditelja na prevenciju cyberbullyinga među adolescentima. *Društvena istraživanja*, 31[3] , 543–561.

[9] Tandon, A., Dhir, A., Almugren, I., AlNemer, G. N. & Mäntymäki, M. [2021] . Fear of missing out [FoMO] among social media users: A systematic literature review,synthesis and framework for future research. Internet Research, 31 [3] , 782−821. https://doi.org/10.1108/INTR-11-2019-0455

[10] Vaterlaus, J. M., Barnett, K. [2022] . Adolescent perceptions and experiences of Snapchat use: Implications for cyberbullying and online safety. *Cyberpsychology, Behavior, and Social Networking,* 25[4] , 275–282.

[11] Young, K. S. [1998] . Internet addiction: The emergence of a new clinical disorder. CyberPsychology & Behavior, 1, 237–244. https://doi.org/10.1089/ cpb.1998.1.237 downloaded:[01.07.2025]

[12] Zenebe, Y., Kunno, K., Mekonnen, M., Bewuket, A., Birkie, M., Necho, M., Seid, M., Tsegaw, M. & Akele, B. [2021] . Prevalence and associated factors of internet addiction among undergraduate university studentsin Ethiopia: A community university-based cross-sectional study. BMC Psychology, 9 [4] , 10. https:// doi.org/10.1186/s40359-020-00508-z; downloaded:[01.07.2025]

THE INFLUENCE OF BRAND EQUITY ON THE COGNITIVE DIMENSION OF STUDENT BEHAVIOR WHEN OPTING FOR A HIGHER EDUCATION INSTITUTION

ARNELA BEVANDA
Faculty of Economics, University of Mostar
Matice hrvatske bb, 88000 Mostar, Bosnia & Herzegovina
arnela.bevanda@ef.sum.ba

INJA STOJKIĆ
Rectorate, University of Mostar
Trg hrvatskih velikana 1, 88000 Mostar, Bosnia & Herzegovina
inja.stojkić@sum.ba

MIRELA MABIĆ
Faculty of Economics, University of Mostar
Matice hrvatske bb, 88000 Mostar, Bosnia i Herzegovina
mirela.mabic@ef.sum.ba

ABSTRACT

This study aims to examine whether and how elements of brand equity influence the cognitive dimension of student behavior when opting for a higher education institution. Based on Keller's model, brand awareness and brand image are used in this research as measures of brand equity, which represents the independent variable in the analysis. The cognitive dimension of behavior (the dependent variable) refers to an individual's thoughts, knowledge, and perceptions acquired through direct interaction with the attitude object, as well as information obtained from other sources. To achieve the defined objective and test the proposed hypothesis, primary data were collected through field research using a survey technique in Bosnia and Herzegovina (BiH). A random stratified sample included 1,141 students from the three largest university centers in BiH: Sarajevo, Mostar, and Banja Luka. The collected data were analyzed using IBM SPSS Statistics 25. The influence of the independent variables on the dependent variable was examined using regression analysis, with a significance level of 0.05. The results showed that brand awareness and brand image, as variables through which brand equity was operationalized, have a significant positive impact on the cognitive dimension of student behavior when opting for a higher education institution.

KEYWORDS: brand equity, Keller's model, consumer behavior, cognitive dimension of consumer behavior, higher education institution

UTJECAJ TRŽIŠNE VRIJEDNOSTI MARKE NA KOGNITIVNU DIMENZIJU PONAŠANJA STUDENATA PRI ODABIRU VISOKOŠKOLSKE INSTITUCIJE

SAŽETAK

Cilj rada je istražiti utječu li i kako elementi tržišne vrijednosti marke na kognitivnu dimenziju ponašanja studenata pri odabiru visokoškolske institucije. Oslanjajući se na Kellerov model, poznatost marke i imidž marke se u ovom istraživanju koriste kao mjere tržišne vrijednosti marke, koja predstavlja nezavisnu varijablu u analizi. Kognitivna dimenzija ponašanja (zavisna varijabla) odnosi se na misli pojedinca, na znanje i percepcije koje osoba stječe kroz izravnu interakciju s objektom stavova, kao i informacije dobivene iz drugih izvora. U svrhu dosezanja definiranog cilja i testiranja postavljene hipoteze primarni podaci su prikupljeni terenskim istraživanjem, tehnikom anketiranja, na području Bosne i Hercegovine (BiH). Slučajni stratificirani uzorak obuhvatio je 1141 studenta u tri najveća Sveučilišna centra u BiH i to Sarajevo, Mostar i Banja Luka. Analiza prikupljenih podataka provedena je u programu IBM SPSS Statistics 25. Utjecaj nezavisnih varijabli na zavisnu istražen je regresijskom analizom, uz granicu značajnosti 0,05. Rezultati su pokazali da poznatost marke i imidž marke kao varijable kroz koje se operacionalizirala tržišna vrijednost marke značajno pozitivno utječu na kognitivnu dimenziju ponašanja studenata pri odabiru visokoškolske institucije.

KLJUČNE RIJEČI: tržišna vrijednost marke, Kellerov model, ponašanje potrošača, kognitivna dimenzija ponašanja potrošača, visokoškolska institucija

1. INTRODUCTION

In today's fast-paced and technologically advanced society, marked by increasing market competition, both businesses and institutions face numerous challenges. To remain competitive, it is essential to adapt marketing strategies and build strong brands aligned with the expectations of contemporary target groups. Public higher education institutions are increasingly recognizing the importance of developing a distinctive brand in order to strengthen their position in the highly dynamic and internationalized higher education market. Bosnia and Herzegovina is no exception, as public universities face growing competition from private institutions and professional programs. Therefore, clear and authentic branding emerges as a necessary strategy for differentiation and long-term positioning. Branding a higher education institution not only contributes to its visibility and the attraction of high-quality students, but also supports the fulfillment of broader social responsibility. In this context, the focus of this paper is the analysis of the impact of brand equity elements, measured using Keller's model, on student behavior when opting for a higher education institution, specifically addressing the cognitive dimension of their decision-making behavior.

2. REVIEW OF PREVIOUS RESEARCH

This paper focuses on three fundamental concepts: brand, brand equity, and the cognitive dimension of consumer behavior. For the purposes of this study, brand equity is examined from the consumer-based perspective, according to Keller (1993), who emphasizes the importance

of brand knowledge in consumer decision-making. This knowledge consists of two components: brand awareness and brand image, and brand equity is achieved when the consumer associates the brand with positive and unique associations. The cognitive dimension of behavior, as part of the three-component attitude model by Schiffman and Kanuk (2004), includes awareness, knowledge, and beliefs about a product or service. Previous research confirms its influence on consumer behavior. Due to the increasingly intense competition among higher education institutions, students are more frequently viewed as consumers (Rutter et al., 2016; Royo, 2017). In analyzing the existing scientific literature on brand equity and the cognitive dimensions of consumer behavior in higher education, several key themes emerge. Research focusing on brand equity, particularly its impact on university reputation, dominates the available literature (Khoshtaria et al., 2020; Arian & Khoshtaria, 2020; Rizard et al., 2022). In this context, various models have been employed to explain the decision-making process of students when opting for a higher education institution (Hossler et al., 1999; Aydın, 2015; Obermeit, 2012). While the importance of brand awareness in higher education is undisputed, the number of studies focusing exclusively on students' brand-based decision-making remains limited (Stephenson et al., 2016). Keller (2008) emphasizes the importance of brand awareness in his model, referring to the consumer's ability to recognize or recall a brand. According to his model, brand awareness is the foundational component of brand equity and consists of two key elements: brand recognition and brand recall. In this context, brand recognition plays a significant role in consumer behavior when choosing products or services, and brand awareness is considered a strong predictor of consumer choice among various alternatives (Macdonald & Sharp, 1996). In his experimental study, Zhang (2020) avoids traditional marketing tools and instead investigates the cognitive processes triggered by brand awareness. His findings show that the cognitive processes of identification and attention allocation vary depending on the level of brand familiarity. Similarly, brand equity in Keller's model is also derived from brand image. Keller (2013) defines brand image as the consumer's perception of a brand, shaped by the associations the brand evokes in the consumer's memory. Brand image plays a key role in the success and reputation of a brand (Song et al., 2023), and previous studies have shown that it significantly affects the consumer's purchase intention (Gupta et al., 2021; Agdigos et al., 2022; Hui & Salman, 2023). In the context of higher education institutions, Mulyono (2016) concludes that brand awareness has a positive and significant impact on brand image, which in turn has a strong influence on students' decision-making when selecting a university. Although studies directly linking brand image to the cognitive processes of consumers in the context of higher education are still limited, the existing literature clearly demonstrates the interconnection between brand equity, brand image, and the cognitive dimensions of consumer behavior.

The research problem addressed in this paper can be defined by the following question: To what extent and in what ways do elements of brand equity influence the cognitive dimension of consumer behavior, specifically among students when opting for public higher education institutions? This study aims to explore whether and how elements of brand equity influence the cognitive dimension of student behavior in the decision-making process for choosing a higher education institution. Based on the literature reviewed, the defined research problem, and the stated objective, the following research hypotheses have been formulated:

> H1a: Brand awareness has a positive influence on the cognitive dimension of student behavior when opting for a higher education institution.
> H1b: Brand image has a positive influence on the cognitive dimension of student behavior when opting for a higher education institution.

3. RESEARCH METHODOLOGY

To achieve the set objective and test the hypotheses, an empirical study was conducted in Bosnia and Herzegovina (BiH) on a sample consisting of 1,141 students from public higher education institutions. The basic characterization of the sample in this study is a stratified random sample. When forming the strata, the territorial division of BiH was taken into account (two entities: Federation of BiH and Republic of Srpska, as well as the Brčko District), along with the size of the higher education institutions, specifically the number of students at each public university. In this context, students from the three largest university centers in BiH— Sarajevo, Mostar, and Banja Luka—were included in the research.

The data collection technique used was surveying. Respondents answered the questions in the questionnaire personally through anonymous participation. The instrument for primary data collection at this stage was a questionnaire consisting of two parts. The first part contained questions about gender, university, study cycle, mode of study, and origin. The second part included a set of statements related to the research topic, developed based on relevant scientific literature (Oliver, 1997; Low & Lamb, 2000; Kim et al., 2003; Chang & Chieng, 2006; Esch et al., 2006; Salinas & Pérez, 2009; Ismail & Spinelli, 2012; Sasmita & Mohd Suki, 2015; Ndaaba et al., 2016; Panda et al., 2019; Rajh, 2022). In this section of the questionnaire, brand awareness (PB) was measured with four statements, while brand image (IB) and the cognitive dimension of student behavior (COG) were each measured with five statements. Respondents expressed their level of agreement with the offered statements on a five-point Likert scale (1—strongly disagree; 5—strongly agree). The statements are presented in Table 1.

Table 1. Questionnaire statements

Code	Statement
PB1	When choosing this university, its name was very well known to me.
PB2	When choosing this university, I easily recognized its logo among the competition.
PB3	When choosing this university, I knew what its brand looked like.
PB4	When choosing this university, I could immediately recall some characteristics of its brand.
IB1	When choosing this university, I believed that it is a university with tradition and culture.
IB2	When choosing this university, I believed that it is a quality university.
IB3	When choosing this university, I believed that it is a recognized university.
IB4	When choosing this university, I believed that it has international acclaim.
IB5	When choosing this university, I believed that this university offers good knowledge at an acceptable cost.
COG1	When choosing this university, I knew all the advantages of studying there.
COG2	When choosing this university, I knew all the disadvantages of studying there.
COG4	When choosing this university, I had enough information about it.
COG3	When choosing a university, I rationally considered all available options.
COG5	By choosing this university, I believe that I made a good decision.

Source: Author's work

For the statistical analysis of the data, IBM SPSS Statistics 25 (IBM SPSS Statistics for Windows, version 25.0; Armonk, NY: IBM Corp., 2017) and Microsoft Excel (Office 2016 version; Microsoft Corporation, Redmond, WA, USA) were used. Descriptive statistics, as well as correlation and regression analyses, were employed. The significance level was set at Alpha = 0.05.

4. RESEARCH RESULTS

The research included a total of 1,141 students from three universities in Bosnia and Herzegovina: specifically, 344 students (30.4%) from the University of Mostar, 438 students (38.4%) from the University of Sarajevo, and 356 students (31.2%) from the University of Banja Luka. The gender structure of the surveyed students shows that the majority were women—745 (65.3%)—while 389 (34.1%) were men. Seven students did not respond to the gender question. More than half of the respondents are enrolled in first-cycle study programs (784; 68.4%), while 347 students (30.4%) are in the second cycle. Fifteen students did not provide an answer to this question. The majority of students come from Bosnia and Herzegovina (1,014; 88.9%), while the remaining 127 students (11.1%) are from other countries. These students were asked to indicate their country of origin, and their responses were as follows: Croatia – 58 students; Germany – 23 students; Republic of Srpska – 10 students; Turkey – 9 students; Montenegro – 9 students; India – 7 students; Spain – 4 students; Australia – 2 students; and one student each from Bangladesh, France, Hungary, Libya, and North Macedonia. An analysis of the responses to the question about student status shows that the majority are full-time students—1,035 (90.7%). Among the remaining students, 100 (8.8%) are part-time, and 6 (0.5%) are exchange students.

The reliability check of individual measurement scales showed that none of the scales had questionable internal consistency (CA < 0.7). The Cronbach's Alpha coefficients for all three scales indicate a satisfactory to good level of internal reliability (Table 2). An additional reliability check—examining how the removal of specific items would affect the overall scale—showed a slight increase in the coefficient for the Brand Awareness scale if item PB1 were removed (Cronbach's Alpha if Item Deleted = 0.899). However, given that the scale already shows a satisfactory/good level of internal reliability, the item was retained. For the other two scales, no improvements in internal consistency were observed when any individual items were removed. The values of each scale were calculated as the arithmetic mean of the items comprising the respective measurement scale. The mean values of the scales indicate high scores (M > 3.5), which, considering the rating range (min = 1; max = 5), suggest that respondents rated all scales relatively highly. The minimum values indicate that some respondents gave low ratings on the investigated scales. However, the skewness indicators and interquartile ranges suggest that the distributions are left-skewed, with most responses clustered around higher values and relatively high central tendency scores. The distribution of results for all three scales significantly deviates from normality. However, upon examining the distribution shape indicators and histograms, the deviation was deemed acceptable, and parametric tests were applied.

Table 2. Selected descriptive statistics and internal reliability of the scales

	code	M	SD	C	Q1-Q3	Skewness	Kurtosis	K-S	CA	NofI
Brand awareness	PB	3.97	1.03	4.25	3.5-5	-1.009	.277	0.159**	0.880	4
Brand Image	IB	4.21	0.80	4.40	3.8-4.8	-1.301	1.728	0.163**	0.865	5
Cognitive Dimension of Behavior	COG	3.86	0.89	4.00	3.2-4.6	-0.496	-0.379	0.099**	0.857	5
M – mean; SD – standard deviation; C – median; Q1 – first quartile; Q3 – third quartile; K- S - Kolmogorov–Smirnov test; CA - Cronbach's Alpha coefficient; NofI – number of items; **significant at the 0.01 level										

Source: Author's work

Correlation analysis showed a significant relationship between all measurement scales (Table 3). Positive correlation coefficient values indicate that higher scores on one scale are associated with higher scores on another scale. Specifically, higher scores on the Brand Awareness scale are accompanied by higher scores on the Brand Image and Cognitive Dimension of Behavior scales, and higher scores on the Brand Image scale correspond with higher scores on the Cognitive Dimension of Behavior scale. The values of the correlation coefficients suggest a moderate to strong association between the analyzed variables.

Table 3. Pearson correlation coefficients between scales

	IB	COG
PB	0.550**	0.585**
IB		0.627**
**significant at the 0.01 level (2-tailed)		

Source: Author's work

To examine the impact of Brand Awareness and Brand Image on the Cognitive Dimension of Consumer Behavior, a regression analysis was conducted. The model was specified with the Cognitive Dimension of Behavior as the dependent variable, while Brand Awareness and Brand Image served as independent variables. The results of the analysis are presented in Table 4.

Table 4. Regression analysis results

	b	β	F value	R	R^2	Adjusted R^2
Constant	0.621					
PB	0.297**	0.345	518.161**	0.690	0.477	0.476
IB	0.488**	0.438				
**significant at the 0.01 level (2-tailed)						

Source: Author's work

The results indicate a significant model in which the independent variables explain 47.6% of the variance in the dependent variable (Table 4). Significance testing of the independent variables shows that both have a significant impact on the dependent variable. The positive signs of the regression coefficients associated with the independent variables suggest a positive influence (both regression coefficients are positive). The standardized beta coefficients indicate that brand image contributes more to the cognitive dimension of behavior.

5. DISCUSSION AND CONCLUSIONS

An analysis of the research results allows us to conclude that the hypotheses are supported; specifically, brand awareness has a positive impact on the cognitive dimension of student behavior when opting for a higher education institution, and brand image also positively influences this cognitive dimension. Although the existing literature still lacks a sufficient number of studies directly examining the impact of these brand equity elements on cognitive processes in the context of higher education, certain similarities support the validity of these findings. For example, Zhang (2020) confirms that brand awareness generally affects consumers' cognitive processes during decision-making, while Bohara et al. (2022) highlight the influence of brand awareness on student decisions depending on their sociodemographic characteristics. It is particularly important to emphasize that, in this study, brand image emerged as a stronger predictor of consumer behavior compared to brand awareness alone. This result is supported by cognitive consumer behavior theories, which consider brand image a

multidimensional psychological construct encompassing tradition, culture, experiences, emotions, and consumer perceptions. This complexity enables a deeper impact on the level of knowledge and perception about the institution, which is reflected in a more informed and rational decision-making process among prospective students.

A significant contribution of this study lies in the fact that the research is conducted within the context of Bosnia and Herzegovina, where the concept of branding higher education institutions has not yet been systematically developed or scientifically explored. Previous available studies have primarily focused on examining the conative dimension of consumer behavior, while the cognitive dimension has remained largely overlooked. This research addresses these scientific gaps and opens the door to a deeper understanding of student behavior in the process of selecting educational institutions. From a practical standpoint, the results underscore the importance of strategic branding for public higher education institutions, with a particular focus on the systematic development of a positive and differentiated brand image in the eyes of the target audience. It is recommended that strategies extend beyond visual identity elements (e.g., name and logo) to embrace deeper brand values and promises that communicate the institution's quality, reliability, and reputation. Moreover, Iwuchukwu et al. (2025) emphasize the importance of student experiences and participation in shaping brand perception, which is crucial for understanding the impact of brand equity on the cognitive dimension of student behavior when opting for a higher education institution. In a broader context, the findings affirm the importance of applying marketing theories and tools in the public higher education sector, pointing to the need for contextualization and adaptation of these concepts to the specifics of the local market and institutional environment. Although still developing, branding of higher education institutions in Bosnia and Herzegovina represents a key step toward strengthening competitiveness, attracting and retaining students, and positioning these institutions within the wider European higher education space.

In conclusion, it can be stated that establishing a strong, consistent, and relevant brand is an imperative in today's competitive higher education market. Institutions that successfully integrate elements of brand equity into their strategic goals and communication with target audiences secure a more recognizable long-term position and greater resilience against increasing competition at both national and international levels. Thus, this study not only expands scientific insights in the field of consumer behavior but also contributes to shaping more effective marketing strategies for public higher education institutions.

REFERENCES

[1] Agdigos, M. A. H., Etpison, M. C. R., Patino, A. A. C., & Etrata Jr, A. E. (2022). The Impact of Brand Image and Perceived Value on Consumers' Purchasing Behavior of Clothing Lines. Management Review An International Journal, 17(2), 27-45.

[2] Arian, M., Khoshtaria T., (2020). The impact of brand equity dimensions on university reputation: an empirical study of Georgian higher education. J. Mark. High. Educ. 2020. February 2020.

[3] Aydın, O. T. (2015). University Choice Process: A Literature Review on Models and Factors Affecting the Process. Journal of Higher Education/Yükseögretim Dergisi, 5(2).

[4] Bohara, S., Suri, P., Panwar D. (2022). Impact of brand awareness on enrollment decision process moderated by students' gender for HEI, Journal of Content, Community & Communication Vol. 15 Year 8.

[5] Chang, P.-L., & Chieng, M.-H. (2006). Building consumer–brend relationship: A cross-cultural experiential view. Psychology & Marketing, 23, 927–959.

[6] Esch, F-R., Langer, T., Schmitt, B. H., & Geus, P. (2006). Are brands forever? How brand knowledge and relationships affect current and future purchases. Journal of Product & Brand Management, 15, 98–105.

[7] Gupta, A., Garg, A., Farhan, F., Chandna, M., Jain, R., & Kumar, S. (2021). Effect of brand image on consumer buying behaviour. Available at SSRN 3907928.

[8] Hossler, Don, Braxton, John & Coopersmith, Georgia (1989). Understanding Student College Choice, Higher Education: Handbook of Theory and Research, Volume 5, pp. 231–288.

[9] Hui, Y., & Salman, S. A. (2023). An Analysis of the Impact of Brand Image on Consumer Purchase Behavior. International Journal on Recent Trends in Business and Tourism (IJRTBT), 7(2), 31-37.

[10] Ismail, A. R., & Spinelli, G. (2012). Effects of brand love, personality and image on word of mouth: The case of fashion brands among young consumers. Journal of Fashion Marketing and Management, 16, 386–398.

[11] Iwuchukwu, E., Singh, A. D. H., Sakka, A. A. B., & Cheng, J. (2025). The Impact of Student Value Co-Creation on Student Loyalty in Malaysia Private Higher Education Institutions: The Role of a Mediator. International Journal of Academic Research in Business and Social Sciences, 15(1), 92–110.

[12] Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. Journal of Marketing, 57(1), 1-22.

[13] Keller, K. L. (2008). Strategic Branding Management: Building, Measuring, and Managing Brand Equity, 3rd Edn. Upper Saddle River: Prentice Hall.

[14] Keller, K. L. (2013). Strategic Brand Management. United States of America. Pearson Education Limited.

[15] Khoshtaria, T., Datuashvili, D., & Matin, A. (2020). The impact of brand equity dimensions on university reputation: an empirical study of Georgian higher education. Journal of Marketing for Higher Education, 30(2), 239-255.

[16] Kim, H. B., Gon Kim, W., & An, J. A. (2003). The effect of consumer-based brand equity on firms' financial performance. Journal of consumer marketing, 20(4), 335-351.

[17] Low, G. S., & Lamb, C. W. (2000). The measurement and dimensionality of brand associations. Journal of Product and Brand Management, 9, 350–368.

[18] Macdonald, E., & Sharp, B. (1996). Management Perceptions of the Importance of Brand Awareness as an Indication of Advertising Effectiveness. Marketing Research On-Line, 1, 1–15.

[19] Mulyono, H. (2016). Brand awareness and brand image of decision making on university. Jurnal Manajemen Dan Kewirausahaan, 18(2), 163–173.

[20] Obermeit, K. (2012). Students' choice of universities in Germany: structure, factors and information sources used. Journal of Marketing for Higher Education, 22(2), 206–230.

[21] Oliver, R.L. (1997). Satisfaction. A Behavioral Perspective on the Consumer. New York: McGraw-Hill Inc.

[22] Panda, S., Pandey, S. C., Bennett, A., & Tian, X. (2019). University brand image as competitive advantage: a two-country study. International Journal of Educational Management, 33(2), 234-251.

[23] Rizard, S. R., Waluyo, B., & Jaswir, I. (2022). Impact of brand equity and service quality on the reputation of universities and students' intention to choose them: The case of IIUM and UIN. F1000Research, 11, 1412.

[24] Royo, J.P. (2017). Students as customers: a paradigm shift in higher education, DEBATS Annual Review, 2.

[25] Rutter, R., Roper, S., Lettice, F. (2016). Social media interaction, the university brand and recruitment performance. J. Bus. Res., 69(8), 3096–3104.

