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USING ARTIFICIAL INTELLIGENCE IN THE DEVELOPMENT OF MARKETING COMMUNICATION TOOLS FOR A SPECIFIC FURNITURE PRODUCT

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ABSTRACT

Artificial intelligence is transforming various industries, including the furniture sector, by enhancing efficiency and innovation. attitudes toward AI-driven marketing communication tools in the wood processing industry are evaluated in this paper. An experiment focused on using artificial intelligence to create communication tools for a specific furniture product, namely a selected kitchen unit from a Slovak furniture manufacturing company and subsequently evaluated the perception of AI-generated suggestions in comparison to human-generated ones. The attitudes observed in the experiment were determined through a questionnaire and evaluated using descriptive statistics. AI-generated ideas were rated as more original and attractive than those from human participants and professional designers; however, they face challenges such as incomprehensibility and credibility issues. The results of the experiment align with theoretical knowledge and other research, indicating that AI-generated ideas are original, innovative, and appealing to customers; however, the human factor remains very important and necessary. Maintaining a professional approach is essential when creating selected marketing communication tools to ensure their effectiveness and proper targeting.

Keywords: artificial intelligence; marketing communication; innovation; wood product.

INTRODUCTION

New technologies are transforming life to enhance well-being and simplify tasks. Artificial Intelligence (AI) simulates the human brain to perform various tasks. Thanks to advancements in information systems, AI is now prevalent in many sectors, facilitating innovation and progress (Zahra, 2023). Its impact spans numerous fields (Li *et al.,* 2024). In creative industries, AI is transforming how we create, produce, and market ideas, particularly in photography, writing, composition, and fashion. AI not only automates activities but also enriches creativity, enabling new forms of artistic expression (Wang *et al.,* 2024). AI has opened new possibilities in trends, design, furniture, and visual arts (Li *et al.,* 2024).

Authors Karíž *et al.* (2024) highlight that AI adoption in the economy is closely tied to digitalization. They view AI as a key driver of digital transformation in the wood processing industry, offering solutions to enhance various processes. As with robotics and AI technology, the furniture sector is a prime example of innovation and change (Brunello *et al.,* 2025). The progression of furniture design from intelligent to smart, and ultimately to AI-driven furniture, was emphasized by Aboushall and Jalagat (2024). Although every

technology has its pros and cons, smart furniture has evolved to include AI-enabled furniture. By utilizing AI management systems and expert systems, this change enhances the utilization of technology, thereby improving production efficiency and product quality in the furniture manufacturing industry (Aboushall and Jalagat, 2024). Artificial intelligence is revolutionizing the furniture sector by promoting innovation, simplifying design, streamlining supply chains, and improving quality control. Additionally, it enhances the whole experience by enhancing client involvement through augmented reality. Cost and accessibility, however, are still essential for broad adoption. Experts anticipate significant advancements in AI as its power increases with the reduction of computer prices and an increase in investments (Henshall, 2023; Karíž *et al.,* 2024). Furniture design requires inquiry, refining, and testing across disciplines to succeed. This intricacy requires designers to consider many options. Complex system engineering influences modern furniture design, which integrates multiple technologies (Zahra, 2023).

AI is revolutionizing furniture design and manufacturing, enabling more creative, personalized, and sustainable solutions throughout the entire production process, from concept to final product (Wang *et al.,* 2024). The furniture industry must embrace digital trends while staying ahead of technological advancements to sustain growth and remain relevant. Innovation and adaptability are crucial for creating value, driving creativity, and meeting consumers' evolving needs. Digitalization is not just a phase but a new reality, and companies that understand its importance will set the standards for quality, sustainability, and customer satisfaction. By doing so, the industry can shape a future that is digital, innovative, and inclusive (Rame *et al.,* 2023).

Current research underscores that while AI is capable of generating ideas, human input remains vital. AI excels in specific tasks, such as image classification and visual reasoning, but struggles with more complex challenges, including advanced mathematics, visual commonsense reasoning, and strategic planning (Maslej *et al.,* 2024). Moreover, Chong (2024) highlights that despite advancements in language comprehension and coding, AI continues to face hurdles in complex reasoning and planning tasks that require context, common sense, and advanced cognitive abilities. This shortcoming is particularly evident in natural language understanding, where AI systems often struggle to grasp the nuances and subtleties of human language.

A survey of furniture designers (Zahra, 2023) revealed that 89.4% believe AI excels at generating initial ideas, while 87.2% feel AI alone is insufficient without designer input. 72.3% view AI as a valuable tool for enhancing interactive and virtual design, but 78.7% fear it may diminish the uniqueness of designers' identities. A study from Stanford University (Si *et al.,* 2024) found that AI-generated ideas were rated as newer than those from human experts; however, they often faced issues such as a lack of implementation details, incorrect use of datasets, and unrealistic assumptions. This research suggests that while AI-generated ideas can be innovative, they often require human revision and adaptation to achieve practical feasibility.

Authors Ashkinaze *et al.* (2024) argue that AI alters ideas rather than enhances them, with no