[26] Salinas, E. M., & Pérez, J. M. P. (2009). Modeling the brand extensions' influence on brand image. Journal of Business Research, 62(1), 50-60.

[27] Sasmita, J., & Mohd Suki, N. (2015). Young consumers' insights on brand equity. International Journal of Retail & Distribution Management, 43(3), 276–292.

[28] Schiffman, L., G., Kanuk, L., L., (2004). Ponašanje potrošača. Mate d.o.o., Zagreb.

[29] Song, B. L., Lee, K. L., Liew, C. Y., & Subramaniam, M. (2023). The role of social media engagement in building relationship quality and brand performance in higher education marketing. International Journal of Educational Management, 37(2), 417-430.

[30] Stephenson, A. L., Heckert, A., Yerger, D. B. (2016). College choice and the university brand: exploring the consumer decision framework. Higher Education, 71(4), 489-503.

[31] Zhang, X. (2020). The Influences of Brand Awareness on Consumers' Cognitive Process: An Event-Related Potentials Study. Frontiers in Neuroscience, 14.

THE IMPLEMENTATION OF STRATEGIC MARKETING IN NON-PROFIT ORGANIZATIONS IN ISTRIA COUNTY: CHALLENGES AND BENEFITS

IRENA ŠKER
University of Pula
Faculty of Economics and Tourism "Dr. Mijo Mirković"
Preradovićeva ul. 1/1, Pula, Croatia
irena.sker@gmail.com

MARKO PALIAGA
University of Pula
Faculty of Economics and Tourism "Dr. Mijo Mirković"
Preradovićeva ul. 1/1, Pula, Croatia
marko@rovinj.hr

HELGA MOŽÉ
The Foundation for Partnership and Civil Society Development Istra
Pula, Croatia
helgamoze@gmail.com

ABSTRACT

Purpose: This paper explores the use of marketing activities and strategies in nonprofit organizations in Istria County, emphasizing the importance of strategic marketing. It examines key elements such as segmentation, targeting, and positioning, as well as resource limitations that affect implementation.

Methodology: A questionnaire based on relevant literature was developed to collect primary data. The study included 133 nonprofit organizations in Istria County over four months in 2024. Data analysis involved descriptive and bivariate statistics, including t-tests.

Results: Findings show that most nonprofit organizations do not systematically engage in marketing activities or integrate core marketing elements into their operations. Only 18% have a formal marketing plan, and strategic marketing is rarely practiced. Nonetheless, the study revealed several benefits of using strategic marketing, such as improved goal communication, stronger public visibility, enhanced branding, and better retention of donors and volunteers. Strategic marketing also contributes to more efficient resource use, stronger nonprofit identity, and greater alignment with organizational goals.

Conclusion: While nonprofit organizations face obstacles in applying strategic marketing, its benefits are significant. Strategic marketing is essential for improving operations, enhancing social impact, and ensuring long-term sustainability.

KEYWORDS: marketing in the nonprofit sector, strategic marketing, nonprofit organizations

1. INTRODUCTION

The study of the application of strategic marketing in the nonprofit sector is highly engaging and valuable to society (Wymer, 2021; NCUB, 2013). Its significance stems from the differences compared to commercial marketing and the diversity of topics available to researchers (Wymer, 2021). As early as the 1980s, Capon & Mauser (1982) explored the suitability of the marketing concept within the context of the public and nonprofit sectors. Unlike for-profit organizations, nonprofit organizations often operate with limited resources and face unique challenges that require specific marketing strategies to achieve their objectives. The value of marketing in the nonprofit sector lies in the fact that by increasing marketing knowledge for nonprofit organizations, we enrich society and improve the quality of life within communities (Ebrahim, 2003; Wymer et al., 2006; Andreasen, 2012). The complexity of marketing in nonprofit organizations is further compounded by the more difficult definition of exchange value compared to the for-profit sector (Kotler & Keller, 2012; Brkljačić, 2019; Burić, 2019). While for-profit organizations base value on the relationship between quality and price, nonprofit organizations provide socially oriented values, making their exchange value more abstract but essential for implementing socially beneficial programs (Brkljačić, 2019).

Marketing orientation in nonprofit organizations is applied throughout all stages of value creation, from program development based on stakeholder needs research to the evaluation of their satisfaction (Werke & Bogale, 2023). Nonprofit marketing is implemented through the traditional elements of the marketing mix: product, price, distribution, and promotion (Ayyıldız et al., 2017; Burić, 2019). This ensures that nonprofit organizations' activities align with the needs of their target groups, leading to a better adaptation of offerings to stakeholders' actual needs (Vázquez et al., 2002; Gainer & Padanyi, 2005).

Beyond meeting the needs of target groups, the application of strategic marketing enables nonprofit organizations to communicate their strategies, missions, and objectives more effectively (Rosnerova & Dagmar, 2021). Clearly defined and targeted marketing messages help convey the value an organization brings to the community, increasing public awareness and support for its initiatives (Gainer & Padanyi, 2005; Andreasen, 2012). Through research and analysis, nonprofit organizations can better understand their target audience, their needs, and the best ways to engage them (Andreasen, 2012). This understanding is crucial for creating marketing strategies that resonate with audiences and motivate them to take action, whether through donations, volunteering, or other forms of support (Chad, 2013).

Similarly, strategic marketing aids nonprofit organizations in optimizing their resource use. Given that many such organizations operate with limited financial means, effective resource management is vital (Weerawardena et al., 2010). Through analysis and planning, nonprofits must identify the most cost-effective marketing channels and tactics that will yield the highest return on investment. This includes digital marketing strategies, which can be both economical and highly effective in reaching a broad audience.

Strategic marketing enables nonprofit organizations to systematically plan, implement, and control activities for long-term competitive advantage. The process begins with market analysis, segmentation, target group selection, and positioning with a unique value proposition. The marketing mix, along with additional service elements (people, processes, physical evidence), is tailored to the needs of target segments; while monitoring and adaptation ensure long-term success (Wysocki & Wirth, 2001).

Considering the broader benefits of strategic marketing for nonprofit organizations, it is evident that it plays a key role in strengthening nonprofit brands (Helmig & Thaler, 2010; Choto et al., 2023; Werke & Bogale, 2023). A recognizable and positive brand image can significantly impact an organization's ability to attract and retain donors and volunteers (Chad et al., 2014; Liu et al., 2018). The application of strategic marketing in the nonprofit sector is crucial for achieving better results, optimizing resources, strengthening brands, and adapting to change (Choto et al., 2023). These activities not only help organizations serve their communities more effectively but also ensure their long-term sustainability and success in fulfilling their missions and objectives (Omura & Forster, 2014).

Numerous benefits arise from the application of strategic marketing in nonprofit organizations. However, as Dolnicar & Lazarevski (2009) highlight, the concept of strategic marketing in nonprofit organizations significantly differs from its application in the commercial sector and is often not sufficiently recognized. Although strategic marketing has been extensively researched in commercial literature, its application in nonprofit organizations remains a specialized field. Additionally, the applicability of marketing within the nonprofit sector continues to be a topic of debate, further complicating its implementation (NCUB, 2013).
Globally, nonprofit organizations face increasing competition due to the growing number of organizations and shrinking financial resources (Katz & Rosenberg, 2005; Peloza & Hassay, 2007; Brady et al., 2010; Salamon et al., 2013; Hopkins et al., 2014; Sepulcri et al., 2020). In this context, marketing becomes essential for success and sustainability (Katz & Rosenberg, 2005; Pope et al., 2009; Hopkins et al., 2014). While some organizations adopt commercial marketing techniques, many still struggle with financial and promotional challenges (Werke & Bogale, 2023). Despite these challenges, an increasing number of nonprofit organizations are introducing "business" marketing strategies, though often without adequate knowledge (Brady et al., 2010; UCB, 2013). Regarding the geographic scope of research on strategic marketing and nonprofit organizations, studies frequently focus on examples from developed countries such as the United States, the United Kingdom, and Australia. Therefore, there is a need for a deeper examination of the challenges and practices of nonprofit organizations in different contexts and regions (Krupka, 2004; NCUB, 2013).

These findings have served as the foundation for defining the research objective and formulating the hypotheses in this study. The aim of this paper is to explore the application of marketing activities and strategies in nonprofit organizations in the Istria County and to determine the importance of applying strategic marketing in nonprofit organizations. Specific objectives include the application of marketing activities, the implementation of key marketing elements such as segmentation, targeting, and positioning, and the analysis of resource limitations in implementing strategic marketing. Istria County was chosen for this research as it stands out as one of Croatia's most active regions with numerous active nonprofit organizations, providing an important context for understanding the application of strategic marketing in the nonprofit sector.

Based on the study's objectives, the following research hypotheses have been formulated:
H1: Most nonprofit organizations engage in marketing activities but without clear integration of key marketing mix elements (product, price, distribution, promotion).
H2: Most nonprofit organizations do not apply strategic marketing as an integral part of planning and decision-making, nor do they implement marketing strategies for segmentation, targeting, and positioning.
H3a: The lack of financial resources significantly hinders the implementation of strategic marketing in nonprofit organizations.

H3b: The lack of human resources significantly hinders the implementation of strategic marketing in nonprofit organizations.

H3c: The lack of technological resources significantly hinders the implementation of strategic marketing in nonprofit organizations.

H4: Increasing marketing knowledge in nonprofit organizations enriches society and improves the quality of life in communities.

H5: The application of strategic marketing enables nonprofit organizations to communicate their strategies, missions, and objectives more effectively.

H6: Clearly defined and targeted marketing messages significantly help convey the value that organizations bring to the community, increasing public awareness and support for nonprofit initiatives.

H7: Strategic marketing plays a crucial role in strengthening a nonprofit organization's brand, and a recognizable and positive brand image can significantly impact its ability to attract and retain donors and volunteers.

H8: The application of strategic marketing in the nonprofit sector results in significant improvements in average organizational performance, resource optimization, and brand strengthening.

H9: There is a statistically significant difference in the perceived importance of strategic marketing for achieving better results between organizations with a marketing plan and those without one.

To achieve the research objective and test the proposed hypotheses, descriptive and bivariate statistical analyses were applied.

2. THEORETICAL BACKGROUND AND REVIEW OF EXISTING LITERATURE

It is well known that there are three main sectors, particularly in developed countries: the private sector, the governmental sector, and the nonprofit sector (Ayyıldız et al., 2017). Various terms are used in the literature to describe organizations in this sector, such as nonprofit organizations (NPOs), voluntary organizations, civil society organizations, and non-governmental organizations (NGOs) (Ayyıldız et al., 2017). In this paper, we will use the term "nonprofit organizations" as it is widely accepted in international literature, ensuring consistency with global practices and research.

Over the past three decades, nonprofit organizations have experienced significant growth (Ebrahaim, 2003; Stride & Lee, 2007; Leroux 2010; Hersberger-Langloh, 2022), which has spurred greater interest in marketing within this sector (Pope et al., 2009). In the early stages of research on nonprofit marketing, the research community viewed this field as a simple application of commercial marketing concepts to the nonprofit environment (Andreasen, 2012). However, the value of such an approach was often questioned. Researchers found that merely borrowing constructs and scales from commercial marketing posed a problem, as much of the previous research lacked sufficient validity and relevance for nonprofit contexts (Kotler & Zaltman, 1971; Jacoby, 1978; Wymer, 2013). Although nonprofit organizations did not adopt marketing techniques until the 1960s and 1970s, today, it has become common practice (Wenham et al., 2003). While marketing has not always been a priority, its importance is increasingly recognized, particularly in fostering long-term relationships with donors and beneficiaries (Leroux, 2010; Choto et al., 2023). However, the applicability of marketing within the nonprofit sector remains a topic of debate, further complicating its implementation, as highlighted by a study conducted by the Global Nonprofit Management Team (NCUB, 2013).

Kotler and Zaltman (1971) define strategic marketing as the design, implementation, and control of programs to promote social ideas, including product planning, pricing, communication, distribution, and market research. Strategic marketing planning refers to the continuous process of developing, implementing, and monitoring marketing strategies to achieve specific marketing objectives (Kotler & Andreasen, 1975; Pope et al., 2009; Pavičić, 2003). Strategic nonprofit marketing can be defined as the practice of using marketing strategies to achieve nonprofit organizations' purposes and goals (Andreasen, 2012; Murray, 2015; Novatorov, 2015; Tuneva, 2020; Werke & Bogale, 2023). Choto, Musakuro, Iwu, and Tengeh (2023) emphasize that marketing strategies in nonprofit organizations should focus on increasing organizational sustainability through management and monitoring of marketing effectiveness, where service quality and customer satisfaction play a key role. Hassay & Peloza (2009) observed that nonprofit organizations increasingly apply marketing concepts such as market orientation, customer relationship marketing, market segmentation, loyalty, and branding.

The application of marketing strategies enables nonprofit organizations to better understand the needs of users and donors, ensuring competitiveness and engagement with target audiences (Tabaku & Mersini, 2014). Possible strategies for nonprofit organizations encompass various approaches to achieving growth and sustainability. Market penetration, according to Bigley (2018), directs organizations to sell existing services or products to current users, thereby increasing revenue and strengthening the brand. Market development, as noted by Kukarstev et al. (2019), involves expansion into new geographic areas or target groups, facilitating growth and revenue generation. Product development, according to Gutterman (2023) and Nayir (2024), includes creating new or improved services and products that can generate additional income, such as educational materials or consulting services. Diversification, highlighted by Purkayastha et al. (2012) and Mustafa & Shkurti (2023), allows organizations to create new products and enter new markets, thereby increasing revenues and strengthening their competitive advantage. Each of these strategies provides nonprofit organizations with opportunities for growth, expansion, and long-term sustainability despite challenges in the sector.

Effective marketing helps nonprofit organizations define their mission and attract necessary resources (Bennett, 2017; Lee et al., 2018). Nonprofit organizations also need to enhance perception and visibility to attract support and ensure sustainability (Pavičić, 2003). Market analysis and strategy adaptation increase donor commitment and community support (Mato-Santiso et al., 2021). More and more nonprofit organizations adopt strategies similar to those in the business sector, yet they often lack adequate knowledge and expertise. For example, online marketing, which is standard in the for-profit sector, is still not widely present in nonprofit organizations due to a lack of qualified personnel (NCUB, 2013). Additionally, constraints such as insufficient financial resources, human capital, and time further complicate marketing development and implementation. Consequently, marketing is often managed by volunteers or overburdened employees who lack the necessary skills (Katz & Roesenberg, 2005; Peloza & Hassay, 2007; Pope et al., 2009). This results in weaker brand recognition, poorly defined target audiences, and insufficient presence in digital channels (NCUB, 2013).

3. METHODOLOGY

A questionnaire for collecting primary data was developed based on an extensive literature review and is divided into five parts that measure current marketing activities, implementation

of strategic marketing, challenges of strategic marketing implementation, attitudes and opinions about marketing in nonprofit organizations and respondents' demographic data.

Current marketing activities were measured through 5 statements adopted from Dolnicar & Lazarevski (2009). 5 statements were used to measure the implementation of strategic marketing adopted from Drummond et al. (2008). The challenges of strategic marketing implementation were measured through 3 statements adopted from Werke & Bogale (2023), while attitudes and opinions about marketing in nonprofit organizations were measured through 10 statements adopted from Gainer & Padanyi (2005), Wymer et. al. (2006), Helmig & Thaler (2010), Andreasen (2012), Chad et al. (2014), Liu, et al. (2018), Rosnerova & Dagmar (2021), Choto et al. (2023), Werke & Bogale (2023).

Variables were measured with a 5-point Likert scale, ranging from "strongly disagree" as 1, to "strongly agree" as 5. Finally, respondents' demographic data included organization type, number of employees, years in operation and sources of financing. The questionnaires were distributed to nonprofit organizations in the Istrian Region, Croatia, over a period of four months from August to November 2024. They were administrated onsite, via e-mail and by telephone to potential respondents who were willing to participate in the survey. Completed questionnaires were collected online.

Data analysis was performed on the sample of 133 valid questionnaires and included descriptive and bivariate statistical analyses. The respondents' demographics, as well as current marketing activities, implementation of strategic marketing, challenges in strategic marketing application, attitudes and opinions about marketing in nonprofit organizations were evaluated with descriptive statistics methods, calculating percentage, mean, standard deviation, coefficient of skewness and kurtosis. The significance of differences in the importance of implementing strategic marketing considering respondents who have and do not have a marketing plan, were tested with independent samples t-test. The sample consisted of 133 nonprofit organizations operating in the Istrian County. A majority (32.3 %) had been operating for over 20 years, followed by organizations with 11 to 20 years (20.3 %), 5 to 10 years (24.0 %), and less than 5 years (23.3 %). Humanitarian, cultural, and educational organizations each represented 19.05 % of the sample, followed by sports and social organizations at 17.86 % each. Ecological organizations accounted for 3.57 %, religious organizations 2.38 %, and health organizations 1.19 %.

Most nonprofit organizations (35.34 %) had no employees, followed by those with one (19.55 %), two (16.54 %), and three employees (13.53 %). Organizations with four to six employees represented smaller shares ranging from 3.76 % to 5.26 %, while those with over ten employees made up only 1.50 %.

Regarding sources of financing, the majority (67.67 %) relied primarily on public funding. Donations accounted for 15.04 %, self-financing for 13.53 %, and other sources including income from marketing and EU funds constituted 3.76 %.

4. RESULTS AND DISCUSSION

Considering the aim of the paper, which focuses on researching the application of strategic marketing in nonprofit organizations, as well as the established hypothesis, descriptive and bivariate statistical analysis were used for data processing. The research results, analyzed

through descriptive statistics on statements regarding current marketing activities in nonprofit organizations, are presented in Table 1.

Table 1. Descriptive statistical analysis of statements on current marketing activities

Variables	Arithmetic mean	Standard deviation	Coefficient of skewness	Coefficient of kurtosis
CURRENT MARKETING ACTIVITIES				
Your organization is engaged in marketing activities	2.45	1.230	-0.161	-0,823
Your organization's current marketing activities include key elements of the marketing mix (product, price, distribution, promotion)	2.32	1.275	0.543	-0.813
Your organization regularly monitors and analyzes the effectiveness of its marketing activities	1.98	1.111	0.785	-0.410

Source: Authors' analysis

When examining current marketing activities, the highest average rating was given to the statement, "Your organization is engaged in marketing activities" ($x = 2.45$, SD = 1.230). This indicates that most respondents disagree with the statement. However, the high dispersion of data around the mean suggests a diversity of responses.

The other statements, "Your organization's current marketing activities include key elements of the marketing mix" and "Your organization regularly monitors and analyzes the effectiveness of its marketing activities," show low average ratings, indicating disagreement. The arithmetic means (2.32 and 1.98) suggest that most nonprofit organizations do not incorporate key elements of the marketing mix into their activities nor do they regularly track and analyze the effectiveness of their marketing efforts. Additionally, the standard deviations (1.275 and 1.111) indicate some variation in approaches to marketing activities among organizations. While some attempt to implement marketing elements, the majority do not do so systematically or consistently.

Out of the 133 collected survey questionnaires, only 18.05 % of nonprofit organizations have a marketing plan, meaning that 109 respondents lack one. This highlights an insufficient level of strategic marketing approaches within the sector. Based on these findings, hypothesis 1, "Most nonprofit organizations engage in marketing activities but without a clear integration of key marketing mix elements (product, price, distribution, promotion)," can be rejected.

Since marketing strategy aims at segmentation, targeting, and positioning (Drummond et al., 2008), the following section presents statements regarding the application of strategic marketing. Table 2 displays the results of the descriptive statistical analysis of statements related to the implementation of strategic marketing in nonprofit organizations, clearly outlining some of the applied marketing strategies.

Table 2. Descriptive statistical analysis of statements on the implementation of strategic marketing

Variables	Arithmetic mean	Standard deviation	Coefficient of skewness	Coefficient of kurtosis
IMPLEMENTATION OF STRATEGIC MARKETING				
Strategic marketing is an integral part of your organization's planning and decision-making	2.16	1.359	0.923	-0.007

Your organization conducts strategic analyses (external, internal, and consumer analysis) to develop marketing strategies and determine strategic directions	1.89	1.130	1.074	0.158
Your organization utilizes market segmentation to identify different user groups and tailor products or services to their needs	2.24	1.388	0.629	-0.996
Your organization strategically selects target segments and focuses its resources on building long-term relationships with them	2.47	1.379	0.205	-1.423
Your organization has a clearly defined market position that highlights its unique advantages over the competition	2.50	1.396	0.264	-1.335

Source: Authors' analysis

The arithmetic means of 2.16 indicates that nonprofit organizations have not extensively implemented strategic marketing in their plans and decisions. The high standard deviation coefficient (1.359) suggests dispersion in responses. Similarly, most organizations disagree with the statement that they conduct strategic analyses to develop marketing strategies ($\bar{x}$ = 1.89, SD = 1.130), while the coefficient of skewness (1.074) suggests a tendency toward lower response values. An analysis of the application of segmentation, target group selection, and positioning reveals that all responses have a relatively low arithmetic mean, ranging from 2.24 to 2.50. This suggests that the majority of respondents strongly disagree with these statements, while the standard deviation indicates a high degree of response dispersion. Therefore, hypothesis 2 "Most nonprofit organizations do not apply strategic marketing as an integral part of planning and decision-making, nor do they implement marketing strategies for segmentation, targeting, and positioning" can be accepted. While some nonprofit organizations may have implemented certain strategies, the results indicate that, overall, strategic marketing is not sufficiently integrated into their plans and decisions, nor are key marketing strategies adequately developed.

To gain insight into the key obstacles hindering the successful implementation of strategic marketing practices, an analysis was conducted on the impact of financial, human, and technological resources on the application of strategic marketing, as shown in Table 3.

Table 3. Descriptive statistical analysis of statements on the challenges of strategic marketing implementation

Variables	Arithmetic mean	Standard deviation	Coefficient of skewness	Coefficient of kurtosis
CHALLENGES OF STRATEGIC MARKETING IMPLEMENTATION				
The lack of financial resources in your organization significantly hinders the implementation of strategic marketing	4.23	1.132	-1.569	1.769
The lack of human resources in your organization significantly hinders the implementation of strategic marketing	4.18	1.140	-1.419	1.336
The lack of technological resources in your organization significantly hinders the implementation of strategic marketing	3.86	1.268	-0.813	-0.440

Source: Authors' analysis

The statement "The lack of financial resources in your organization significantly hinders the implementation of strategic marketing" has the highest arithmetic mean ($\bar{x}$ = 4.23), indicating

that the majority of respondents recognize financial constraints as a key obstacle. The coefficient of skewness (-1.569) suggests that the responses were mostly concentrated towards higher scores (4 and 5), while the high coefficient of kurtosis (1.769) indicates a deviation from normality in the distribution of responses, further confirming the consensus among respondents on the importance of this challenge. The challenge of human resources is also evident in the respondents' answers, as it has a high arithmetic mean of 4.18. The coefficient of skewness (-1.419) and kurtosis (1.336) again indicate a pronounced concentration of responses towards higher values. The statement "The lack of technological resources in your organization significantly hinders the implementation of strategic marketing" has a slightly lower arithmetic mean (3.86), suggesting that, while technological resources pose a challenge, their importance is not as critical as that of financial and human resources.

Financial and human resources were identified as the biggest obstacles to the implementation of strategic marketing in nonprofit organizations, highlighting the need for additional investments in these areas. Although technological resources also present a challenge, their impact is somewhat less pronounced compared to financial and human constraints. Therefore, hypotheses 3a, b, c "The lack of financial, human, and technological resources significantly hinders the implementation of strategic marketing in nonprofit organizations" can be accepted. Building on the research aim of determining the importance of strategic marketing in nonprofit organizations, the results of respondents' attitudes and opinions about marketing in these organizations were analyzed, as shown in Table 4.

The results show strong support for the idea that strategic marketing plays a key role in strengthening nonprofit organizations, both in terms of their visibility and their ability to achieve their goals. High arithmetic means (ranging from 4.13 to 4.61) and low standard deviations (below 1) indicate very positive attitudes from respondents towards the importance of marketing in the nonprofit sector.

Table 4. Descriptive statistical analysis of attitudes and opinions about marketing in nonprofit organizations

Variables	Arithmetic mean	Standard deviation	Coefficient of skewness	Coefficient of kurtosis
ATTITUDES AND OPINIONS ABOUT MARKETING IN NONPROFIT ORGANIZATIONS				
Increasing knowledge of marketing in nonprofit organizations enriches society and improves the quality of life in communities	4.40	0.843	-1.714	3.439
The application of strategic marketing enables nonprofit organizations to communicate their strategies, missions, and goals more effectively	4.44	0.847	-1.961	4.714
Clearly defined and targeted marketing messages help convey the values that the organization brings to the community	4.61	0.976	-0.784	5.009
Clearly defined and targeted marketing messages raise public awareness	4.40	0.825	-1.846	4.677
Clearly defined and targeted marketing messages support the initiatives of nonprofit organizations	4.37	0.875	-1.693	3.428
Strategic marketing plays a key role in strengthening the brand of a nonprofit organization	4.29	0.936	-1.409	1.920
A recognizable and positive brand image can significantly impact the organization's	4.44	0.874	-1.968	4.348

ability to attract and retain donors and volunteers				
The application of strategic marketing in the nonprofit sector is crucial for achieving better results	4.23	0.958	-1.255	1.369
The application of strategic marketing in the nonprofit sector is crucial for optimizing resources	4.13	0.988	-1.027	0.661
The application of strategic marketing in the nonprofit sector is crucial for strengthening the brand and adapting to changes	4.26	0.990	-1.439	1.856

Source: Authors' analysis

The statement "Increasing knowledge of marketing in nonprofit organizations enriches society and improves the quality of life in communities" has a high average score ($x = 4.40$) with a low standard deviation (sd = 0.843), indicating a strong consensus among respondents that marketing can have broader societal benefits. Therefore, hypothesis 4, "Increasing knowledge of marketing in nonprofit organizations enriches society and improves the quality of life in communities," can be accepted. The statement "The application of strategic marketing enables nonprofit organizations to communicate their strategies, missions, and goals more effectively" highlights the perception of strategic marketing as a key tool in the professionalization and strengthening of communication capacities within nonprofit organizations. The analysis results support this claim. With an average score of 4.44, most respondents agree or strongly agree with this statement, suggesting that they recognize strategic marketing as a mechanism that enables clearer, more structured, and targeted communication. The low standard deviation of 0.847 further confirms the relative homogeneity of responses, indicating a broad consensus among respondents. The skewness coefficient of -1.961 shows a strong negative skew, indicating a concentration of responses towards the higher values of the scale (4 and 5). This further suggests that the majority of respondents highly value the role of strategic marketing in communicating organizational strategies, missions, and goals. Therefore, hypothesis 5, "The application of strategic marketing enables nonprofit organizations to communicate their strategies, missions, and goals more effectively," can also be accepted. Respondents show agreement with statements about the benefits of clearly defined and targeted marketing messages, as all three statements record high average scores (above 4.3), low standard deviations (below 1.0), and negative skewness coefficients, indicating a predominant trend toward high scores among respondents. This further confirms a strong consensus on the importance of clearly defined and targeted marketing messages in the nonprofit sector. Additionally, the high values of the kurtosis coefficients indicate that the responses are concentrated towards higher ratings, confirming that these strategies are almost universally recognized as beneficial. The results clearly support hypothesis 6: "Clearly defined and targeted marketing messages significantly help in conveying the values that the organization brings to the community, increasing public awareness, and support for nonprofit initiatives."

The next step was to analyze the collected data from statements addressing hypothesis 7: "Strategic marketing plays a crucial role in strengthening a nonprofit organization's brand, and a recognizable and positive brand image can significantly impact its ability to attract and retain donors and volunteers." High average scores for both statements (4.29 for the role of strategic marketing in strengthening the brand and 4.44 for the impact of a positive image on attracting donors and volunteers) indicate strong agreement among respondents. Low standard deviations (0.936 and 0.874) suggest relative homogeneity of responses, and the negative skewness coefficients (-1.409 and -1.968) confirm that most responses were concentrated towards higher ratings. High kurtosis coefficients (1.920 and 4.348) suggest that the responses are strongly

directed towards the upper end of the scale, indicating that respondents strongly support the claims. Based on the data, hypothesis 7 can be accepted.

To gain insights into the potential benefits of applying strategic marketing in the nonprofit sector, the results of the last three statements were analyzed. In the analysis of attitudes towards the application of strategic marketing in the nonprofit sector, respondents expressed generally positive opinions about its importance for achieving better results, optimizing resources, and strengthening the brand and adapting to changes. The three statements recorded high average scores, ranging from 4.13 to 4.26. The standard deviations for all three statements (below 1.0) also suggest low deviations from the arithmetic mean, indicating that most respondents share similar opinions about the importance of strategic marketing in these areas. Based on the results, hypothesis 8, "The application of strategic marketing in the nonprofit sector results in significant improvements in average organizational performance, resource optimization, and brand strengthening," can be accepted.

To assess whether there is a difference in attitudes and opinions regarding the benefits of applying strategic marketing in nonprofit organizations that have a marketing plan and those that do not, an independent samples t-test was performed. The results of the t-test are presented in Table 5.

Table 5. Comparison of nonprofit organizations' ratings of attitudes and opinions on the benefits of applying strategic marketing

Variables	Arithmetic mean		Standard Deviation		T-value
	MP YES	MP NO	MP YES	MP NO	
The application of strategic marketing in the nonprofit sector is crucial for achieving better results	4,29	4,21	0,934	0,959	0,710
The application of strategic marketing in the nonprofit sector is crucial for resource optimization	4,21	4,11	0,957	0,989	0,661
The application of strategic marketing in the nonprofit sector is crucial for strengthening the brand and adapting to changes	4,38	4,23	0,904	1,001	0,516

Note: * significant at 0.05; MP YES - nonprofit organizations that have a marketing plan; MP NO - nonprofit organizations that haven`t a marketing plan
Source: Authors' analysis

For all three statements, organizations with a marketing plan have slightly higher arithmetic means, indicating that they value the importance of strategic marketing in the nonprofit sector a bit more. Both groups show a high degree of agreement with all statements (all arithmetic means are above 4.0), suggesting that nonprofit organizations, in general, recognize the importance of applying strategic marketing. The standard deviations between the two groups are very similar, meaning there is no significant difference in the variability of attitudes within each group. The t-values for all three statements are low (t = 0.710; t = 0.661; t = 0.516), i.e., below the critical value, indicating that the differences between the groups are not statistically significant. Therefore, hypothesis 9 " There is a statistically significant difference in the perceived importance of strategic marketing for achieving better results between organizations with a marketing plan and those without one " can be rejected.

5. CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

Strategic marketing, although widely accepted in for-profit organizations, is still an under-recognized area in nonprofit organizations. At the beginning of research on marketing in the nonprofit sector, the research community considered this area to be a simple application of commercial marketing concepts in a nonprofit environment (Andreasen, 2012). However, although it brings numerous benefits in both the for-profit and nonprofit sectors, its application in the nonprofit sector differs because it is primarily focused on the goals of nonprofit organizations, and should be viewed as such. Over the past five decades, nonprofit organizations have experienced significant growth, which has led to greater interest in marketing within this sector. Although most of the previous research has been focused on large, developed countries, there is a need to explore this concept in smaller countries and regions. Therefore, the aim of this paper was to explore the application of marketing activities and strategies in nonprofit organizations in the Istria County area and to determine the importance of applying strategic marketing in nonprofit organizations. The research was conducted on a sample of 133 nonprofit organizations in the Istria County (Croatia). The research results confirm most of the hypotheses, especially those relating to the key role of strategic marketing in nonprofit organizations. Most nonprofit organizations do not conduct marketing activities, do not include key elements of the marketing mix (product, price, distribution, promotion), and do not monitor their effectiveness. Furthermore, only about 18 % of nonprofit organizations have a marketing plan. Strategic marketing is not an integral part of the plans and decisions in most organizations, and they do not conduct analyses for developing marketing strategies. Additionally, the research confirmed that the lack of financial, human, and technological resources significantly hinders the application of strategic marketing in nonprofit organizations, which is consistent with previous studies (Katz & Roesenberg, 2005; Peloza & Hassay, 2007; Pope et al., 2009), which also mention time as a limitation. The research also confirmed numerous benefits of applying strategic marketing in nonprofit organizations. Most respondents believe that increasing knowledge of marketing in nonprofit organizations enriches society and improves the quality of life in communities, which is consistent with previous research (Wymer et al., 2006; Andreasen, 2012). Moreover, applying strategic marketing enables nonprofit organizations to communicate their strategies, missions, and goals more effectively. Clearly defined and targeted marketing messages significantly help convey the values that the organization brings to the community, raise public awareness, and garner support for nonprofit organizations' initiatives. Furthermore, the application of strategic marketing is recognized as key to strengthening the brand of nonprofit organizations, as well as attracting and retaining donors and volunteers. These results also confirm the importance of defining and applying clear marketing messages, as well as a strategic approach for effective communication with the target audience. The application of strategic marketing in the nonprofit sector results in significant improvements in average organizational outcomes, resource optimization, and brand strengthening. Although some nonprofit organizations have a marketing plan, the research results showed no statistically significant difference in the perception of the importance of strategic marketing for achieving better results between organizations that have a marketing plan and those that do not. The scientific contribution of this research lies in deepening the understanding of the application of strategic marketing in the nonprofit sector, particularly in the context of less developed regions. The research contributes to a better understanding of the key factors that influence the successful implementation of marketing strategies in nonprofit organizations, with a particular emphasis on resource limitations and challenges. Additionally, the results of the research contribute to the scientific field of social sciences, economics, marketing, and specifically nonprofit marketing. The practical contribution of the research lies

in providing specific guidelines for nonprofit organizations for the effective application of strategic marketing. The results highlight the importance of developing marketing plans and utilizing marketing tools to improve the visibility of organizations, strengthen their brand, and ensure long-term sustainability. Furthermore, the research results can serve as a basis for creating public policies and support programs for nonprofit organizations, with the aim of strengthening their capacity to implement strategic marketing activities. Based on the results obtained, it can be concluded that strategic marketing is recognized as a key factor for success in nonprofit organizations, and that its application enables achieving better organizational results, optimizing resources, strengthening the brand, and adapting more successfully to changes in the market. Limitations of the research are visible in several areas. The research was conducted on a sample of organizations from only one county, which limits the generalization of the results to a broader area. Additionally, the research is based on self-reports from respondents, which may affect the objectivity of the results, as participants may be inclined to provide socially acceptable answers. Furthermore, future research could be expanded to a larger number of nonprofit organizations and different regions to ensure representativeness and generalizability of the results. It would also be useful to explore specific marketing strategies that are most effective in different types of nonprofit organizations, as well as analyze the role of digital marketing, which is becoming an increasingly important tool in the nonprofit sector. Therefore, future research should explore in more depth the challenges nonprofit organizations face in applying strategic marketing, including analyzing how organizations can overcome resource-related obstacles. It would also be beneficial to investigate the long-term effects of applying strategic marketing on the sustainability and development of nonprofit organizations, with a focus on the long-term attraction of donors and volunteers, as well as the social impact these organizations have.

REFERENCES

[1]   Andreasen, A.R. (2012). Rethinking the relationship between social/nonprofit marketing and commercial marketing. *Journal of Public Policy & Marketing*, *31*(1), 36–41. https://doi.org/10.2307/41714253

[2]   Ayyıldız, H., Akmermer, B., Akyüz, A. M. (2017). *Marketadaing approach for nonprofit organizations.* In Proceedings of the book chapter in Advances in Marketing Management, 118-135). IGI Global. https://doi.org/10.4018/978-1-5225-0731-4.ch008

[3]   Bennett, R. (2017). Relevance of fundraising charities' content-marketing objectives: Perceptions of donors, fundraisers, and their consultants. *Journal of Nonprofit & Public Sector Marketing*, *29*(1), 39–63. https://doi.org/10.1080/10495142.2017.1293584

[4]   Bezuidenhout, A. (2017). *Essential marketing principles for nonprofit organizations: Views of marketing managers* (Master's dissertation). Stellenbosch University, Stellenbosch. Scholar.sun.ac.za. https://scholar.sun.ac.za/items/43d30b37-5c49-449f-a270-2efd56e7edc2

[5]   Bigley, J. (2018). A tactical framework for market penetration with a multidimensional organization. *Research in Economics and Management, 4(*1), 1–11. https://doi.org/10.22158/rem.v4n1p1

[6]   Brady, E., Brace-Govan, J., Brennan, L., Conduit, J. (2010). Market orientation and suggestions for fundraising: Indicators from Victoria. *International Journal of Nonprofit and Voluntary Sector Marketing, 16*, 84–98. http://dx.doi.org/10.1002/nvsm.403

[7]   Brkljačić, I. (2019). *Marketing neprofitnih organizacija na primjeru udruge Nobilis* (Undergraduate thesis). University of Split, Faculty of Economics, Split. Retrieved from https://urn.nsk.hr/urn:nbn:hr:124:859631

[8] Burić, I. (2019). *Marketing nonprofitnih organizacija u Republici Hrvatskoj* (Undergraduate thesis). University of Split, Faculty of Economics, Split. Retrieved from https://urn.nsk.hr/urn:nbn:hr:124:45966

[9] Capon, N., Mauser, R. L. (1982). The marketing concept in the public and nonprofit sectors: Theoretical and practical issues. *Journal of Marketing, 46*(3), 29–37.

[10] Chad, P., Kyriazis, E., Motion, J. (2014). Bringing marketing into nonprofit organisations: A managerial nightmare! *Australasian Marketing Journal (AMJ), 22*(4), 342–349. https://doi.org/10.1016/j.ausmj.2014.08.001

[11] Chad, P. (2013). Extending the use of market orientation: Transforming a charity into a business. *Australasian Marketing Journal (AMJ), 21*(1), 10–16. https://doi.org/10.1016/j.ausmj.2012.07.001

[12] Choto, P., Musakuro, N., Iwu, G., Tengeh, R. (2023). *Marketing for improved sustainability in nonprofit organizations*. IntechOpen. https://doi.org/10.5772/intechopen.105642

[13] Dolnicar, S., Lazarevski, K. (2009). Marketing in nonprofit organizations: An international perspective. *International Marketing Review, 26*(3), 275–291. https://doi.org/10.1108/02651330910966591

[14] Drucker, P. (1973). Management: Tasks, responsibilities, practices. New York: Harper & Row.

[15] Drummond, G., Ensor, J., Ashford, R. (2008). *Strategic marketing, planning and control*. 3rd edition. Routledge.

[16] Ebrahim, A. (2003). Making sense of accountability: Conceptual perspectives for northern and southern nonprofits. *Nonprofit Management and Leadership, 14*(2), 191–212. https://doi.org/10.1002/nml.7

[17] Gainer, B., Padanyi, P. (2005). The relationship between market-oriented activities and market-oriented culture: Implications for the development of market orientation in nonprofit service organizations. *Journal of Business Research, 58*(6), 854–862. https://doi.org/10.1016/j.jbusres.2003.08.002

[18] Gutterman, A. (2023). Traditional product development process. Retrieved from https://www.researchgate.net/publication/373862653_Traditional_Product_Development_Process

[19] Hassay, D. N., Peloza, J. (2009). Building the charity brand community. *Journal of Nonprofit & Public Sector Marketing, 21*(1), 24–55

[20] Helmig, B., Thaler, J. (2010). *Nonprofit marketing*. In R. Taylor (Ed.), Third sector research, 151–169. Springer.

[21] Hersberger-Langloh, S. (2022). A stakeholder perspective on the market orientation of Swiss nonprofit organizations. *Journal of Nonprofit & Public Sector Marketing, 34*(4), 395–420. https://doi.org/10.1080/10495142.2020.1865239

[22] Hopkins, C. D., Shanahan, K. J., & Raymond, M. A. (2014). The moderating role of religiosity on nonprofit advertising. *Journal of Business Research, 67*(2), 23–31. https://doi.org/10.1016/j.jbusres.2013.03.008

[23] Jacoby, J. (1978). Consumer research: How valid and useful are all our consumer behavior research findings? *Journal of Marketing, 42*(1), 14–27.

[24] Katz, E., Rosenberg, J. (2005). An economic interpretation of institutional volunteering. *European Journal of Political Economy, 21*(2), 429–443. https://doi.org/10.1016/j.ejpoleco.2004.11.002

[25] Kotler, P., Keller, K. L. (2012). *Marketing management*. 14th edition. London: Pearson Education.

[26] Kotler, P., Zaltman, G. (1971). Social marketing: An approach to planned social change. *Journal of Marketing, 35*, 3–12. https://doi.org/10.2307/1249783

[27] Kotler, P., Andreasen, A. (1975). Strategic marketing management for nonprofit organizations. *Journal of Marketing, 39*(4), 20–29. https://doi.org/10.2307/1250615

[28] Krupka, Z. (2004). Prikaz knjige Strategija marketinga u neprofitnim organizacijama. *Tržište, 16*, 119–121.

[29] Kukartsev, V., Fedorova, N., Tynchenko, V., Danilchenko, Y., Eremeev, D., Boyko, A. (2019). The analysis of methods for developing the marketing strategies in agribusiness. *IOP Conference Series: Earth and Environmental Science, 315*, 022107. https://doi.org/10.1088/1755-1315/315/2/022107

[30] Lee, H., Ha, K. C., Kim, Y. (2018). Marketing expense and financial performance in arts and cultural organizations. *International Journal of Nonprofit and Voluntary Sector Marketing, 23*(3). https://doi.org/10.1002/nvsm.1588

[31] Leroux Miller, K. (2010). *The nonprofit marketing guide: High-impact, low-cost ways to build support for your good cause.* 2nd edition. Wiley.

[32] Liu, G., Ko, W. W., Chapleo, C. (2018). How and when socially entrepreneurial nonprofit organizations benefit from adopting social alliance management routines to manage social alliances. *Journal of Business Ethics, 151*(2), 497–516. https://doi.org/10.1007/s10551-016-3231-6

[33] Mato-Santiso, V., Rey-García, M., Sanzo-Pérez, M. J. (2021). Managing multi-stakeholder relationships in nonprofit organizations through multiple channels: A systematic review and research agenda for enhancing stakeholder relationship marketing. *Public Relations Review, 47*(4), 102074. https://doi.org/10.1016/j.pubrev.2021.102074

[34] Murray, T. (2015). *Marketing strategies to sustain nonprofit organizations* (Doctoral study, Keller Graduate School of Management). ProQuest Dissertations Publishing.

[35] Mustafa, L., Shkurti, L. (2023). Diversifying products and services and developing the network of suppliers and customers: Exploring their impact on business success. *Review of Economics and Finance, 21*, 2550–2558. https://doi.org/10.55365/1923.x2023.21.272

[36] Nayir, H. (2024). New product development and stage-gate process for tangible products. Retrieved from https://www.researchgate.net/publication/377890175_NEW_PRODUCT_DEVELOPMENT_AND_STAGE-_GATE_PROCESS_FOR_TANGIBLE_PRODUCTS

[37] Novatorov, E. (2015). Nonprofit marketing: Theory triangulation. *Organizations & Markets: Formal & Informal Structures eJournal, 1*(1), 1–17. https://doi.org/10.2139/ssrn.2515224

[38] NUCB Global Nonprofit Management Team. (2013). Exploring a new marketing strategy for nonprofit organizations. *International Journal of Marketing Studies, 5*, 8–8. https://doi.org/10.5539/ijms.v5n6p8

[39] Omura, T., Forster, J. (2014). Competition for donations and the sustainability of not-for-profit organizations. *Humanomics, 30*(3), 255–274. https://doi.org/10.1108/H-04-2014-0041

[40] Pavičić, Jurica (2003). Strategija marketinga neprofitnih organizacija, knjiga, Masmedia, Zagreb.

[41] Peloza, J., Hassay, D. N. (2007). *A Typology of Charity Support Behaviors: Toward a Holistic View of Helping*. 1st Edition. Routledge.

[42] Pope, J.A., Isely, E.S., Asamoa-Tutu, F. (2009). Developing a Marketing Strategy for Nonprofit Organizations: An Exploratory Study. *Journal of Nonprofit & Public Sector Marketing 21*(2), 184–201. https://doi.org/10.1080/10495140802529532

[43] Purkayastha, S., Manolova, T., Edelman, L. (2012). Diversification and Performance in Developed and Emerging Market Contexts: A Review of the Literature. *International*

Journal of Management Reviews 14(1), 18-38. https://doi.org/10.1111/j.1468-2370.2011.00302.x

[44] Rosnerova, Z., Hraskova, D. (2021). The Application and Importance of Marketing and its Tools in the Conditions of Non-profit Organizations on a Global Scale. *SHS Web of Conferences*, *92, 02055.* https://doi.org/10.1051/shsconf/20219202055

[45] Salamon, L. M., Sokolowski, S. W., Megan, A., Tice, H. S. (2013). *The state of global civil society and volunteering: Latest findings from the implementation of the UN nonprofit handbook.* Working Papers of the Johns Hopkins Comparative Nonprofit Sector Project, 49, 18. https://core.ac.uk/reader/71361352

[46] Sepulcri, L. M. C. B., Mainardes, E. W., Belchior, C. C. (2020). Nonprofit branding: A bibliometric analysis. *Journal of Product & Brand Management, 29*(5), 655–673. https://doi.org/10.1108/JPBM-05-2019-2366

[47] Stride, H., Lee, S. (2007). No Logo? No way. Branding in the Non-Profit Sector. *Journal of MarketingManagement, 23*(1/2), 107–122. http://dx.doi.org/10.1362/026725707X178585

[48] Tabaku E, Mersini M. (2014). An overview of marketing means used by non-profit organisations: A detailed overview of NPOs operating in the district of Elbasan. *Journal of Marketing & Management, 4*(2), 78-95.

[49] Tuneva, M. (2020). Nonprofit marketing: Does strategic planning help? *Mednarodno Inovativno Poslovanje = Journal of Innovative Business and Management, 12*(2), 96–104. https://doi.org/10.32015/JIBM.2020.12.2.10.96-104

[50] Vázquez, R., Álvarez, L. I., Santos, M. L. (2002). Market orientation and social services in private non-profit organisations. *European Journal of Marketing, 36*(9/10), 1022–1046.

[51] Weerawardena J, McDonald RE, Mort GS. (2010). Sustainability of nonprofit organizations: An empirical investigation. *Journal of World Business*, *45*(4), 346-356. https://doi.org/10.1016/j.jwb.2009.08.004

[52] Wenham, K., Stephens, D., Hardy, R. (2003). The Marketing Effectiveness of UK Environmental Charity Websites Compared to Best Practice. *International Journal of Nonprofit and Voluntary Sector Marketing, 8*(3), 213-223. https://doi.org/10.1002/nvsm.214

[53] Werke, S. Z., Bogale, A. T. (2023). Nonprofit Marketing: A Systematic Review. *Journal of Nonprofit & Public Sector Marketing*, *36*(5), 1–38. https://doi.org/10.1080/10495142.2023.2290531

[54] Wymer, W., Alves H. (2013). Scale development research in nonprofit management & marketing: A content analysis and recommendation for best practices. *International Review on Public and Nonprofit Marketing, 10*(1), 65-86. https://doi.org/10.1007/s12208-012-0093-1

[55] Wymer, W. (2021). *Nonprofit marketing research: Developing ideas for new studies*. SN Business & Economics

[56] Wymer, W. (2013). The influence of marketing scholarship's legacy on nonprofit marketing. *International Journal of Financial Studies* 1(3), 102-118. https://doi.org/10.3390/ijfs1030102

[57] Wymer, W., Knowles, P., Gomes, R. (2006). *Nonprofit Marketing: Marketing Management for Charitable and Nongovernmental Organizations*. 1st edition, Sage publication.

[58] Wysocki, A. F., Wirth, F. F. (2001). *Strategic Marketing Management: Building a Foundation for Your Future*. University of Florida, IFAS Extension, https://www.academia.edu/16843960/Strategic_Marketing_Management_Building_a_F

oundation_for_Your_Future1?rhid=29503303456&swp=rr-rw-wc-26459903, accessed 9.8.2024.

RESEARCH AND ANALYSIS OF THE PERCEPTION AND PURCHASE DECISION AMONG CROATIAN CONSUMER`S SNEAKER SHOES

KRISTINA MARŠIĆ
University of Zagreb
Faculty of Textile Technology
Hallerova aleja 6c, 42000 Varaždin, Croatia
kristina.marsic@ttf.unizg.hr

MAJA STRACENSKI KALAUZ
University of Zagreb
Faculty of Textile Technology
Prilaz baruna Filipovića 28a, 10000 Zagreb, Croatia
maja.stracenski.kalauz@ttf.unizg.hr

MATIJA ERŠEG
matijaerseg6@gmail.com

ABSTRACT

The aim of this paper is to research and analyze the perception of Croatian consumers, their attitudes and behavior regarding purchasing and using sports shoes, specifically sneakers. Therefore, after secondary research, a primary study was conducted to fulfil the fundamental goal of this paper, i.e. to gain insight into the costumer's perception, attitudes and behavior regarding their decision-making process during purchasing and using sports, sneaker shoes. Attitudes about price, quality, comfort, design, fashion brand and other behavioral factors such as purchasing sneakers for personal use or as a gift were examined. The study was conducted using a quantitative, on-line, anonymous survey questionnaire on a convenience sample of Croatian sneakers consumers using Google forms, which was completed by 124 adult respondents of both sexes, during the summer of 2023. The results of the study showed that there is no significant difference in preferences and purchases of sneakers between male and female respondents. The conclusion of the study provides insight into the characteristics, habits and preferences of respondents regarding the purchase and usage of sneaker shoes.

KEYWORDS: sports footwear - sneakers, consumer perception of sneakers purchase, customer attitudes, consumer behavior, purchase / buying process, Croatian sneakers consumers

1. INTRODUCTION

Consumer Behaviour is a study of how individuals make decisions on spending their available resources in consumption related aspects. It is a study of when, why, how, where and what products people do or do not buy. It blends elements from psychology, sociology, social psychology, anthropology and economics. It attempts to understand the influencing factors of a customer purchase decision-making process, both individually and in groups by understanding

its demographics and behavioural variables, impacts on the consumer from groups such as family, friends, reference groups, and society in general [Sethi, 2018 in Vukasović and Petrič, 2022].

Consumer perception, values, attitudes and behavior play a key role in the modern market, especially when it comes to purchasing fashion and sports garments and footwear. The decision to purchase for products or services, is often the result of a complex process that includes psychological-, self-oriented-, socio-cultural-, economic- factors, such as personal preferences, functionality, aesthetics, product brand, loyalty and other factors [Kesić, 2006] and it also stands for sports footwear. There are several types of sport consumers, which can be grouped based on different characteristics such as their level of engagement and commitment with sports, their purchasing behaviour, or the types of products or services they consume [Shifman and Kanuk, 2004]. Consumer perception is crucial in the market, particularly for fashion and sports apparel and footwear, therefore understanding consumer perception is becoming increasingly important for manufacturers, retailers and marketers. "In recent decades, the world has witnessed a remarkable transformation in the perception of sneakers, which transcended their utilitarian origins to become a symbol of cultural expression and fashion-forward identity. This shift has given rise to what is now commonly known as sneaker culture" [Richer, 2023] as well as athleasure phenomenon. Previews studies researched and provided insights and the analysis of how sports consumers experience and value sport`s goods and among them sports footwear and what are the key factors that influence their lifestyle and buying behavior, choice, brand preferences and loyalty [McKinsey & Company, 2025] to sneakers brands. Fritz et al. [2024] explores consumer sport segmentation and how marketing strategies, branding and product quality shape consumer perception and behavior, and how these factors are reflected in the market share of individual sports footwear brands.

Within the Croatian and surrounding national markets, in the available scientific literature, apart from the work of Vukasović and Petrič [2022], no scientific research was found that would analyze consumer attitudes and behavior specifically towards purchasing sneakers in the Croatian and local markets. This paper aim is to fulfil that gap and based on primary research data from Eršeg`s Bachelor Thesis [2024], to analyze and to contribute to a better understanding of the dynamics of consumer`s perception, attitudes and behavior in the context of the sports fashion industry in general and specifically among Croatian consumers during purchasing sports footwear, specifically sneakers shoes buying process.

2. LITERATURE REVIEW

2.1. SPORTS COSTUMER

Referring to the AMA [2025] definition that seas "consumer behaviour refers to the study of how customers (individuals and organizations) satisfy their needs and wants by choosing, purchasing, using, and disposing of goods, ideas, and services. …helps marketers learn what influences buying decisions. This knowledge helps marketers identify products and services that fulfil consumer needs and fill a gap in the market". Casper [2007] related "consumer behaviour to sports practice represents a substantial economic impact in the sport industry" and Funk [2008] define "sport consumption behaviour as a process that involves the individuals when they select, buy, use and have products and services related with sport to satisfy their needs". While elaborating sport consumer typologies over a critical review Stewart et al. [2024] presents past works of some academic authors, arguing that they have identified important motivational and behavioural differences and that they frequently provide only partial

explanations of sport consumer behaviour, while leaking holistic approach. Stewart et al. [2024] found in the previews studies the constrained by an overemphasis on social-psychological traits, that give only limited attention to the cultural and economic context in which behaviours take place. One of (the third) perspective focuses on multidimensional approaches that bine underlying motives for consuming sport products, factors that give sport meaning, indicators of loyalty, levels of emotional attachment, and frequency of game attendance, to produce an array of sport consumer types / segmentation [Kunkel and Biscaia, 2020; He, 2022].

Academic research on sneaker purchase decisions highlights a standard 5-step process (need recognition, information search, evaluation, purchase, post-purchase evaluation) and identifies key factors influencing consumers, including psychological (motivation, perception), personal (lifestyle, self-expression), and social (brand awareness, endorsements, community influence) factors. Product attributes like quality, style, and comfort are critical, alongside brand image and price, while online factors like virtual features, user reviews, and social media significantly impact purchasing and post-purchase behavior [Kesić, 2007; Richards, 2023]. Sport consumers are classified into four categories: active sports consumers, passive sports consumers, consumers of tangible sports products, and consumers of a sports event. A consumer of tangible sports goods is a person who purchases sport related equipment and clothing for sport, recreation, fitness, or lifestyle" [Func at al., 2016].

3. RESEARCH METHODOLOGY

3.1. METHODOLOGY AND RESEARCH INSTRUMENT

Based on the expert and practitioner knowledge in the research field the methodology and a research instrument, later used for this research, was designed and previously tested on 6 member focus group. Final research instrument chosen for this research was quantitative, online, anonymous, self-completed survey questionnaire created in Google Forms with link distributed over e-mail. The survey questionnaire consists of 22 questions, open-ended and closed-ended. First 3 questions were socio-demographic questions; next 9 questions were behavioural regarding sneakers buying habits; next (13.) question was attitudinal regarding importance of 9 extrinsic and intrinsic factors when buying sneakers that respondents has to evaluate on 5 point Leakert scale; than 2 questions were consumer preferences regarding material and brand; followed by next 2 behavioural questions asking respondents about their consumption practice regarding brand and price, in last year; the following question asks about preference for future behaviour; following by 2 attitudinal questions regarding retailer preferences; 19. question using 5 point Likert scale asks about the importance and preference of 6 retailer characteristics-factors when choosing sneaker`s retailer and next closed-end question asks about the consumers preference regarding a communication style with retailers; next question asks about self-awareness of respondents about consumer rights and last question was about post purchase reason for reclamation or return of product if consumer is unsatisfied with purchased. For the analysis purpose the simple statistics method was used over collected research data to present the results of this primary research.

3.2. DATA COLLECTION AND SEMPLE

The survey research has been conducted in the period from July 28th 2023 to September 26th 2023., in Croatia (on Croatian language), on the convenience sample. Data collection was gathered by direct distribution of a link for survey via e-mail to families and friends of

researchers who was asked to forward it to their acquaintances (mailing list). The survey was also placed on several forums where willing respondents could fill it out. The total sample collected in the research period consists of 124 respondents both genders, which fully completed the questionnaire.

4. RESEARCH RESULTS AND DISCUSSION

The research sample includes a total of N=124 respondents both genders.

The first 3 questions of the survey questionnaire were related to the socio-demographic characteristics of the respondents: gender, age, status of the respondents. Thus, according to the gender structure, 60% (n=75) were men and 40% (n=49) women that participated in this research. According to the results of the age structure, the largest share of respondents, 38.7% (n=48) was between 25 and 34 years of age. Table 1. Shows distribution of respondents by Age and gender.

Table 1.   Respondents distribution by age and gender

Age	N	%	Gender F	F/age	n (F)	% (F/age)	% (F/age)/N	Gender M	n (M/age)	n (M/age)	% (M/age)	% (M/age)/N
18-24	36	29.03	Female	18-24	16	32.65	12.90	Male	18-24	20	26.67	16.13
25-34	48	38.71	Female	25-34	16	32.65	12.90	Male	25-34	32	42.67	25.81
35-44	28	22.58	Female	35-44	10	20.41	8.06	Male	35-44	18	24.00	14.52
45-54	8	6.45	Female	45-54	5	10.20	4.03	Male	45-54	3	4.00	2.42
>55	4	3.23	Female	>55	2	4.08	1.61	Male	>55	2	2.67	1.61
∑ (N)	124	100.00	∑ (F)		49	100.00	39.52	∑ (M)		75	100.00	60.48

Source: Authors

According to the employment status, 72.58% (n=90) of the surveyed respondents were employed. The rest were students 25.00% (n=31), unemployed persons 1.61% (n=2) and pensioners/retired 0.81 (n=1). These socio-demographic characteristics are similar to respondents who participated in the study by Vukasović and Petrič [2022], which investigated „Consumer Behaviour and Loyalty When Purchasing Sporting Goods" among Slovenian consumers a year before this study.

In this study, respondents were asked, using an open-ended question, to write down the amount of money (how much) they spend annually (regardless of how many pairs they buy) on buying sneakers in euros. 2.42% (n=3) of respondents do not spend at all on buying sneakers (0 €), while the maximum amount was exactly 1359.76 €, which was stated by 0.81 (n=1) respondent.

The majority of respondents 16.94% (n=21) spend on sneakers 100 € per year, 14.52% (n=18) 200 € on the third most frequently cited sum was 150 € that was payed by 11.29% (n=14), and if those single answers are cumulate and summarize so that previews single answers are put in intervals of spending ranks-classes Table 2. show how much respondents spend annually on buying sneakers.

Table 2.   Annual spending money amount in Euros on sneakers summarized in spending ranks

€ per year	n	% (n/N)
0	3	2.42
20-100	52	41.94
120-200	42	33.87
250-300	14	11.29
400	2	1.61
500	5	4.03
600-1359.7	6	4.84
∑ (N)	124	100.00

Source: Authors

When it comes to the occasions in which respondents wear sneakers, it is partially evenly distributed. Thus, most of the respondents wear sports shoes every day 34.68% (n=43), then 26.61% (n=33) wear sneakers in their free/leisure time, 23.39% (n=29) wear them only for sports, or 12.9% (n=16) on all occasions and 2.42% (n=3) respondents sad thy never them.

When respondents were asked to mark how they provide their sneakers the majority 95.97% (n=119) buy their sneakers, 2.42% (n=3) receive sneakers as a gift and 1.61% (n=2) get their sneaker trough sponsorship.

62.90% (n=78) of respondents answer that they love to purchase sneakers, while 37.1% (n=46) do not like going for sneakers shopping.

On question how often respondents buy sneakers, i.e. goes on shopping for a sneaker 63.71% (n=79) once a year, 29.03% (n=36) seasonally, 3.23% (n=4) once in a month, 0.81% (n=1) more than monthly and 3.23% (n=4) do not buy sneakers.

Among respondents (n=97) 78.23% do not buy and give sneakers as a gift to other people, while (n=27) 21.77% buy and give a sneaker as a present.

Regarding the place where respondents most often buy sneakers they answer that majority of them mostly buy sneakers in a specialized sports shoe/equipment store 69.34% (n=86), than 20.16% (n=25) buy trough an online store, 8.06% (n=10) buy sneakers in stores that are not specialized for selling sports sneaker shoes, 0.81% or one respondent answer that he buy in equally online and in store selling sports goods (Decathlon), also one respondent buy sneakers at the market and one respond that he do not buy sneakers.

When it comes to the sports and physical activities in which the respondents wear sneakers, it is partially evenly distributed among a lot of different sports and activities, although few respondents didn`t answer this question or emphasize that they wear them just for go to work and at work and they do not do any sports or any sports activities 4.03% (n=5). What is in the line with Fernandes et al. [2013] discusses "Sportswear is clothing that falls into one of two categories. First and foremost, it may be purchased to facilitate participation in sports activities. So, sneakers were first invented for athletic purposes, but they can now be seen everywhere. The second category is based on the acknowledgment that sportswear can be fashionable within certain market segments. … Probably many participants associate sport shoes not only to sports but also with a specific lifestyle".

50,81% (n=63) the respondents that use sneaker for 1 sport, for 2 sports activities 25,00% (n=31), for 3 sports activities 11,29% (n=14), for 4 sports activities 4.84% (n=6), while 1.61% (n=2) of respondents wears sneakers for all sports activities. 2.42% (n=3) respondents use

sneakers every day, but do not do sports. Most respondents wear sneakers every day, in their free time and exclusively for sports or on all occasions. Respondents answer that they use sneakers as their first choice/sport: jogging/running 23.39% (n=23), walking 14.52%, (n=18) football play 12.10% (12.10%), cycling 0.87%, basketball play 8.08%, gym 7.26%, hiking and climbing 5.65%, tennis play 4.03, fitness 2.42%, generally training 1.61% and one respondent play volleyball, boxing, weight lifting and calisthenics. There is a slight deferens to Slovenian research and costumers, which the most likely buy sports and leisure products (82.0%) and hiking products (55.9%). Follows equipment for cycling (29.8%), running (28.6%), fitness (24.2%) and skiing (19.3%). Then come volleyball (8.1%), basketball (8.1%), football (6.8%). The lowest purchases are related to handball (1.2%), martial arts (1.9%) and tennis (5.0%).

On open-end question asking What are your main sources of information about sports shoes before purchasing(?) the respondents obtain most information through manufacturer websites (73.39%), online reviews and user ratings (70.16%), and recommendations from friends/family (63.71%), magazine reviews (40.32%), TV commercials (21,77%) and other sources mention just once.

When buying sports shoes, how important do you consider the following factors(?) respondents had to answer with Likert scale (1unimportant-5most important). The answers are shown later at Figure 1.

Figure 1. The importance of sneaker`s factor/characteristic when purchasing sneakers (N=124)
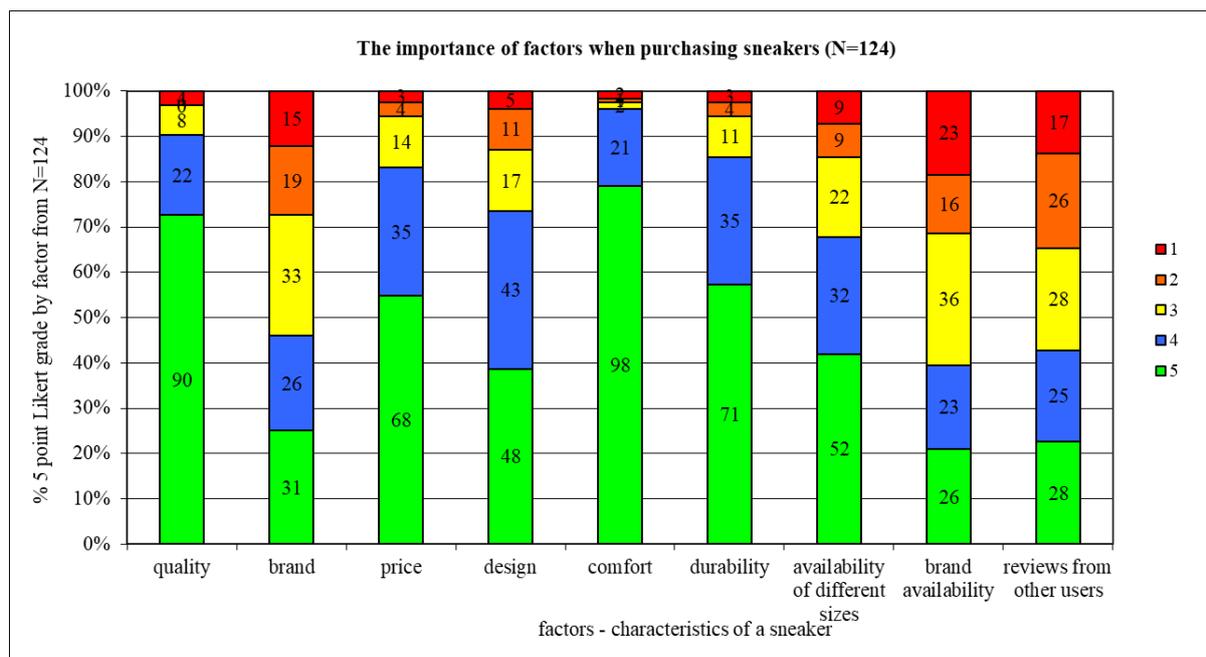
Source: Authors

Respondents answered on an open-ended question about which brand they like the most (the best), naming 26 different brand names of sneakers. In 37 respondents, it is possible to find a high level of brand preference to the level of loyalty (to 11 brand names), since they simultaneously name the same brand that they like the most and only wear exactly that brand. Respondents 8.87% (n=11) are equally loyal to two brands Adidas and Nike, then to Mizuno 3.32% (n=4), 42% Asics (n=3), to a 1.61% Benger brand name (n=2) and to other 5 brands was named by one respondent (Brooks, decathlon, Kalenji, La sportive, Reebok, Under Armour). Only 4.84% (n=6) respondents do not wear the brands they say they like the most. Adidas

25.81% (n=32), Nike 22.58% (n=28), Mizuno 5.65% (n=7), Puma 4.84% (n=6), Asics 4.03 (n=5), Reebok 3.32% (n=4), Benger and Under Armour 2.42% (n=3), Gaerne, Jordan and Kalenji 1.61% (n=2) and other brand names are chosen as preferable and actively used 15 different brand names. With brand names that respondents also wear are other 32 brand names, making a total of more than 50 different sneakers brand names respondents not just know, bat actively wear.15 respondents do not have a favourite brand, among them 11 respondents either do not have or do not know their favourite brand, but wear sneakers. 4 respondents neither have a favourite brand nor wear sneakers.

Findings of Vukasović and Petrič [2022] were a bit higher, but in the line with present research, where thy found that Slovenian costumers/respondents prefer to buy Nike (44.05%) and Adidas (35.71%) as top brand names again, follows by Asics (2.38%). This is to be expected as Nike and Adidas are the leading brands in sports products and equipment. In Interbrand's [2020] ranking of the world's top 100 brands, Nike ranks 15th and Adidas 50th.

Respondents average spending for 1 pair of sneakers (2023) was in following amounts of euros: 18.55% (n=23) spend less than 50 €, between 50-100 € 52.42% (n= 65), 100-200 € spend 25,00 % (n=31) of respondents and more than 200 € for 1 pair of sneakers spend 4.03% (n= 5) of respondents.

The majority 25,00% (n=31) respondents answered that they buy from 1 to 2 pairs of sneakers average per year (2023) and cumulatively 60,48% (n=75) purchase till 2 pairs of sneakers annually. From 2 to 3 pairs buy a another 16.94 (n=21) respondent and so on. Minimum is non, maximum over 10 pairs average annually. According to Glace, J. study [2023], sheard on her blog, findings show that among Americans (respondents) in the year 2023., "66% of them (consumers) purchase sneakers 2 times a year or less.

When asked if they would be willing to pay a higher price for sports shoes that were produced in compliance with environmental standards (?), respondents gave the following answers: "yes, always" 9.68 (n=12), majority answered "yes, if the price difference is reasonable" 51.61% (n=64), unwilling to pay more for eco-label, while answering "no, price is a decisive factor in the choice" 18.55% (n=23) and "no, environmental aspects are not important when choosing sports shoes" think 20.16% (n=25) of respondents.

Questioning the importance and preference of 6 retailer characteristics (factors) when choosing sneaker`s retailer and asking respondents to choose one of the grade from 5 point Likert scale (5 very important, 1-unimportant), respondents were asked: How important are the following factors: "wide range of different models and brands", "friendly staff providing expert advice", "competitive prices", "quality after-sales service" (warranty, replacement), "accessible store location" and "ease of using the online store", when choosing a sports shoe retailer? The cumulative answers by measured characteristics are presented on Figure 2.

Figure 2. How important are the following characteristics to respondents when they are choosing a sports shoe retailer
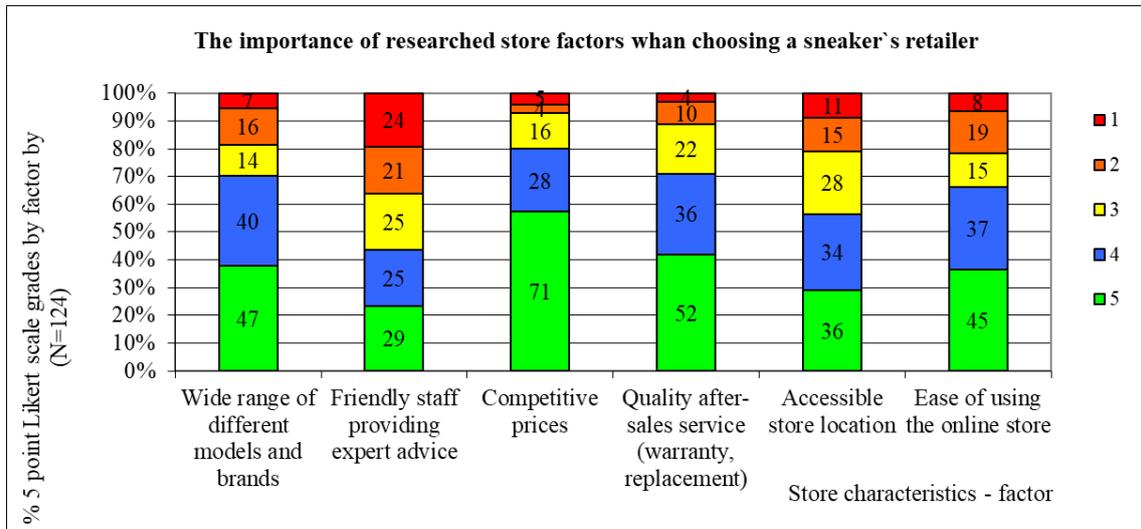
Source: Authors

When purchasing sneakers majority of respondents 75.81% (n=94) prefer direct communication, i.e. personal visit to the store, conversation with the retailer (seller), while indirect, i.e. communication via email or social media prefer 24.19% (n=30).

Regarding costumers rights knowledge of respondents in this research, they are mostly very well familiar 29.03% (n=36) and partially familiar 33.87% (n=42) that is cumulatively 62.90%, while pure knowledge had 23.39% (n=29) and completely unfamiliar with costumers rights were 13.71% (n=17).

The most common reason for returning or exchanging sneakers after purchase were following reasons that respondents answered: inappropriate size/wrong shoes number 50.81% (n=63), poor quality of materials/manufacturing 23.39% (n=29), Uncomfortable wearing 21.77%. The rest of the respondents answered that they do not return 1.61% (n=2) or that they had never returned anything 1.61% (n=2), one respondent's reaction was surprise he asked is it even possible to return sneakers or to be exchanged after buying them.

5. CONCLUSION

This empirical study on Croatian sneakers consumer's perceptions and preferences, attitudes and behaviour when purchasing sneakers highlighted the key factors that shape consumer's perception and decisions regarding sneakers and where and how they buy sneakers as well as highlighted some aspects of sneaker's buying process.

Through data analysis, the sociocultural profile of sneakers consumers is researched; analysis reviled the importance of 9 extrinsic and intrinsic factors when buying sneakers. Among them respondents mostly cherish "comfort", "quality", "durability", then important factor is a "sneaker's price", then "design" and "availability of different sizes". Among factors of "brand availability" and "reviews of other users about sneakers" (particular model or brand), the respondents are equally distributed from important to unimportant for their decision-making regarding sneakers' purchase. The most preferred materials for sneakers are leather and textile. Croatian buyers (respondents) wear sneakers every day and use them on all occasions for

various sports activities (only one or more), only a few respondents do not wear sneakers or do not play sports at all. Mostly and as their first choice, the sports activities for which they wear sneakers are running and walking, and for playing football. Respondents mostly buy 1 to 2 pairs of sneakers yearly and spend mostly for 1 pair of sneakers (2023) between 50-100 € or less than 50 €, just 1/3 is willing to spend more than 100 €, but more than ½ of respondents are willing spend more for eko-friendly sneaker. They usually do not give or get a sneaker as a present and over 90% buy them. But 63% love to purchase for sneakers and the rest do not like going for sneakers shopping. The majority goes on sneaker shopping once a year and seasonal, just few respondents goes more frequently.

Regarding brands, respondents know more than 50 different sneakers brands (names) and around 9% prefer and some of them are loyalty to the one among11 brand names. Respondents usually prefer to buy and mostly wear Adidas, Nike and Mizuno. Croatian costumers, respondents mostly buy sneakers in a specialized sports shoe/equipment store and prefer direct communication and 1/5 of respondents prefer indirect communications and they buys sneakers in online stores. Among characteristics of the sneakers store for costumers are the most important "competitive prices", than "after-sales service quality" (warranty, replacement), followed by "wide range of different models and brands" (assortment) that store purchase and "ease of using the online store", while importance and unimportance is equally distributed for "accessible store location" as a store factor and it`s slightly less important to respondents that "staff are friendly and providing expert advice". More than 60% of respondents are familiar with costumer`s rights and the main reason for return or reclamation are inappropriate size or poor (bad) sneaker`s quality.

This study is one of the few studies that investigates sneakers as sports footwear or sports equipment, but also sneakers as fashion footwear for everyday life on the Croatian market, where this topic has not been sufficiently researched so far. Therefore, although this research has numerous limitations, it provides indicative and valuable insight into the perception, attitudes and behaviour of consumers towards purchasing sneakers on the Croatian market.

One of the limitations of this study is that semi-structured interviews were conducted on a limited convenience sample, which may not be representative of the larger population of sneakers consumers in Croatia and local markets. Another limitation is the methodology that uses only simple statistics as a method. Therefore, a stronger and deeper statistical analysis, revealing the validity and reliability of the instrument and sample (of this work), as well as the application of some multivariate analysis in future research, would show a deeper, holistic relationship between attitudes and behavior. For example, the analysis of attitude variables about the characteristics of sneakers or stores according to behavioral variables in the process of purchasing sneakers could also be a motivation for future research on this topic. Also, future research could encompass a wider population (local and global markets) and provide deeper insight into comparative analysis between different consumer markets for sneakers.

REFERENCES

[1]   American Marketing Assocciation (AMA). (2023). Home/Topic/Consumer Behavior, What is consumer behaviour? Why is Consumer Behavior Important?, https://www.ama.org/topics/consumer-behavior/ [September, 24th 2023]

[2]   Casper, J. (2007). Sport commitment, participation frequency and purchase intention, segmenta tion based on age, gender, income and skill level with US tennis participants. *European Sport Management Quarterly*, 7(3), pp 269-282, 2007. In Fernandes, N.E.;

Correia, A.H.; Abreu, A.M.; Biscaia, R. (2013). Relationship between sport commitment and sport consumer behavior, https://www.researchgate.net/publication/259591748_Relationship_between_sport_commitment_and_sport_consumer_behavior downloaded: [September, 24th 2023]

[3] Eršeg, M. (2024). *Analiza i istraživanje percepcije potrošača pri kupnji sportske obuće / Analysis and research of consumer perception when purchasing sports shoes*, Bachelor Thesis, Maršić, K. (menthor). University of Zagreb Faculty of Textile technology. Varaždin, 2024

[4] Fernandes, N.E.; Correia, A.H.; Abreu, A.M.; Biscaia, R. (2013). Relationship between sport commitment and sport consumer behavior, https://www.researchgate.net/publication/259591748_Relationship_between_sport_commitment_and_sport_consumer_behavior downloaded: [September, 24th 2023]

[5] Fritz, C.; Lues, H.; Deventer, M.; Klonaridis, R. (2024). Factors influencing Generation Y consumers' intention to purchase sneakers, *International Journal of Research in Business and Social Science*, 13(3), pp 26-35, 2024. https://www.researchgate.net/publication/381098685_Factors_influencing_Generation_Y_consumers%27_intention_to_purchase_sneakers downloaded: [August, 23th 2025] In Cevenini, F.; Chelli, A.; Notaro, S. (2025). Preferences for bio-textile sneakers: the interaction between social norms, environmental and social sustainability, Cleaner and Responsible Consumption,17, June, 2025, downloaded: https://www.sciencedirect.com/science/article/pii/S2666784325000439 downloaded: [August, 23th 2025]

[6] Funk, D. (2008). *Consumer behavior in sport and events: Marketing Action.*: Elsevier. Oxford, UK

[7] Funk, D.; Funk, D. C.; Alexandris, K.; McDonald, H. (2016). *Sport consumer behaviour: Marketing strategies*. Routledge

[8] Glace, J. (2023). Exploring sneakerheads and sneaker culture: Consumer attitudes and buying habits - Consumer insights on sneaker shopping, https://aytm.com/post/sneaker-consumer-insights-report downloaded: [September, 06 th, 2023]

[9] He, X. (2022). Investigation of Determinants and Constraints of Fan and Participant Engagement in Sport Events, *Proceedings of the 2022 7th International Conference on Financial Innovation and Economic Development (ICFIED 2022)*, January, 21-23th 2022. Harbin, China. Advances in Economics, Business and Management Research, 648, pp 3253- 3259, 2022.

[10] Kesić, T. (2006). *Ponašanje potrošača*. Opinio d.o.o. Zagreb, Croatia

[11] Kunkel, T.; Biscaia, R. (2020). Sport Brands: Brand Relationships and Consumer Behavior, *Sport Marketing Quarterly*, 29, pp 3-17, 2020. https://www.researchgate.net/publication/339704775_Sport_Brands_Brand_Relationships_and_Consumer_Behavior#fullTextFileContent downloaded: [September, 22th 2024].

[12] McKinsey & Company. (2025). Report - Sporting Goods 2025—The new balancing act: Turning uncertainty into opportunity, https://www.mckinsey.com/industries/retail/our-insights/sporting-goods-industry-trends downloaded: [May, 14th 2025]

[13] Stewart, B.; Smith, A.; Nicholson, M. (2003). https://research-repository.rmit.edu.au/articles/journal_contribution/Sport_consumer_typologies_A_critical_review/27429840/1?file=50737761, Sport consumer typologies: A critical review. RMIT University. *Journal contribution*. https://hdl.handle.net/10779/rmit.27429840.v1 downloaded: [November, 23th 2024]

[14] Richards, J. (2023). *Sports Marketing: An Australian Perspective*, Western Sydney University, Kingswood,

https://researchers.westernsydney.edu.au/en/publications/sports-marketing-an-australian-perspective downloaded: [November, 03th 2023]

[15] Richter, F. (2023). Topics/Nike/sneakers, The World's Most Popular Sneaker Brands – Sneakers, https://www.statista.com/chart/30540/market-share-of-sneaker-brands/

[16] downloaded: [November,14th 2023]

[17] Schiffman, L. G.; Kanuk L. L. (2004). *Ponašanje potrošača*, Mate d.o.o. Zagreb, Croatia.

[18] Sethi, I. (2018). Factors Affecting Consumer Behaviour in Telecom Industry. *International Journal of Management Studies*, 3 (6), pp 38-43, 2018.]

[19] Vukasović, T.; Petrič, A. (2022). https://toknowpress.net/ISSN/2232-5697/11.71-83.pdf, Consumer Behaviour and Loyalty When Purchasing Sporting Goods, *International Journal of Management, Knowledge and Learning*, 11(72), pp 71-83, 2022., or https://www.doi.org/10.53615/2232-5697.11.71-83 downloaded: [November, 17th 2023]

THE ROLE OF SUSTAINABLE MARKETING IN THE TRANSFORMATION OF THE TEXTILE INDUSTRY TOWARDS A CIRCULAR ECONOMY

LEA MASNEC
University of Zagreb
Faculty of Organization and Informatics
Laboratory for Applied Software Engineering
Pavlinska 2, 42000 Varaždin, Croatia
lmasnec@foi.unizg.hr

LARISA HRUSTEK
University of Zagreb
Faculty of Organization and Informatics
Department of Organization
Pavlinska 2, 42000 Varaždin, Croatia
lhrustek@foi.unizg.hr

ANA KUTNJAK
University of Zagreb
Faculty of Organization and Informatics
Department of Organization
Pavlinska 2, 42000 Varaždin, Croatia
akutnjak@foi.unizg.hr

ABSTRACT

Concern for sustainability is becoming a central topic in political, scientific, and professional discussions, with increasing emphasis being placed on adapting industrial actors to sustainable practices and the circular economy. Numerous industries have been identified as major sources of pollution and natural resource consumption, with the textile industry standing out in particular, presenting a range of sustainability challenges, from the degradation of water resources and intensive land use for cotton cultivation to the generation of substantial waste during the production of clothing and other textile products. To prevent this, it is necessary to transform the traditional linear model of textile production and consumption by implementing an advanced digital business model that promotes sustainable solutions and circularity. The introduction of circular economy principles driven by digital solutions extends product life cycles and promotes sustainable practices such as recycling, reuse, exchange, buy-back, and more. This paper explores how sustainable marketing can drive the transformation of the textile industry towards circular business models supported by digital solutions. It analyzes strategies that incorporate ecological and ethical principles into communication, consumer relations, and branding, with the aim of promoting sustainable products and responsible behavior within industries. Using case studies and existing

research, the paper identifies approaches that support a sustainable transition in the textile sector.

KEYWORDS: sustainability, sustainable marketing, circular economy, textile industry, business process improvement, digital technologies

ULOGA ODRŽIVOG MARKETINGA U TRANSFORMACIJI TEKSTILNE INDUSTRIJE PREMA CIRKULARNOJ EKONOMIJI

SAŽETAK

Zabrinutost za održivost postaje središnja tema političkih, znanstvenih i stručnih rasprava, pri čemu se sve veći naglasak stavlja na prilagodbu industrijskih aktera održivim praksama i kružnom gospodarstvu. Brojne industrije identificirane su kao glavni izvori onečišćenja i potrošnje prirodnih resursa, pri čemu se tekstilna industrija posebno ističe, pokrećući niz izazova za održivost, od degradacije vodnih resursa i intenzivnog korištenja zemljišta za uzgoj pamuka, do stvaranja znatnih količina otpada tijekom proizvodnje odjeće i drugih tekstilnih proizvoda. Kako bi se to spriječilo, potrebno je izmijeniti tradicionalni linearni model proizvodnje i potrošnje tekstila te primijeniti unaprijeđeni digitalni poslovni model koji promovira održiva rješenja i cirkularnost. Uvođenje principa cirkularne ekonomije vođene digitalnim rješenjima, produžuje životni vijek proizvoda te promiče održive prakse kao što su reciklaža, ponovna upotreba, razmjena, otkup i druge. Ovaj rad istražuje kako održivi marketing može potaknuti transformaciju tekstilne industrije prema cirkularnim modelima poslovanja podržanih digitalnim rješenjima. Pri tom se analiziraju strategije koje uključuju ekološka i etička načela u komunikaciju, odnose s potrošačima i brendiranje, s ciljem promicanja održivih proizvoda i odgovornog ponašanja unutar industrija. Korištenjem studije slučaja i dosadašnjih istraživanja, rad identificira pristupe koji podržavaju održivu tranziciju u tekstilnom sektoru.

KLJUČNE RIJEČI: održivost, održivi marketing, cirkularna ekonomija, tekstilna industrija, unapređenje poslovnih procesa, digitalne tehnologije

1. INTRODUCTION

Sustainability is increasingly taking the position of one of the key global priorities, which is primarily driven by the necessity of mitigating environmental degradation, more rational management of natural resources, and a more effective response to the challenges of climate change (Vilkaite-Vaitone, 2024). Contemporary business entities are increasingly recognizing the strategic importance of sustainable practices, integrating them into their operational models in order to ensure balanced ecological, social, and economic development (Adwan & Altrjman, 2024; Gregurec et al., 2025; Yadav et al., 2018). In this context, particular attention is required by the textile industry, whose negative impacts on the environment and intensive consumption of resources clearly illustrate the need for systematic implementation of sustainable practices.

The textile industry, as one of the largest polluters and consumers of resources, is facing the need for a radical change in business models (Denić et al., 2021). Traditional linear models of production and consumption are not sustainable, and their transformation towards circular models implies the integration of ecological, social, and economic principles. Sustainable marketing has a role in enabling and communicating sustainable practices. Marketing in this research represents a means for promoting sustainable behavior (Sheth & Parvatiyar, 2020).

The purpose of the paper is to present, through analysis and synthesis, how sustainable marketing, in combination with digital solutions, contributes to the transition of the textile industry towards circular economy models. This research represents a review scientific paper that combines theoretical literature analysis and a qualitative case study. The goal is to synthesize existing knowledge on the application of sustainable marketing and digital technologies in general, and then in the context of the circular economy in the textile industry. The case study is used to demonstrate the concrete application of theoretical frameworks in practice.

The following research question is posed in the paper: *How can sustainable marketing encourage and support the transformation of the textile industry towards circular business models?* The paper is structured as follows. After the introductory part, the applied methodology is presented, which served to achieve the research objectives and obtain answers to the posed research question. The following section analyzes relevant scientific literature and presents the results of the conducted research. Special emphasis is placed on the presentation of a practical example that illustrates the application of theoretical frameworks in a specific context. The paper concludes with a discussion of the findings and final considerations.

2. METHODOLOGY

This paper uses a review approach (*narrative literature review*) combined with a qualitative analysis of a practical example. The analysis is based on secondary sources, including scientific articles (Scopus, Web of Science (WoS)) relevant to sustainable marketing, digital technologies, the circular economy, and the transformation of the textile sector. The selection of literature was guided by criteria of relevance (2015–2025), peer review, and citation frequency.

For the purpose of systematizing insights on the role of digital technologies in sustainable marketing, a targeted literature search was conducted using the keywords: *„sustainable marketing" AND „digital technologies",* in the title, abstract, and keywords. The search was carried out in the Scopus and WoS databases. In the Scopus database, eleven papers were identified, while four were found in the WoS database, all of which were already included in the Scopus results. After excluding three unavailable articles from the Scopus database and one that does not fit the scope of this research, seven scientific papers were selected for the final analysis. These papers served to examine key findings related to the concept of sustainable marketing and the specific role of digital technologies in its application. Additionally, relevant papers on the topic of the circular economy and the transformation of the textile sector were included. A total of fourteen additional papers were included.

As an example of good practice, initiatives of various organizations were analyzed, which base their business models on the principles of the circular economy, particularly in the

segment of extending the lifespan of textile products through digitally mediated exchange. Although the business models of the selected organizations do not achieve full circularity in terms of a closed-loop production and recycling system, their role in extending the lifespan of textile products makes them a significant example of the transition towards more sustainable consumption patterns in the textile industry.

3. PREVIOUS RESEARCH

The following section presents the key findings from the literature. First, the authors examine the concept of sustainable marketing and analyze the role of digital technologies in its application in the contemporary business environment. Furthermore, the authors analyze the concept of the circular economy, with a particular focus on new business models within the textile sector that integrate sustainability principles. Finally, the findings from both areas are combined, and common conclusions are defined.

3.1. SUSTAINABLE MARKETING AND DIGITAL TECHNOLOGIES

Previous research confirms that sustainable marketing goes beyond traditional promotional strategies because it integrates ecological and ethical principles into communication and consumer relationships (Bryła et al., 2022; Oka & Subadra, 2024). In this context, digital technologies are recognized as a key driver of their implementation, especially in industries facing significant environmental challenges. Digital technologies enable not only the redefinition of the role of marketing but also the active guidance of marketing activities (and ultimately consumers) toward sustainable products and practices. In the contemporary market context, consumers are becoming increasingly critical and inclined to evaluate brands through the lens of their environmental and social impacts (Masengu et al., 2023; Subramanya Iyer et al., 2024). In response to these changes, organizations increasingly turn to various technological mechanisms to achieve their environmental goals and strengthen sustainable practices (Masengu et al., 2023). One of the most significant contributions of digital technologies to sustainable marketing is reflected in the use of tools such as artificial intelligence (AI), the Internet of Things (IoT), big data, blockchain technology, digital platforms, e-commerce platforms, social media, advanced CRM systems, and many others.

AI enables personalized communication and precise targeting based on actual consumer data and their environmental preferences (Gündüzyeli, 2025; Kumar et al., 2025; Masengu et al., 2023). This increases the effectiveness of campaigns aimed at promoting sustainable products and behaviors, while simultaneously enhancing organizational agility and encouraging the integration of sustainability into marketing practices (Gündüzyeli, 2025). **IoT** sensors and systems are used to collect and interpret data on resource consumption, ensuring operational efficiency and environmental awareness within organizations (Kumar et al., 2025). **Big data analytics** provides organizations with deeper insights into resource usage and their ecological footprint, influencing process optimization and waste reduction (Subramanya Iyer et al., 2024). At the same time, the analysis of large datasets reveals valuable insights about consumers and their environmental attitudes, making data a foundation for developing sustainable business strategies (Kumar et al., 2025). **Blockchain** technology enables the verification of material origins, eco-certifications, and product carbon footprints (Kumar et al., 2025), enhancing business transparency and strengthening consumer trust (Subramanya Iyer et al., 2024). Furthermore, this technology increases the credibility of sustainable messages, as it allows verification of the origin of raw materials and processes within the

supply chain (Masengu et al., 2023). The promotion of sustainable behaviors, such as ethical consumption and zero-waste practices, is increasingly represented on **digital platforms** and through influencer marketing (Kumar et al., 2025; Masengu et al., 2023) encouraging consumers to use sustainable products (Subramanya Iyer et al., 2024). **E-commerce platforms** are increasingly introducing sustainability filters and eco-labeling systems, making it easier for environmentally conscious consumers to make informed purchasing decisions (Kumar et al., 2025; Masengu et al., 2023). **Social media** represents another significant tool of sustainable marketing. Its use goes beyond promotional purposes, enabling education and awareness-building about circular practices through storytelling, influencer marketing, and participatory campaigns, which is particularly prominent among younger consumers who value authenticity and social responsibility (Khan et al., 2019; Subramanya Iyer et al., 2024). The application of **CRM systems** allows for personalized communication, consumer satisfaction analysis, and the promotion of loyalty through corporate social responsibility marketing, which improves organizational trust and image while promoting their sustainable marketing outcomes (Acheampong et al., 2023).

In the contemporary context, where visual communication shapes consumers' relationships with products and services, sustainable packaging and product design play a crucial role. They function as a communication strategy that strengthens the perceived value of products while simultaneously contributing to waste reduction (Masengu et al., 2023). Research shows that digital technologies significantly help bridge the gap between marketing theory and practice, enabling faster implementation of sustainability concepts in industrial settings and aligning core organizational activities with environmental imperatives (Foltean, 2019).

From these findings, it can be concluded that digital technologies do not merely support sustainable marketing but constitute a fundamental component in the transition toward a circular economy. Their application enables the development of more precise, transparent, and scalable strategies that simultaneously link sustainability, digital technologies, and market competitiveness. Environmental responsibility encourages the academic community and managers to systematically investigate and incorporate sustainability issues into marketing approaches. This emphasizes the need to adopt new mindsets, principles, concepts, and tools in marketing, with the aim of creating sustainable competitive advantages and ensuring organizational growth in an environmentally responsible manner.

3.2. CIRCULAR ECONOMY AND THE TEXTILE INDUSTRY

Previous research shows that the transition of the textile industry from a linear to a circular model is a complex process, requiring technical innovations and a strategic change in business practices and market communication (Aloini et al., 2020; Camacho-Otero et al., 2019; Chen et al., 2021). In 2016, the textile industry was estimated at $1.3 trillion and employed over 300 million people worldwide (Denić et al., 2021). Of the total amount of textile used, as much as 60% goes to clothing waste (Denić et al., 2021).

The adoption of circular production principles is promising, especially for manufacturers seeking to reduce material consumption and resource toxicity (Acerbi & Taisch, 2020). Several authors emphasize that the implementation of circular solutions is not possible without systematic support through digital technologies and a shift in end-user perception (Abdelmeguid et al., 2024; Aloini et al., 2020). Although strategies such as recycling and reuse are increasingly present in the textile industry, they often remain at lower levels due to the lack of a comprehensive transformation of the business model (Brydges, 2021; Stumpf et

al., 2021). In this context, sustainable marketing and digital technologies become methods for operationalizing sustainable practices, as well as for building trust, educating consumers, and differentiating brands in the market (Camacho-Otero et al., 2019; Leal Filho et al., 2019). Transparency, emotional branding, and a value-based approach can significantly increase the acceptance of circular offerings and facilitate the adoption of new habits among consumers, which is important for the long-term sustainability of business operations (Dehghannejad et al., 2025; Dragomir & Dumitru, 2022). Furthermore, research confirms that the integration of digital technologies facilitates the operational implementation of circular economy strategies and enhances their credibility in the market (Horn et al., 2023; Salem & Mahmoud, 2019). From previous studies, it can be concluded that the combination of sustainable marketing and digital support represents an opportunity for the successful transition of the textile industry toward a circular economy.

4. ANALYSIS OF A GOOD PRACTICE EXAMPLES

Understanding and reviewing sustainability in the textile industry involves assessing the impact of textile production, processing, and consumption on the environment, economy, and society. Key components of a sustainability review in the textile industry include (1) *the design of sustainable products and materials*, (2) *the promotion and development of responsible raw materials* considering environmental and social criteria, and (3) *the product life cycle*. A sustainability review of the textile industry can help identify and implement measures to improve environmental, economic, and social outcomes, with the use of digital technologies, ensuring long-term stability in the sector (Rathore, 2023).

Numerous textile companies have realized that their operations threaten the future of younger generations; therefore, they are designing business models that extend the lifespan of their products, implement sustainable production principles, and seek to mitigate negative impacts on stakeholders. The following section presents examples of specific textile companies and their sustainable business models.

Example 1: Hennes and Mauritz (H&M)

The activities included in H&M's business model are as follows:
- 100% of products are made from recycled cotton or come from sustainable sources: by 2030, H&M aims for all products to be made from recycled and other sustainable materials;
- Safe working environment and fair and equal labor conditions: all H&M business partners are required to sign the "Sustainability Commitment," which represents a set of standards for fair labor, adequate working conditions, animal welfare, and more;
- Garment take-back program: in H&M stores, customers can return old clothing, which is then sorted for reuse or recycling, while customers receive a discount that can be used in H&M stores;
- Rental, repair, and second-hand services: the H&M Take Care concept is available on H&M digital marketplaces and provides guidance and products that help customers care for their clothing (H&M, n.d.).

At the global level, H&M pays great attention to all dimensions of sustainability, which is why their website features a special focus and stories highlighting their commitment. They have defined clear sustainability goals related to the areas of *(a) Climate, (b) Materials and Resources, (c) Packaging, (d) Chemicals, (e) Water, and (f) Fair and Equal Approach*. Goals

related to *Climate* focus on reducing greenhouse gas emissions, while the *Materials and Resources* area includes the procurement of materials certified as recycled. In the *Packaging* area, the goal is to minimize plastic packaging. In the *Chemicals* area, the objective is to reduce the input of chemical resources in accordance with the Restricted Substances List, while the *Water* area involves reducing water usage in production facilities. The *Fair and Equal Approach* includes ambitions related to respecting human rights across the value chain (H&M Group, n.d.). H&M prepares a detailed annual sustainability report measuring parameters that demonstrate their contributions to economic, environmental, and social sustainability (H&M Group, 2024). Additionally, they actively promote their sustainability story in digital environments, aiming to raise awareness about important sustainability issues.

H&M actively promotes sustainable activities through social media and its e-commerce platform, where it emphasizes the eco-friendly characteristics of its products. Beyond promotional activities, H&M seeks to improve its business model by ensuring sustainable principles throughout the value chain. One important project is *TextileGenesis*, which uses blockchain technology to track the creation of a garment, including every process involved and the locations of farms, facilities, factories, and other sites where these processes took place. In this way, blockchain technology records the story of the garment, *TextileGenesis* shares it through a digital platform, and the H&M Group team explores how to scale it (H&M Group, 2021).

Example 2: Nike

Nike has turned to sustainable strategies through the following programs:
- Recycling + Donation: an approach where customers can bring their used sportswear and footwear to Nike stores – You Drop It Off – while Nike experts sort and determine the suitability of the products for recycling or donation – We Sort It – and ultimately take action by either cleaning and donating the items through the *Soles4Souls program* (Soles4Souls, n.d.) or sending them for recycling through the *Nike Grind* program (Nike Grind, n.d.) – We Take Action – (Nike, n.d.-b).
- Nike Circular Design: guidelines for future design based on the principle of circularity, including how materials are sourced, how products are made and used, returned, and ultimately redesigned and reimagined (Nike, n.d.-a).

For the circular design and development of Nike sneakers, a digital platform has been created that allows users to track the entire process step by step, as well as to learn about the circular approach to working with textile products. The platform is open to users, free of charge, and offers engaging educational content related to circularity in the textile industry.

Example 3: Inditex (Zara)

The activities through which Zara seeks to contribute to sustainability include the following programs:
- Zara Pre-owned: a program that allows for the repair, donation, or resale of clothing previously purchased at Zara. The program is based on a platform approach, meaning that Zara Pre-owned relies on a digital platform that enables the extension of the lifespan of Zara's products (Orešković, 2024).
- Zara Resell: a program through which all Zara customers can buy or sell previously used Zara clothing, all facilitated via a digital platform open to all users (Orešković, 2024), (Zara Pre-Owned, n.d.).

The analyzed textile companies have shown that they are transforming their existing business models toward circular business principles. Among digital solutions, textile companies most commonly turn to digital platforms that allow them to collect old, used textile products, which are then directed toward circular economy activities – repair, reuse, recycle, donate, and others.

However, it should be emphasized that the textile industry is associated with a sustainability paradox, where its actual contribution is questionable despite efforts to adapt business models to circular principles. Large fast-fashion companies leave a significant footprint that undermines sustainability in every aspect, which can be described as a sustainability paradox in the textile industry, reflecting conflicts in organizational goals, product design, and value chain structures (Dehghannejad et al., 2025). For example, research shows that Zara still records poor sustainability performance, with the environmental, economic, and social dimensions being compromised (Lily, 2024), (Chibuzor, 2025).

5. CONCLUSION

Global textile and fashion companies, driven by fast fashion and the need to meet the demands of a growing global population, pose a significant threat to sustainability. Although industrial development policies are increasingly oriented toward digital and sustainable business principles, balancing business objectives with sustainability goals remains challenging. Nevertheless, efforts are being made, and textile companies, with the help of digital technologies, are making progress in adhering to the principles of a sustainable circular economy.

Among digital technologies, the most prevalent are digital platforms that connect customers with textile companies, allowing old textiles or products to be reintroduced into processes for recycling, processing, or resale. This process is supported by social media technologies, e-commerce platforms, and CRM systems. In the production context and throughout the textile industry value chain, the value of digital technologies such as blockchain and sensors has been recognized, enabling traceability of materials used in the production of textile products. With population growth, artificial intelligence and big data technologies play an important role by supporting demand forecasting, which can help limit production volumes and, consequently, reduce the ecological footprint.

Despite the support of digital technologies and the functionalities they provide, the paradox of the textile industry, rooted in the misalignment between the business objectives of textile leaders and the goals of sustainable development, remains a major challenge for future well-being. As long as sustainable development goals and the circular economy serve merely as a "marketing gimmick" to attract customers rather than a genuine obligation, achieving significant progress in sustainability contributions will be difficult.

REFERENCES

[1] Abdelmeguid, A., Afy-Shararah, M., & Salonitis, K. (2024). Mapping of the Circular Economy Implementation Challenges in the Fashion Industry: A Fuzzy-TISM Analysis. *Circular Economy and Sustainability*, *4*(1), 585–617. https://doi.org/10.1007/s43615-023-00296-9

[2] Acerbi, F., & Taisch, M. (2020). A literature review on circular economy adoption in the manufacturing sector. *Journal of Cleaner Production*, *273*, 123086. https://doi.org/10.1016/j.jclepro.2020.123086

[3] Acheampong, S., Pimonenko, T., & Lyulyov, O. (2023). SUSTAINABLE MARKETING PERFORMANCE OF BANKS IN THE DIGITAL ECONOMY: THE ROLE OF CUSTOMER RELATIONSHIP MANAGEMENT. *Virtual Economics*, *6*(1), 19–37. Scopus. https://doi.org/10.34021/ve.2023.06.01(2)

[4] Adwan, A. A., & Altrjman, G. (2024). The role of social media marketing and marketing management promoting and developing brand sustainability strategy. *International Journal of Data and Network Science*, *8*(1), 439–452. Scopus. https://doi.org/10.5267/j.ijdns.2023.9.011

[5] Aloini, D., Dulmin, R., Mininno, V., Stefanini, A., & Zerbino, P. (2020). Driving the Transition to a Circular Economic Model: A Systematic Review on Drivers and Critical Success Factors in Circular Economy. *Sustainability*, *12*(24), 10672. https://doi.org/10.3390/su122410672

[6] Brydges, T. (2021). Closing the loop on take, make, waste: Investigating circular economy practices in the Swedish fashion industry. *Journal of Cleaner Production*, *293*, 126245. https://doi.org/10.1016/j.jclepro.2021.126245

[7] Bryła, P., Chatterjee, S., & Ciabiada-Bryła, B. (2022). The Impact of Social Media Marketing on Consumer Engagement in Sustainable Consumption: A Systematic Literature Review. *International Journal of Environmental Research and Public Health*, *19*(24), Article 24. https://doi.org/10.3390/ijerph192416637

[8] Camacho-Otero, J., Boks, C., & Pettersen, I. N. (2019). User acceptance and adoption of circular offerings in the fashion sector: Insights from user-generated online reviews. *Journal of Cleaner Production*, *231*, 928–939. https://doi.org/10.1016/j.jclepro.2019.05.162

[9] Chen, X., Memon, H. A., Wang, Y., Marriam, I., & Tebyetekerwa, M. (2021). Circular Economy and Sustainability of the Clothing and Textile Industry. *Materials Circular Economy*, *3*(1), 12. https://doi.org/10.1007/s42824-021-00026-2

[10] Chibuzor, S. (2025, February 28). Zara's Sustainable Paradox: Navigating Corporate Social Responsibility in the Fast Fashion Era. *Medium*. https://medium.com/@willstephen21/zaras-sustainable-paradox-navigating-corporate-social-responsibility-in-the-fast-fashion-era-7ac8e8f74458

[11] Dehghannejad, M., Pal, R., Dissanayake, K., & Sandberg, E. (2025). Exploring paradoxical tensions in scaling circular business models within the textile and clothing industry. *Sustainable Production and Consumption*, *56*, 579–592. https://doi.org/10.1016/j.spc.2025.04.022

[12] Denić, D., Bošković, G., Pavlović, A., & Jovičić, N. (2021). The circular economy in the textile industry. *Tekstilna Industrija*, *69*(1), 47–57. https://doi.org/10.5937/tekstind2101047D

[13] Dragomir, V. D., & Dumitru, M. (2022). Practical solutions for circular business models in the fashion industry. *Cleaner Logistics and Supply Chain*, *4*, 100040. https://doi.org/10.1016/j.clscn.2022.100040

[14] Foltean, F. S. (2019). Bridging marketing theory - practice gap to enhance firm performance: Introduction to the special issue. *Journal of Business Research*, *104*, 520–528. Scopus. https://doi.org/10.1016/j.jbusres.2019.06.008

[15] Gregurec, I., Kutnjak, A., & Kuštelega, M. (2025). The Role of Social Media in the Implementation of Sustainable Marketing: Consumer Behavior, Brand Engagement, and Green Consumption. *9th FEB International Scientific Conference: Sustainable Management in the Age of ESG and AI: Navigating Challenges and Opportunities*, 603–610. https://www.croris.hr/crosbi/publikacija/prilog-skup/881768

[16] Gündüzyeli, B. (2025). The Role of Social Media and Artificial Intelligence (AI) in Enhancing Digital Marketing Resilience During Crises. *Sustainability (Switzerland)*, *17*(7). https://doi.org/10.3390/su17073134

[17] H&M. (n.d.). *Naše obveze u pogledu održivosti | H&M Careers Hrvatska*. Retrieved August 20, 2025, from https://career.hm.com/hr-hr/sustainability/

[18] H&M Group. (n.d.). Goals and ambition. *H&M Group*. Retrieved August 20, 2025, from https://hmgroup-prod.azurewebsites.net/sustainability/leading-the-change/goals-and-ambitions/

[19] H&M Group. (2021, April 15). Tracing the story, one thread at a time—H&M Group %. *H&M Group*. https://hmgroup-prd-app.azurewebsites.net/our-stories/tracing-the-story-one-thread-at-a-time/

[20] H&M Group. (2024, October 23). Annual and sustainability report 2024. *H&M Group*. https://hmgroup-prod.azurewebsites.net/investors/annual-and-sustainability-report/

[21] Horn, S., Mölsä, K. M., Sorvari, J., Tuovila, H., & Heikkilä, P. (2023). Environmental sustainability assessment of a polyester T-shirt – Comparison of circularity strategies. *Science of The Total Environment*, *884*, 163821. https://doi.org/10.1016/j.scitotenv.2023.163821

[22] Khan, A. A., Wang, M. Z., Ehsan, S., Nurunnabi, M., & Hashmi, M. H. (2019). Linking sustainability-oriented marketing to social media and web atmospheric cues. *Sustainability (Switzerland)*, *11*(9). Scopus. https://doi.org/10.3390/su11092663

[23] Kumar, S., Sharma, C., Mishra, M. K., Sharma, S., & Bhardwaj, V. (2025). Smart, sustainable, and green: The digital transformation of green-marketing. *Discover Sustainability*, *6*(1). https://doi.org/10.1007/s43621-025-01242-5

[24] Leal Filho, W., Ellams, D., Han, S., Tyler, D., Boiten, V. J., Paço, A., Moora, H., & Balogun, A.-L. (2019). A review of the socio-economic advantages of textile recycling. *Journal of Cleaner Production*, *218*, 10–20. https://doi.org/10.1016/j.jclepro.2019.01.210

[25] Lily. (2024, January 26). Zara Sustainability Goals | How Sustainable is Zara in 2025? *Eco-Stylist*. https://www.eco-stylist.com/how-sustainable-is-zara/

[26] Masengu, R., Bigirimana, S., Chiwaridzo, O. T., Bensson, R., & Blossom, C. (2023). *Sustainable marketing, branding, and reputation management: Strategies for a greener future* (p. 670). Scopus. https://doi.org/10.4018/979-8-3693-0019-0

[27] Nike. (n.d.-a). *Nike Circular Design Guide*. Retrieved August 20, 2025, from https://circulardesign.nike.com/

[28] Nike. (n.d.-b). *Recycle + Donate Your Athletic Gear*. Nike.Com. Retrieved August 20, 2025, from https://www.nike.com/hr/sustainability/recycling-donation

[29] Nike Grind. (n.d.). *Changing the Game From the Ground Up*. Retrieved August 20, 2025, from https://www.nikegrind.com/

[30] Oka, I. M. D., & Subadra, I. N. (2024). Digital marketing for sustainable tourism village in Bali: A mixed methods study. *Journal of Infrastructure, Policy and Development*, *8*(7). Scopus. https://doi.org/10.24294/jipd.v8i7.3726

[31] Orešković, P. (2024, February 23). Jeste li čuli za Zara Pre-owned? Ovo je 9 najboljih komada koje možete nabaviti. *Women in Adria*. https://www.womeninadria.com/zara-odrzivost/

[32] Rathore, B. (2023). Textile Industry 4.0: A Review of Sustainability in Manufacturing. *International Journal of New Media Technology*, *10*, 38–43. https://doi.org/10.58972/eiprmj.v10i1y23.41

[33] Salem, A. H., & Mahmoud, O. A. (2019). Proposing applied processes to achieve the Circular Economy model in the textile sector A case study in Mei Chin, Queenstown, Singapore. *2019 IEEE International Smart Cities Conference (ISC2)*, 280–287. https://doi.org/10.1109/ISC246665.2019.9071749

[34] Sheth, J., & Parvatiyar, A. (2020). Sustainable Marketing: Market-Driving, Not Market-Driven. *Journal of Macromarketing*, *41*, 027614672096183. https://doi.org/10.1177/0276146720961836

[35] Soles4Souls. (n.d.). Donate Shoes. *Soles4Souls*. Retrieved August 20, 2025, from https://soles4souls.org/give-shoes/

[36] Stumpf, L., Schöggl, J.-P., & Baumgartner, R. J. (2021). Climbing up the circularity ladder? – A mixed-methods analysis of circular economy in business practice. *Journal of Cleaner Production*, *316*, 128158. https://doi.org/10.1016/j.jclepro.2021.128158

[37] Subramanya Iyer, K. N. A., Nagojappa, N. B. S., Kanjanapathy, M., & Kumar, S. H. (2024). Marketing in the digital age: Leveraging technology for sustainability. In K. Singh, R. S. Dubey, D. W. S. Renwick, & R. Crichton (Eds.), *Utilizing Technology for Sustainable Resource Management Solutions* (pp. 194–217). IGI Global. https://doi.org/10.4018/979-8-3693-2346-5.ch013

[38] Vilkaite-Vaitone, N. (2024). From Likes to Sustainability: How Social Media Influencers Are Changing the Way We Consume. *Sustainability (Switzerland)*, *16*(4). Scopus. https://doi.org/10.3390/su16041393

[39] Yadav, N., Gupta, K., Rani, L., & Rawat, D. (2018). Drivers of Sustainability Practices and SMEs: A Systematic Literature Review. *European Journal of Sustainable Development*, *7*(4). https://doi.org/10.14207/ejsd.2018.v7n4p531

[40] Zara Pre-Owned. (n.d.). *Woman New in | Zara Preowned*. Retrieved August 21, 2025, from https://www.zara.com/el/en/preowned-resell/products/Woman-l850/New-in-l2200

EMOTIONAL BOTS, ARTIFICIAL INTELLIGENCE AND 10G NETWORK: THE FOUNDATION OF A NEW DIMENSION AND PERSONALIZED MARKETING

ANAMARIJA ZRON
University of Rijeka
Faculty of Economics and Business
Ivana Filipovića 4, 51000 Rijeka, Croatia
anamarija.zron@efri.uniri.hr

ABSTRACT

For decades, advancements in different technologies have shaped personalized marketing strategies. Recently, the emergence of emotional chatbots empowered by AI and soon widely supported by 10G network has introduced new possibilities for adaptive consumer interactions and real-time, ultra-high data transfer rates. Employing a qualitative methodology, this research synthesizes findings from a review of current literature on emotional bots, 10G network, neuromarketing, and AI ethics. Additionally, case studies illustrate practical applications and evaluate diverse technological approaches. The findings demonstrate that empathetic, socially oriented chatbots significantly improve consumer emotions, satisfaction, and trust during engagements, thereby enabling brands to build deeper and more authentic relationships with their customers. This emotional connection, when supported by advanced technologies such as a 10G network, allows for real-time, hyper-personalized interactions that further strengthen customer loyalty and enhance overall marketing effectiveness. At the same time, ethical issues such as algorithmic bias require attention through bias detection tools, fairness-aware machine learning practices, and transparent governance mechanisms using explainable AI. These insights underscore the transformative potential of emotionally intelligent AI supported by innovative network capabilities for enhancing personalized marketing while highlighting the necessity of responsible AI deployment.

KEYWORDS: emotional bots, 10 G network, personalized marketing, artificial intelligence

1. INTRODUCTION

The integration of emotionally intelligent artificial agents with 10G network infrastructure represents a frontier in consumer neuroscience, enabling real-time decoding of psychophysiological states for hyper-personalized marketing. Grounded in Picard's [1995] foundational work on affective computing, modern emotion AI leverages multimodal affect detection - facial action coding, prosodic analysis, and EEG (Electroencephalography) correlation - to surpass traditional sentiment analysis [D'Mello and Kory, 2015].

This technological advancement is further boosted by the emergence of a 10G network, providing exceptionally high data transfer speeds and supporting connectivity for a large

volume of devices [Reeves, 2024]. These features enable seamless, real-time emotional exchanges between consumers and brands, creating a new era of interactive and adaptive marketing experiences. Also, recent systematic reviews verify that fMRI (functional Magnetic Resonance Imaging) and other neuroimaging techniques are used across the board in neuromarketing studies to measure neural response to marketing stimuli, especially in prefrontal regions commonly linked to emotion, preference, and decision-making [Aditya and Sarno, 2018; Kopton and Kenning, 2014].

Previous research has found that chatbot communication style and empathetic comprehension are the strongest predictors of consumer satisfaction, trust, and engagement, particularly in service settings. Cai et al. [2024] established that chatbots using a social-oriented and empathic communication style have significant effects on user satisfaction even when bad experiences occur. Perceived competence and warmth also mediate the impact, such that social bots outperform task bots in minimizing consumer negative affect.

Similarly, Al-Oraini [2025] demonstrated that trust, perceived competence, and social-oriented communication style are the strongest predictors of customer satisfaction with AI-driven chatbots. Furthermore, Paulsson et al. [2025] have recently confirmed that perceived reliability and empathy are significant predictors of consumer confidence in AI customer service chatbots. Customers require not only technical correctness but also emotional correspondence and an empathic approach from AI bots; thus, emotional intelligence emerges as the prime element of digital trust establishment.

On a broader scale, advanced AI technologies enable companies to craft marketing messages and product suggestions that align closely with the emotional profiles of their audience, creating more impactful and tailored interactions [Korath and Sangheethaa, 2024]. As these systems become increasingly skilled at interpreting and responding to human emotions, experts caution that they could create a sense of artificial closeness and emotional reliance. This development introduces complex ethical and psychological considerations for both businesses and their customers [Fang et al., 2025; Wu, 2024].

Nevertheless, in situations that demand higher ethical standards, a strong legal framework is essential. The challenge of algorithmic bias in emotion recognition, especially across diverse demographic groups, demands clearer standards for accountability. As per Wachter et al. [2017], GDPR does not imply a legally binding "right of explanation" for decisions made by computerized (automated) systems. Instead, it offers a narrower "right to be informed," including the logic, meaning, and implications of the computerized (automated) decision process. The European Court of Justice (CJEU) has declared that a person is entitled to be given a clear and transparent explanation whenever a computer-made decision affects them [Cooper et al., 2025]. This must involve being aware of what data was used, in what way, and how it has influenced the decision, as well as what the most likely consequence could be, preferably based on concrete facts [Stibbe, 2025].

2. METHODOLOGY

For this paper, a qualitative methodology was applied. The primary research method is a systematic review of relevant scientific and professional literature in the field of emotional bots, 10G network, personalized marketing, neuromarketing, and AI ethics. The review included the latest research articles, review papers, books, and reports addressing the

development and application of emotionally intelligent bots in marketing, the impact of 10G network on digital transformation, and personalized user experience.

The literature review enables the identification of key trends, challenges, and opportunities, as well as a critical analysis of existing solutions and recommendations for future development [Paré and Kitsiou, 2017]. In addition to the literature review, a case study approach was used to illustrate concrete applications of emotional bots that are currently in use. Based on the previously stated developments, challenges, and represented methodology, several research questions arise that guide this study:

RQ1: How do emotionally intelligent AI agents integrated with a 10G network enhance personalized marketing and consumer engagement?

RQ2: What are the key ethical and governance challenges associated with AI emotion recognition technologies in marketing?

RQ3: What are the practical applications of emotional bots, and how do they impact users?

These questions frame the scope of this paper, which seeks to provide a comprehensive analysis of the opportunities and risks presented by the upbringing of emotional bots and next-generation network technologies in the context of personalized marketing.

3. LITERATURE REVIEW

Recent research papers underscore the transformative impact of emotionally intelligent chatbots and emotion AI in marketing. Emotion AI enables machines to recognize, interpret, and respond to human emotions, thereby enhancing the quality of human-machine interaction and customer experience [Al Mazrouei, 2025; Chaturvedi et al., 2025].

A systematic review of AER (automated emotion recognition) in marketing points to the application of sophisticated tools such as Noldus FaceReader and iMotions for real-time, large-scale emotion analysis in e-commerce and social media environments [Bohorquez Camacho et al., 2025]. Positive emotional expressions (e.g., happiness, surprise) are linked to higher purchase intentions, while negative emotions can reduce engagement and sales. The literature also notes that the effectiveness of emotional bots depends on the quality of information, system reliability, and the ability to deliver both hedonic (pleasure-related) and utilitarian (task-related) value to users [Križanec Cvitković et al., 2025].

Furthermore, the launch of 10G network infrastructure is a key enabler for real-time, hyper-personalized marketing. A 10G network offers ultra-high data transfer rates, low latency, and massive device connectivity, supporting seamless data exchange between consumers and brands [CableLabs, 2019]. In today's digital world, 10G will enable innovators to create a wide variety of new services and applications that will revolutionize everything about the way we live, learn, work, and play [Dietz, n.d.]. This technological leap is allowing the integration of advanced AI systems, including emotional bots, into marketing ecosystems, enabling real-time emotional data analysis and adaptive marketing strategies. A fundamental driver of the economic value of 10G resides in its capability to enable innovative applications and use cases. These applications will be deployed within the consumers, enterprises, and public services markets. They will have a significant impact on enterprise productivity, health care, and consumer well-being [Katz and Callorda, 2020].

Moreover, AI-driven personalization is revolutionizing how brands interact with consumers. By analyzing vast amounts of customer data, purchase history, browsing behavior, and social media activity, AI systems can deliver highly tailored content, offers, and recommendations. This approach increases customer engagement, loyalty, and conversion rates [Sario et al., 2024; Upadhyaya, 2024]. For example, Amazon's recommendation engine is responsible for 35% of its total sales [Marianantoni, 2025], while Netflix attributes 80% of its views to AI-driven content suggestions [Krysik, 2024]. In e-commerce, AI-powered personalization has led to measurable improvements in customer satisfaction, repeat purchases, and operational efficiency.

Nevertheless, consumer neuroscience research, using tools like fMRI, EMG, GSR, and ECG, reveals that emotional engagement activates brain regions associated with decision-making and preference formation [Alsharif and Khraiwish, 2024]. Automated emotion recognition systems are increasingly used to decode consumer responses to marketing stimuli, enabling brands to segment audiences based on emotional profiles and deliver more effective, personalized experiences [Bohorquez Camacho et al., 2025]. The integration of emotion AI with neuroscientific insights allows marketers to refine strategies and establish deeper emotional connections with consumers.

These findings directly inform and contextualize this study's focus on how advanced emotional bots and network technologies might redefine consumer-brand interactions and support systems. Thus, the review sets a foundation for addressing the research questions regarding both enhanced 10G network personalization in marketing (RQ1) and practical applications of emotional bots (RQ3).

Alongside its many advantages, the deployment of emotional AI and hyper-personalized marketing presents significant ethical and governance challenges. Key concerns include, once again, algorithmic bias. At the same time, privacy and data security are also critical, given the sensitive nature of emotional data, which requires strong protection measures and explicit user consent [Denecke and Gabarron, 2024; Wu, 2024]. As emotional AI becomes more advanced, it also increases concerns about pseudo-intimacy and emotional manipulation, potentially undermining user autonomy and well-being [Wu, 2024].

Recent research on AI regulation and data ethics highlights how biases can develop due to low-quality training data, weak model assumptions, or limited dataset diversity, usually in a manner that causes discriminatory decisions, reinforcing or deepening existing social inequalities [Bahangulu and Owusu-Berko, 2025; Holistic AI, 2024]. To tackle these issues, organizations are encouraged to adopt bias detection tools, develop machine learning models that prioritize fairness, and conduct ongoing inspections that involve a wide range of stakeholders throughout the AI development process [Wiggins, 2025]. Strong governance also requires clear accountability measures, transparency in how algorithms are created, and the use of explainable AI (XAI) techniques to help people understand and, if needed, intervene in automated decisions [Phiri, 2023; Schneider, 2025]. These insights form the basis for addressing RQ2, which examines key ethical and governance challenges of AI emotion recognition technologies.

3.1. CASE STUDIES AND EXAMPLES OF EMOTIONAL BOTS

Literature reviews, in the absence of concrete case studies, may remain abstract and insufficiently grounded in real-world applications. With that being said, the next part of the paper presents and explains the use cases of emotional bots - with a particular focus on their practical implications and user impact, as explored in RQ3.

The first example is Replika. Replika is an AI chatbot specifically designed to provide users with emotional companionship and support. Its architecture supports adaptive, continuous conversations where the bot learns from user interactions, slowly customizing its responses to match the user's personality, preferences, and emotional states. Most users also report a strong emotional connection with their Replika, often addressing it as a friend or even confidant. Possati's [2023] analysis presents a unique psychoanalytic perspective on Replika, highlighting that the bot is more than just a technology or an app - it is also a psychosocial construct shaped by the unconscious influences of both its creators and users. Possati [2023] explains that Replika was rooted in personal trauma and loss of its creators, which shapes Replika's design and purpose narrative. This background influences how users interact with the bot and how they express their unconscious desires, fears, and needs to the AI. In marketing, this approach enables extremely personalized and emotionally resonant experiences that create a tight bond between brands and customers. With the responsiveness and strength of a 10G network, AI platforms can react instantly to user behavior, creating captivating experiences that build trust, loyalty, and a sense of greater proximity to the brand.

Additionally, EmpathyBot is a prototype robot service that identifies and addresses human emotions using facial emotion recognition and cloud-based AI. It is built on the Raspberry Pi platform, utilizing a camera and sensors, as well as the Google Cloud Vision API to detect emotional facial expressions of happiness, sadness, anger, and surprise in real-time [Dexter Industries, n.d.]. After detecting a person, the robot, with the use of an ultrasonic sensor, captures an image of their face. Then, this photo is dispatched to Google Cloud Vision, which examines facial expressions and returns a list of likely displayed emotions. EmpathyBot then adjusts its chat responses appropriately, based on the identified state of emotion, to offer empathetic and contextually appropriate interactions [Dexter Industries, n.d.]. The use of technology like EmpathyBot in marketing strategies adds another level of hyper-personalization, in which the emotional state of the user has a direct influence on the marketing interaction, elevating customer experience to a more responsive, human-empathetic extent. This kind of empathetic response system is right in harmony with directions in personalized marketing that are centered around building long-term brand relationships.

One more example in this domain is Realeye. It is an organization that uses leading-edge neuromarketing tools such as eye-tracking and facial coding to measure customers' emotional reactions to advertising content [Neuroscience Marketing, n.d.]. Unlike surveys, Realeyes captures actual behavior and feelings, allowing brands to see how individuals honestly respond to ads and content. This information enables brands to offer more tailored marketing strategies according to real user emotions and interaction, enhancing the performance of ads. Realeyes also utilizes AI to track video content, monitoring attention, emotional interest, and viewer fatigue for enhanced digital advertising [Realeyes, n.d.].

The examples like Replika or Realeye clearly illustrate how emotionally intelligent chatbots and similar technologies can be leveraged to deliver highly individualized experiences and psychosocial support across various service domains, aligning with both primary research questions of this paper. This integration of technological and psychological innovation underscores not only the growing possibilities for deeper consumer engagement but also the real-world impact of such solutions [Dexter Industries, n.d.; Possati, 2023; Realeyes, n.d.]. This is especially important in marketing, where the ultimate focus lies on creating added value for the customer, making emotionally intelligent technologies crucial for enhancing personalized customer experiences and building stronger brand relationships.

4. CONCLUSION AND LIMITATIONS

In response to the first research question - how emotionally intelligent AI agents integrated with 10G network enhance personalized marketing and consumer engagement - the findings demonstrate that the ultra-fast, low-latency connectivity enabled by 10G network is a key enabler for real-time emotion recognition and adaptive communication. This synergy allows for brands to send highly personalized and emotionally resonant marketing messages, significantly boosting consumer engagement, increasing user satisfaction, and strengthening credibility and trust in their communication [Al-Oraini, 2025; CableLabs, 2019; Korath and Sangheethaa, 2024; Paulsson et al., 2025]. In conclusion, the results for RQ1 indicate that emotionally intelligent AI agents combined with a 10G network bring new possibilities of personalized marketing through instant, emotion-sensitive interaction that deepens consumer engagement and brand trust. The author is convinced that the union of these technologies represents a key step towards responsive marketing systems with an emphasis on consumers' emotional behavior.

As of governance and ethics question (RQ2), the study identified several challenges, particularly how consent management and privacy issues, as well as algorithmic bias, can become problematic for emotion recognition technology. To address these challenges, implementing open data practices, designing transparent algorithms, communicating openly, fostering user engagement, and ensuring constant monitoring are crucial to prevent manipulation and discrimination. Everything stated is essential to maintain user trust and ethical practice in an increasingly complicated digital world [Bahangulu and Owusu-Berko, 2025; Holistic AI, 2024; Wiggins, 2025]. Resolving ethical and governance issues such as privacy, bias, and consent will be essential to maintaining trust and equity in the application of emotion recognition technology. The author emphasizes that transparency, especially towards users, and good regulation are key ways through which companies can make such technologies serve society ethically.

Regarding the usage of AI emotional bots and their impact on users (RQ3), these systems have already demonstrated concrete value in numerous service areas, most prominently in customer (marketing) services. Their capability in recognizing and appropriately reacting to users' emotional cues enables better problem resolution as well as improves overall user experience. Examples include Replika, which builds deep emotional bonds through adaptive conversations [Possati, 2023]; EmpathyBot, which recognizes and responds to user emotions in real time [Dexter Industries, n.d.]; and Realeye, which tracks genuine emotional reactions to ads to tailor marketing strategies better [Realeyes, n.d]. Applying these technologies with a 10G network brings a new level of personalization, instant responsiveness, and emotional connection, significantly enhancing user-brand relationships.

Hyper-personalized marketing is truly seen through emotionally intelligent bots that deliver highly tailored, adaptive, and emotionally aware customer interactions. It improves customer engagement, satisfaction, and loyalty by addressing both practical requirements and emotional/ psychological ones. Therefore, the application of emotional bots enhanced by a 10G network in marketing represents a transformational shift, bringing together emotional intelligence, real-time responsiveness, and data-driven personalization to fuel customer relationships and drive business success.

The study also acknowledges its limitations. First and foremost, it relies primarily on secondary literature and theoretical analysis, which limits its applicability to specific real-world contexts and dynamic technological developments. Secondly, due to page limitations, this literature

review is brief - a more comprehensive and detailed analysis is necessary to obtain a broader picture. Furthermore, rapid advancements in emotion AI and a 10G network may cause some findings to be outdated without continuous empirical validation. Additionally, ethical considerations are discussed conceptually, but there is a lack of in-depth case-based insights into real-world challenges. And lastly, the interdisciplinary complexities of AI governance are not fully addressed in this context, underscoring the need for collaborative, empirical, and longitudinal research to validate and extend these findings.

REFERENCES

[1]   Aditya, D., & Sarno, R. (2018). Neuromarketing: State of the arts. *Advanced Science Letters,* 24(12), pp. 9307-9310. https://doi.org/10.1166/asl.2018.12261

[2]   Al-Oraini, B. S. (2025). Chatbot dynamics: Trust, social presence and customer satisfaction in AI-driven chatbot services. J*ournal of Innovative Digital Transformation*, 2(2), pp. 109-130. https://doi.org/10.1108/JIDT-08-2024-0022

[3]   Al Mazrouei, N. (2025). Emotion AI: Transforming Human-Machine Interaction, https://trendsresearch.org/insight/emotion-ai-transforming-human-machine-interaction/, downloaded: [June 30th, 2025]

[4]   Alsharif, A., & Khraiwish, A. (2024). Tools in marketing research: Exploring emotional responses to stimuli. *Scientific Annals of Economics and Business*, *71*(2), pp. 173–192. https://doi.org/10.47743/saeb-2024-0009

[5]   Bahangulu, J. K., & Owusu-Berko, L. (2025). Algorithmic bias, data ethics, and governance: Ensuring fairness, transparency and compliance in AI-powered business analytics applications. *World Journal of Advanced Research and Reviews, 25*(2), pp. 1746-1763. https://doi.org/10.30574/wjarr.2025.25.2.0571

[6]   Bohorquez Camacho, L. D., Lichters, M., & Amor, P. J. (2025). *Automated emotion recognition in marketing research: A systematic literature review of current image and video-based methods* (Working Paper No. 02/2025). Otto-von-Guericke-Universität Magdeburg, Fakultät für Wirtschaftswissenschaft. ISSN 1615-4274. https://www.fww.ovgu.de/fww_media/femm/femm_2025/2025_02.pdf

[7]   CableLabs. (2019). 10G: The Next Great Leap in Broadband, https://www.cablelabs.com/insights/10g-the-next-great-leap-in-broadband, downloaded: [July 7th, 2025]

[8]   Cai, N., Gao, S., & Yan, J. (2024). How the communication style of chatbots influences consumers' satisfaction, trust, and engagement in the context of service failure. *Humanities and Social Sciences Communications, 11*, 687. https://doi.org/10.1057/s41599-024-03212-0

[9]   Chaturvedi, R., Verma, S., & Srivastava, V. (2025). From customer relationships to AI companionships: Transforming marketing with feeling AI. *Vision: The Journal of Business Perspective*. https://doi.org/10.1177/09722629251340483

[10]   Cooper, D., Van Quathem, K., Oberschelp de Meneses, A. S., & Brazil, D. (2025). insideprivacy.com/gdpr/cjeu-clarifies-gdpr-rights-on-automated-decision-making-and-trade-secrets/, CJEU Clarifies GDPR Rights on Automated Decision-Making and Trade Secrets, https://www.insideprivacy.com/gdpr/cjeu-clarifies-gdpr-rights-on-automated-decision-making-and-trade-secrets/, downloaded: [July 8th, 2025]

[11]   Denecke, K., & Gabarron, E. (2024). The ethical aspects of integrating sentiment and emotion analysis in chatbots for depression intervention. Frontiers in Psychiatry, 15. https://doi.org/10.3389/fpsyt.2024.1462083

[12] Dexter Industries (n.d.). EmpathyBot: The Raspberry Pi Robot That Reads Emotions, https://www.dexterindustries.com/projects/raspberry-pi-robot-that-reads-emotions/, downloaded: [July 8th, 2025]

[13] Dietz, B. (n.d.). Four ways that 10G will revolutionize our lives, https://broadbandlibrary.com/four-ways-that-10g-will-revolutionize-our-lives/, downloaded: [July 7th, 2025]

[14] D'Mello, S.; Kory, J. (2015). A Review and Meta-Analysis of Multimodal Affect Detection Systems. ACM Computing Surveys, 47(3), pp. 1-36. https://doi.org/10.1145/2682899

[15] Fang, C. M., Liu, A. R., Danry, V., Lee, E., Chan, S. W. T., Pataranutaporn, P., Maes, P., Phang, J., Lampe, M., Ahmad, L., & Agarwal, S. (2025). How AI and human behaviors shape psychosocial effects of chatbot use: A longitudinal randomized controlled study, arXiv. https://doi.org/10.48550/arXiv.2503.17473

[16] Holistic AI. (2024). How to mitigate bias in AI systems through effective governance, https://www.holisticai.com/blog/mitigate-bias-ai-systems-governance downloaded: [June 30th, 2025]

[17] Katz, R., & Callorda, F. (2020). Assessing the Economic Potential of 10G Networks, https://www.teleadvs.com/wp-content/uploads/Assessing-the-Economic-Potential-of-10G-Networks.pdf , downloaded: [July 7th, 2025]

[18] Kopton, I. M., & Kenning, P. (2014). Near-infrared spectroscopy (NIRS) as a new tool for neuroeconomic research. Frontiers in Human Neuroscience, 8, 549. https://doi.org/10.3389/fnhum.2014.00549

[19] Korath, A., & Sangheethaa, S. (2024). Impact of emotional factor segmentation generated by AI on digital marketing platform. Educational Administration: Theory and Practice, 30(4), pp. 2396–2402. https://doi.org/10.53555/kuey.v30i4.1347

[20] Križanec Cvitković, M., Globočnik Žunac, A., & Martinčević, I. (2025). Comparison of advantages and disadvantages of chatbots in marketing communication – Using the method of systematic literature review. CroDiM, 8(1), pp. 105–123. https://hrcak.srce.hr/file/475709

[21] Krysik, A. (2024). How Netflix recommendation algorithm works, https://stratoflow.com/how-netflix-recommendation-algorithm-work/, downloaded: [July 7th, 2025]

[22] Marianantoni, A. (2025). AI-powered customer personalization: Case studies from successful startups,https://maccelerator.la/en/blog/entrepreneurship/ai-powered-customer-personalization-case-studies-from-successful-startups/, downloaded: [July 7th, 2025]

[23] Neuroscience Marketing. (n.d.). Realeyes. https://www.neurosciencemarketing.com/blog/companies/realeyes, downloaded: [August 7th, 2025]

[24] Paré, G., & Kitsiou, S. (2017). Methods for literature reviews. In F. Lau & C. Kuziemsky (Eds.), Handbook of eHealth evaluation: An evidence-based approach (Chapter 9). University of Victoria. https://www.ncbi.nlm.nih.gov/books/NBK481583/

[25] Paulsson, A., Ekberg, G., & Mourad, S. (2025). Perceived service quality and trust in AI customer service chatbots: A quantitative analysis of reliability, responsiveness, and empathy (Doctoral dissertation). https://urn.kb.se/resolve?urn=urn:nbn:se:lnu:diva-140066

[26] Picard, R. W. (1995). Affective Computing. M.I.T Media Laboratory Perceptual Computing Section Technical Report No. 321. https://arl.human.cornell.edu/linked%20docs/Picard%20Affective%20Computing.pdf

[27]   Phiri, P. (2023). Mathematical Frameworks for Accountability in AI Systems, https://www.linkedin.com/pulse/mathematical-frameworks-accountability-ai-systems-phiri-phd-citp/, downloaded: [June 30th, 2025]

[28]   Possati, L.M. (2023). Psychoanalyzing artificial intelligence: the case of Replika. AI & Society, 38, pp. 1725–1738. https://doi.org/10.1007/s00146-021-01379-7

[29]   Realeyes. (n.d.). About us. https://www.realeyesit.com/company/about-us/, downloaded: [August 7th, 2025]

[30]   Reeves, J. (2024). What Does a 10G Network Mean in 2024?, https://www.fibermall.com/blog/10g-network.htm, downloaded: [June 30th, 2025]

[31]   Sario, Z. M. Z., Dulay, J. J., Aliarte, K. N., & Novilla, N. J. (2024). Improving marketing personalization with AI: How self-congruency influences consumer engagement. International Journal of Research and Innovation in Social Science (IJRISS), 8(12), pp. 537–549. https://dx.doi.org/10.47772/IJRISS.2024.8120042.

[32]   Schneider, B. (2025). Automated Decision & The Right to Explanation: Delimiting the Scope, https://www.linkedin.com/pulse/automated-decision-right-explanation-delimiting-scope-bruno-schneider-g7jne/, downloaded: [June 30th, 2025]

[33]   Stibbe. (2025). CJEU Confirms Right of Explanation in Battle Between Trade Secrets and Transparency, https://www.stibbe.com/publications-and-insights/cjeu-confirms-right-of-explanation-in-battle-between-trade-secrets-and, downloaded: [June 30th, 2025]

[34]   Upadhyaya, M. (2024). The role of artificial intelligence in personalized marketing. Educational Administration: Theory and Practice, 30(6), pp. 2388-2397. https://doi.org/10.53555/kuey.v30i6.5742

[35]   Wachter, S.; Mittelstadt, B.; Floridi, L. (2017). Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation. International Data Privacy Law, 7(2), pp. 76-99. https://doi.org/10.1093/idpl/ipx005

[36]   Wiggins, D. (2025). AI Governance Explained: A Blueprint for Ethical & Safe AI, https://www.linkedin.com/pulse/ai-governance-explained-blueprint-ethical-safe-dion-wiggins-5v4mc/, downloaded: [June 30th, 2025]

[37]   Wu, J. (2024). Social and ethical impact of emotional AI advancement: the rise of pseudo-intimacy relationships and challenges in human interactions. Frontiers in Psychology, 15, 1410462. https://doi.org/10.3389/fpsyg.2024.1410462

TRANSFORMATION OF THE USER EXPERIENCE THROUGH MARKETING ACTIVITIES IN THE METAVERSE

MAGDALENA KUŠTELEGA

University of Zagreb Faculty of Organization and Informatics
Department of Economics
Pavlinska 2, 42000 Varaždin, Hrvatska
magdalena.kustelega@foi.unizg.hr

ABSTRACT

Today's business environment faces companies with numerous challenges in retaining existing customers and attracting new ones, while simultaneously encouraging interaction and their engagement. One potential solution to these challenges is the metaverse, an imagined virtual space that merges the physical and digital worlds. Consumers can freely explore and communicate within a three-dimensional environment through digital avatars, utilizing technologies such as virtual, augmented, and extended reality. The metaverse, regarded as the next stage of internet development known as Web 3.0, constitutes a persistent and decentralized network of virtual worlds that fosters social, economic, and creative activities among consumers within virtual communities, facilitating the purchasing decision-making process. This paper examines how and to what extent marketing activities within the metaverse can transform the user experience. Since the metaverse offers personalized and multisensory interactions with products and brands in virtual stores and various events, such marketing activities can significantly enhance user engagement and loyalty. Despite numerous advantages, challenges in user data security, privacy, and accessibility require robust legal and technical frameworks to ensure sustainable metaverse development.

KEYWORDS: metaverse marketing, user experience, transformation, consumer engagement, consumer loyalty

TRANSFORMACIJA KORISNIČKOG ISKUSTVA KROZ MARKETINŠKE AKTIVNOSTI U METAVERZUMU

SAŽETAK

Današnje doba donosi poduzećima brojne izazove u zadržavanju postojećih i privlačenju novih korisnika, istovremeno potičući interakciju i njihov angažman. Jedno od mogućih rješenja tih izazova jest metaverzum, zamišljeni virtualni prostor koji spaja stvarni i digitalni svijet. Korisnici kroz digitalne avatare mogu slobodno istraživati i komunicirati unutar trodimenzionalnog okruženja koristeći tehnologije kao što su virtualna, proširena i produžena stvarnost. Metaverzum, kao sljedeća faza razvoja interneta nazvana Web 3.0, predstavlja trajnu i decentraliziranu mrežu virtualnih svjetova koja potiče društvene, ekonomske i kreativne aktivnosti korisnika unutar virtualnih zajednica, olakšavajući proces donošenja odluka o

kupnji. Ovaj rad istražuje kako i u kojoj mjeri marketinške aktivnosti unutar metaverzuma mogu transformirati korisničko iskustvo. Budući da metaverzum pruža personalizirane i višeosjetilne interakcije s proizvodima i brendovima u virtualnim trgovinama i na raznim događajima, takve marketinške strategije mogu značajno povećati angažman i lojalnost korisnika. Iako metaverzum donosi mnoge prednosti, postavlja i izazove povezane sa sigurnošću korisničkih podataka, privatnošću te pristupačnošću tehnologiji, što zahtijeva razvoj odgovarajućih pravnih i tehničkih rješenja za održivi razvoj.

KLJUČNE RIJEČI: marketing u metaverzumu, korisničko iskustvo, transformacija, angažman korisnika, lojalnost korisnika

1. INTRODUCTION

The metaverse, as a concept, refers to a virtual space rich in graphics and realism where people can engage in activities such as work, gaming, shopping, and socializing [Krowinska et al., 2024, p. 196; Fabac, 2022]. This space facilitates consumer interaction through digital avatars that represent their virtual counterparts. The metaverse is considered one of the most complex and promising innovations in the digital revolution, linking the physical and virtual worlds into a permanent, interactive environment characterized by 3D virtual worlds [Chaffey & Ellis-Chadwick, 2022, p. 509; Krowinska et al., 2024, p. 196]. Some authors define the metaverse as the next stage of the internet (Web 3.0), where the digital and physical worlds merge to create a continuous and shared virtual universe [Moro Visconti, 2022, p. 515]. Within this space, various real-life activities are conducted in interactive 3D settings accessible through VR headsets, AR glasses, or mobile devices [Krowinska et al., 2024, p. 191]. Simply put, the metaverse is a connected network of three-dimensional virtual worlds where individuals, represented by digital avatars, meet, communicate, create content, and trade using modern technologies such as virtual reality (VR), augmented reality (AR), and extended reality (XR) [Krowinska et al., 2024, p. 196; Fabac, 2022].

2. DEFINITION AND KEY DETERMINANTS OF THE METAVERSE

The conceptual definition of the metaverse derives from the word "*meta,*" meaning "*beyond*" or "*across*," and "*universe*," referring to the cosmos [Moro Visconti, 2022, p. 530]. The metaverse signifies a new era of digital interactions, merging the physical and virtual worlds into a unique and persistent digital universe [Krowinska et al., 2024, p. 196]. The term was first introduced in Neal Stephenson's 1992 science fiction novel *Snow Crash*, describing a utopian virtual world where avatars, digital representations of consumers, play a central role, symbolizing the sophistication and status of their consumers [Tehnologija.hr, 2025]. These avatars act as digital doubles capable of communication, content creation, and trading within the metaverse. The entire process is supported by blockchain technology, ensuring transparent and secure access to decentralized financial and social applications [Moro Visconti, 2022, p. 530].

Today, the metaverse has evolved into a key technological movement significantly impacting social interaction, work, entertainment, and business [Krowinska et al., 2024, p. 191; Moro Visconti, 2022, pp. 515-516]. Its main features include real-time interactivity and communication, persistent existence, interoperability, and integration with various technologies such as artificial intelligence, cloud computing, 5G/6G networks, and quantum

computing [Moro Visconti, 2022, pp. 530-531]. Interoperability is ensured through the transfer of digital identities and consumer-owned content across platforms without losing connection to the consumer account or previously created value [Krowinska et al., 2024, p. 196]. While initially focused on entertainment and socialization, the metaverse also enables the growth of a digital economy based on blockchain, cryptocurrencies, and NFTs as certificates of digital ownership, encouraging consumer-driven economic activity [Moro Visconti, 2022, p. 530].

A more recent and modern definition of the metaverse emphasizes its multifunctional nature as a digital platform that enables [Krowinska et al., 2024, p. 196; Moro Visconti, 2022, p. 530]:

- a persistent, partially decentralized network of virtual worlds – decentralization is achieved through blockchain technology, granting consumers control over their digital assets and information
- multisensory interaction with digital objects and people – including sight, sound, touch, and other forms of perception that allow consumers to immerse themselves in the virtual world
- creation and exchange of digital goods, including NFTs
- a shared digital economy based on blockchain technology

From the above, it can be concluded that the metaverse represents a groundbreaking innovation in the digital revolution, opening new possibilities for connectivity and interaction between the digital and real worlds. Its application and development of advanced technologies enable new forms of social interaction, work, entertainment, and business, laying the foundation for the future of the internet and digital [Krowinska et al., 2024, p. 191; Moro Visconti, 2022, p. 515]. Consequently, an increasing number of companies are investing in technological infrastructure to enhance the metaverse, regularly updating it according to consumer preferences [Medianet, 2022].

One of the key advantages of the metaverse is the removal of physical barriers, allowing unlimited consumer meetings and interactions regardless of geographic distance [Moro Visconti, 2022, p. 533]. Consumers in virtual worlds can establish connections and collaborations as if they were physically together, opening new dimensions in global cooperation, education, and socialization [Linkram Digital, 2024]. Companies that implement some form of metaverse in their operations enable consumers to immerse themselves in a 3D environment, thus completely transforming the user experience. Since consumers perceive their presence as crucial for the seamless flow of activities, an added value effect is created that benefits the company. In other words, increased consumer engagement through interaction, work tasks, or meetings has a great impact on higher satisfaction and long-term loyalty. Virtual worlds are also important for education and training, where students and employees can develop skills in safe, controlled environments through simulations and virtual workshops, without the limitations of physical space and equipment [Smith & Zook, 2024, p. 55]. Although the metaverse represents an imagined world, its consumers are human beings who have socialization and networking needs, so an additional advantage of the metaverse is the creation of a sense of belonging that prevents isolation and strengthens community in virtual environments, improving consumers' mental health [Krowinska et al., 2024, p. 197].

Despite its many advantages, the metaverse also presents significant challenges and risks. One of the primary concerns is cybercrime. New virtual environments lack sufficient protection, making them vulnerable to fraud, identity theft, money laundering, abuse, and various forms of cyberbullying. Compared to existing internet platforms, security measures in the metaverse are still in their infancy, creating opportunities for exploitation [Linkram Digital, 2024]. User

experience can rapidly become negative if privacy and data protection are compromised [Lidermedia.hr, 2022]. For instance, if a consumer believes their personal data will be frequently collected, processed, or sold without clear consent and safeguards, they are likely to reconsider engaging with the virtual world [Smith & Zook, 2024, pp. 634-635]. Furthermore, concerns exist about the metaverse's impact on social and cultural values, as global virtual connectivity risks are destroying local identities and cultural diversity. Excessive reliance on virtual communities may foster separation from the real world and its traditions. The metaverse can also adversely affect mental health. Prolonged immersion in virtual environments may lead to increased social isolation, addiction, and distorted perceptions of reality, escalating psychological health issues. Additionally, prospective consumers may encounter technical barriers, such as the need for fast and stable internet connections, as well as expensive access equipment, which contribute to a digital divide and economic inequality in the adoption of metaverse technologies [Linkram Digital, 2024]. If consumers perceive that access to the metaverse is unequal, it can lead to dissatisfaction and generate aversion to purchasing products or services. Finally, there is the risk that large corporations could dominate virtual spaces, monopolizing economic activities and social interactions, as has occurred with traditional social networks, potentially resulting in the loss of authenticity and consumer freedom Smith & Zook, 2024, pp. 634-635].

3. HISTORICAL DEVELOPMENT OF THE METAVERSE

The concept of the metaverse evolved through several phases. Its origins date back to 1986 when a computer team from Lucasfilm Games (later known as Lucasarts) developed a system called Habitat [Krowinska et al., 2024, p. 191], which was the first major graphical virtual community and is regarded as a prototype to today's massively multiplayer online role-playing games. Habitat was designed as a system supporting thousands of consumers within a shared virtual space. It provided a real-time animated representation of an online simulated world where consumers could communicate, play, embark on adventures, fall in love, marry, divorce, start businesses, found religions, wage wars, protest, and even experiment with forms of self-governance. All these activities took place in virtual reality during the pilot phase from 1986 to 1988. Developers introduced various features, while consumer feedback laid the foundation for more complex online graphical worlds. A promotional video of Habitat celebrated it as "*A strange new world where names can change as often as events and surprises hide around every corner, where fantasy and fun reign supreme*." Consumers immersed themselves in this virtual world using avatars (their digital doubles), enabling them to enjoy the benefits of virtual life in an entertaining way, and the network of consumers gave rise to the first virtual community [Marshall, 2017].

The second key stage in the metaverse's development was the launch of the centralized platform Second Life, one of the earliest complex forms of the metaverse. It offered consumers the opportunity to create unique avatars and interact within a huge virtual world that is continuously expanded through content generated by the community itself [Krowinska et al., 2024, pp. 191-192]. Second Life represents an online virtual environment where consumers, through their avatars, freely explore, communicate, and create content without predefined tasks or objectives, granting them the freedom to shape their own experiences. The user experience is based on rich social interaction, including participation in concerts, conferences, shopping, and activities not possible in the physical world, such as flying and teleportation. Consumers can construct virtual objects, customize their spaces, and apply scripts providing avatars with new abilities, further enhancing engagement and creativity. Added value is evident in

purchasing decisions, as the virtual economy enables real financial transactions through the buying of land, clothing, and other goods [Virtualna stvarnost, 2022]. What distinguishes Second Life from other virtual worlds is the fact that most content is created in real time, offering consumers an authentic sense of shared space for collaboration and socializing. Consumer trust is maintained through freedom and privacy, with avatars representing virtual identities that are not anonymous and can be sanctioned if they violate established rules [Brown, 2022].

A third key stage is the era of the rise of online multiplayer games such as Fortnite, Roblox, and Minecraft, which nowadays are considered the most widespread practical representations of the metaverse [Krowinska et al., 2024, p. 193]. Their key characteristics are as follows:

- Fortnite is primarily known for its battle-royale mechanics, where consumers drop onto an island and fight for survival as the play area gradually shrinks. Fortnite has evolved far beyond the game itself, becoming a virtual social space hosting concerts, events, and branded partner campaigns. This platform dominates among teenagers and young adults, demonstrating a practical example of how the metaverse can become a space for social activities and cultural events. The buying and selling of various items occur within the application itself, ensuring sustained consumer engagement that requires consumers to regularly follow the latest news and benefits associated with timely purchases [Microperts, 2023].

- Roblox differs from Fortnite by focusing on user-generated content. The platform offers an extensive library of virtual worlds and games across multiple genres, from simple puzzles to complex simulations and role-playing. Its simple user interface and development tools enable young creators to actively shape experiences, explaining its popularity among children and teenagers. Roblox's digital economy revolves around its virtual currency, *Robux*, which can be bought with real money or earned within games. Content creators earn revenue by selling virtual goods and games, motivating continuous development and innovation, thus encouraging more frequent engagement of its consumers [Microperts, 2023].

- Minecraft, as the third most popular game, stands out as an open-type metaverse focused on creativity and freedom of exploration. Consumers gather resources, build custom structures, and participate in activities like farming, mining, and battling enemies. Though its graphics are stylized in a blocky form, the game's depth stems from nearly limitless possibilities for creation and world customization. Minecraft attracts a broad audience across all ages and serves as a platform for education, business, and socializing. Its sales process includes a one-time purchase of the game plus additional content and expansions [Microperts, 2023].

A common thread linking these three platforms is the pursuit of metaverse objectives such as enabling diverse social interactions, fostering virtual communities, encouraging consumers' creativity, and developing economies based on digital assets. However, they differ in their approaches, target demographics, and transactional models. Fortnite focuses on dynamic gameplay and live events, Roblox operates as a user-generated content ecosystem for younger consumers, while Minecraft promotes an open world and freedom of expression without specific objectives [Microperts, 2023].

Ultimately, the emergence of blockchain and cryptocurrencies in 2009 facilitated the development of new ownership and digital goods exchange models within decentralized virtual worlds [Moro Visconti, 2022, pp. 530–531].
The final key event is the establishment of the Web 3.0 concept, a new generation of the

internet currently in development [N1info.hr, 2022], which integrates the metaverse with the Internet of Things, blockchain technology, and various open-source software [Smith & Zook, 2024, p. 19; Krowinska et al., 2024, p. 196]. Web 3.0's main characteristics include decentralization, allowing data distribution across multiple locations, and placing control in consumers' hands. Internet access is provided without additional authorizations, enabling consumers to use a single account across various websites, with full compatibility and connectivity across different smart devices. To better understand data, consumers are encouraged to use artificial intelligence when searching for product or service information, with the premise that well-informed consumers can more precisely define their search queries [Bitstore.net, 2021]. Another key advantage of Web 3.0 is that consumers will be compensated for the time and data they spend online, significantly contributing to attracting consumers to the internet and creating a positive perception of the user experience.

4. TRANSFORMATION OF USER EXPERIENCE IN THE METAVERSE

The metaverse represents not only a technological innovation but also a profound transformation in how consumers perceive products, services, and brands [Marin, 2022]. Unlike traditional online shopping, in the metaverse, consumers with avatars can engage in rich, interactive experiences that include three-dimensional presentations, personalized services, and multisensory elements [Smith & Zook, 2024, p. 55]. Through the metaverse, consumers can try products in virtual stores, such as accessing virtual footwear and customizing its appearance visually, or participate in virtual events and promotions where they can interact, create content, and compete in brand-organized contests [Adaglobal.com, 2025]. Such content significantly extends engagement and fosters emotional connections with products and brands, thereby enhancing consumer loyalty [Smith & Zook, 2024, p. 631-633; Linkram Digital, 2024].

What makes the metaverse particularly attractive for marketing is its capability to collect extensive and precise consumer behavior data in real time, enabling personalized marketing campaigns and product offerings [Smith & Zook, 2024, p. 207]. Metrics such as time spent in virtual spaces, interactions with products, and updates to avatar appearance and preferences provide marketers with deep insights into consumer needs and interests, which can directly translate into increased sales and investment effectiveness [Smith & Zook, 2024, p. 207]. A successful example is Nike's Nikeland platform, where virtual games, competitions, and avatar clothing customization constitute an integral part of the shopping and branding experience, strengthening consumers' identities as brand ambassadors both inside and outside the metaverse [Smith & Zook, 2024, p. 631; Renovi, 2023]. Additionally, the role of gamification in the metaverse further motivates consumers to actively participate, be rewarded, and socialize in digital spaces, granting more autonomy and a sense of belonging through novel, complex content [Smith & Zook, 2024, p. 55; Virtualna stvarnost, 2022].

The transformation of the user experience in the metaverse also enables companies to enrich their communication strategies using personalized and interactive approaches, which can be achieved through traditional channels. Such strategies contribute to the growing trend of digital presence in virtual worlds, and they are becoming indispensable channels in modern digital marketing [Smith & Zook, 2024, p. 19]. The metaverse has elevated the user experience to a new level, providing a unique, multidimensional, and personalized platform that deepens the connection between consumers and brands in ways previously impossible, significantly influencing purchasing decisions [Metaverse reality, 2025].

5. PRACTICAL INTEGRATION OF MARKETING ACTIVITIES IN THE METAVERSE

The metaverse does not replace traditional marketing but serves as an additional tool to expand and enhance existing strategies through virtual spaces that users can access comfortably from their homes. This new digital medium enables companies to create unique experiences, such as virtual events, games, or interactive promotional content, which lead to higher consumer engagement. Marketing activities in the metaverse include various in-game advertisements, allowing companies to showcase themselves through branded games, virtual items, and live events [Linkram Digital, 2024]. Some of the most well-known examples of advertising in the metaverse are linked to three popular games: Fortnite, Roblox, and Minecraft, with a more detailed overview of these marketing activities provided below.

One of the most popular organic advertising campaigns on the Fortnite platform was executed by the American fast-food chain Wendy's. When Fortnite launched the new game mode "*Food Fight*", two teams competed*: Team Burger* and *Team Pizza*. Wendy's chose to side with *Team Pizza* and eliminate players from *Team Burger* after discovering that, in the game, *Team Burger* stored their virtual beef patties in freezers, which contradicted Wendy's philosophy of using fresh, never frozen meat. Since the goal of the game was to be the last one to survive, Wendy's shifted the game's focus and began destroying the freezers instead of the opposing players, while promoting their slogan: "*Fresh, never frozen meat*." A live Twitch stream attracted more than a quarter of a million viewers, some of whom actively participated in the mission to destroy the meat freezers, while others impatiently followed the game's outcome, perceiving Wendy's as a quality brand that aims to satisfy hungry customers with fresh ingredients [The Drum.com, 2025]. Figure 1. Shows an example of Wendy's ad for the "*Keeping Fortnite Fresh*" campaign within the Fortnite platform.

Figure 1. Wendy's ad for the "Keeping Fortnite Fresh" campaign within the Fortnite

Source: https://www.jourdanhull.com/work/keeping-fortnite-fresh (accessed 22.08.2025.)

Another notable example is Hyundai's marketing campaign called "*Hyundai Future Adventure*" conducted through the Roblox platform. As the first global automotive brand present on Roblox since 2021, Hyundai uses this virtual world to showcase its latest technologies and innovations in an interactive and entertaining way. Users can drive Hyundai electric vehicles, participate in rescue missions with robots, customize their avatars, and engage in various activities and competitions. The campaign's goal was to connect with the tech-savvy younger generation and build long-lasting relationships with potential customers [Hyundai.com, 2021]. Figure 2. shows an example of Hyundai's ad for the "*Hyundai Future Adventure*" campaign within the Roblox platform.

Figure 2. Hyundai's ad for the "*Hyundai Future Adventure*" campaign within the Roblox

Source: https://www.hyundai.com/worldwide/en/newsroom/detail/hyundai-motor-opens-%25E2%2580%2598hyundai-future-adventure%25E2%2580%2599-on-roblox-to-showcase-vision-of-tomorrow-to-young-generations-0000000399 (accessed 22.08.2025.)

McDonald's partnered with the popular video game Minecraft to celebrate the release of *"A Minecraft Movie"* with a major global marketing campaign. The campaign features limited-edition promotional meals and collectible items inspired by Minecraft. Each offer includes in-game items, and in Singapore, special *Happy Meal* toys were introduced and refreshed regularly over five weeks. In addition to physical products, McDonald's provided digital experiences where fans could unlock unique Minecraft skins using codes found in the gift boxes. Users of the McDonald's app received additional codes for exclusive in-game content, and every *Happy Meal* included a code granting access to a digital game and a Minecraft mission inspired by McDonald's. The campaign received an enthusiastic response, and McDonald's further engaged audiences through creative appearances of the Hamburglar mascot zombie on the streets of Singapore, connecting the virtual and real worlds. This campaign stands as one of McDonald's largest marketing initiatives, successfully blending the physical and virtual worlds through interactivity and emotional connection with Minecraft and McDonald's fans [Vimalan, 2025]. Figure 3. shows an example of McDonald's ad for the "*A Minecraft Movie*" campaign within the Minecraft platform.

Figure 3. McDonald's ad for the "*A Minecraft Movie*" campaign within the Minecraft

Source: https://thevoicenewsweekly.com/**McDonalds**-**x**-**A**-**Mine**/ (accessed 22.08.2025.)

Škoda entered the metaverse in Germany through advertising in Decentraland, where users can view a 3D model of the cars from all angles. The campaign targeted "*early adopters*" by using unique location-responsive technology and GDPR-compliant methods. Initial results showed significant consumer interest and engagement, along with valuable data collection for further analysis [Krowinska et al., 2024, pp. 222-224]. This example demonstrates how the metaverse can serve as an effective tool for personalized and interactive marketing campaigns, especially in industries like automotive, where visualization and detailed product presentation are crucial in the purchasing decision-making process [Smith & Zook, 2024, pp. 371-373].

6. CONCLUSION

The transformation of the user experience in the metaverse represents one of the most significant shifts in the digital economy and the way consumers interact with brands. Unlike traditional online shopping, the metaverse offers consumers the chance to immerse themselves in rich, interactive 3D environments where they can try products, participate in virtual events, customize their avatars' appearance, and communicate with others in real time, all involving multidimensional sensory experiences. Such immersive interactions deepen consumer engagement and foster a stronger emotional connection with products and brands, ultimately leading to higher customer satisfaction and long-term customer loyalty, as well as to increased business revenue. Brands like Nike, through its Nikeland on Roblox, demonstrate how the metaverse can serve as a platform for innovative marketing strategies aimed at connecting with younger, tech-savvy audiences. Similar initiatives by McDonald's in Minecraft and Hyundai on Roblox highlight the broad potential of virtual worlds for interactive branding, product promotion, and real-time consumer data collection. This new dimension of user experience emphasizes personalization and user autonomy, with digital avatars playing an active role in

content creation and purchasing decisions. Furthermore, blockchain technologies and digital ownership certificates empower consumers by giving them control over their digital assets, enhancing trust within metaverse ecosystems. Marketing campaigns also leverage gamification, rewards, and social interactions to encourage greater user involvement and community building within virtual spaces. Despite its many advantages, the development and adoption of the metaverse face challenges related to user security and privacy, accessibility to technology, and the potential monopolization of digital spaces by large corporations. Establishing transparent, inclusive, and secure frameworks and technological standards is essential for the sustainable and equitable growth of the metaverse, ensuring it serves all consumers regardless of their geographic location or economic status. Ultimately, the metaverse represents a future in which user experiences are multidimensional, highly personalized, and deeply integrated into everyday life.

REFERENCES

[1] Adaglobal.com. (2025). *Unlocking Metaverse Marketing and Its Potential for Business | ADA*. https://www.adaglobal.com/resources/insights/metaverse-marketing

[2] Bitstore.net. (2021, December 3). Što je Web 3.0? Sve što trebate znati o internetu budućnosti. Bitcoin Store. https://www.bitstore.net/hr/blog/sto-je-web3-i-kako-funkcionira/

[3] Brown, S. (2022, July 19). What Second Life and Roblox can teach us about the metaverse | MIT Sloan. https://mitsloan.mit.edu/ideas-made-to-matter/what-second-life-and-roblox-can-teach-us-about-metaverse

[4] Chaffey, D., & Ellis-Chadwick, F. (2022). Digital marketing (8th ed.). Pearson.

[5] Fabac, R. (2022). METAVERZE AR I VR TEHNOLOGIJE S PRIMJENOM U MARKETINGU. Book of Papers 7th International Scientific and Professional Conference (CRODMA 2022), 99–111. https://crodma.hr/wp-content/uploads/2022/10/CRODMA-2022.pdf

[6] Hyundai.com. (2021). Roblox | Metaverse | Company—Hyundai Worldwide. HYUNDAI MOTORS. https://www.hyundai.com/worldwide/en/company/metaverse/roblox

[7] Krowinska, A., Backhaus, C., Becker, B., & Bosser, F. (2024). Digital Content Marketing—Creating Value in Practice. Routledge.

[8] Lidermedia.hr. (2022, July 24). Metaverzum bi mogao prihvatiti mnoga od najgorih ponašanja stvarnog svijeta. https://lidermedia.hr/zeleno-i-digitalno/metaverzum-prilike-i-prijetnje-144124/

[9] Linkram Digital. (2024, February 3). Linkram Digital. https://linkram.digital/metaverse-marketing-za-pocetnike/

[10] Marin, M. F. (2022, May 17). Marketing in the Metaverse—INCAE. https://incae.edu/en/marketing-in-the-metaverse/

[11] Marshall, C. (2017, June 25). The Story of Habitat, the Very First Large-Scale Online Role-Playing Game (1986) | Open Culture. https://www.openculture.com/2017/05/the-story-of-habitat.html

[12] Medianet. (2022, October 16). Metaverzum – budućnost ili prolazni trend? MediaNet. https://www.medianet.hr/metaverzum-buducnost-ili-prolazni-trend/

[13] Metaverse reality. (2025). How the Metaverse Is Shaping Consumer Behavior. IEEE Metaverse. https://metaversereality.ieee.org/publications/articles/how-the-metaverse-is-shaping-consumer-behavior/

[14] Microperts. (2023, December 11). Fortnite vs Roblox vs Minecraft: A Comparative Analysis of Metaverses. Medium. https://medium.com/@microperts/fortnite-vs-roblox-vs-minecraft-a-comparative-analysis-of-metaverses-1796b45fe6ff

[15] Moro Visconti, R. (2022). The Valuation of Digital Intangibles—Technology, Marketing, and the Metaverse (2nd ed.). Palgrave Macmillan.

[16] N1info.hr. (2022, February 9). Što je metaverse? Najbolji vodič i osnovne značajke nove generacije interneta—Vijesti iz Hrvatske, regiona i svijeta—N1 info. https://n1info.hr/magazin/tehnologija/sto-je-metaverse-najbolji-vodic-i-osnovne-znacajke-nove-generacije-interneta/

[17] Renovi. (2023, March 15). Nike's Metaverse Project: Nikeland on Roblox. Medium. https://medium.com/@renovihub/nikes-metaverse-project-nikeland-on-roblox-d0755371ae95

[18] Smith, P. R., & Zook, Z. (2024). Marketing Communications: Integrating Online and Offline, Customer Engagement and Digital Technologies. Kogan Page Publishers.

[19] Tehnologija.hr. (2025, March 13). Što je metaverse ili metaverzum? 15 pitanja i odgovora - Tehnologija.hr. https://www.tehnologija.hr/sto-je-metaverse/

[20] The Drum.com. (2025). Wendy's: Keeping Fortnite Fresh by VML. The Drum. https://www.thedrum.com/creative-works/project/vmlyr-wendys-keeping-fortnite-fresh

[21] Vimalan, D. (2025, April 4). Gaming meets grub: McDonald's foray into the Minecraft world. Marketing-Interactive. https://www.marketing-interactive.com/gaming-meets-grub-mcdonald-s-foray-into-the-minecraft-world

[22] Virtualna stvarnost. (2022, March 6). Kako funkcionira Second Life? - Virtualna stvarnost. https://virtualnastvarnost.net/kako-funkcionira-second-life-prvi-metaverzum/

CRODMA is a free trade association, which brings together, includes and connects individuals and legal entities engaged in direct and interactive marketing, with the aim of promoting more efficient and more effective management in all areas of Republic of Croatia using the principles, ethics, concepts, knowledge, skills, tools and techniques of direct and interactive marketing. The Association is active in professional and organizational sense independently and in line with the Statute.

MISSION

CRODMA's mission is to support the development and status of direct and interactive marketing as a business strategy.

The mission will be achieved by supporting: development of a legislative framework that will enable prosperity of activities of direct and interactive marketing and market equality of CRODMA members, promotion of activities of direct and interactive marketing to the public (political, economic and general) as a successful business strategy in the prevailing market conditions and education of members and communication of achievements so that the direct and interactive marketing would be properly considered in the domestic and international, primarily European market.

VISION

To become a factor in the development and acceptance of the marketing philosophy as the dominant philosophy of business in Croatia.

CRODMA is focused on the popularization and development of direct and interactive marketing with its members' influence, contacts and activities related to the presentation of ideas and success of direct and interactive marketing for the business, political and general public.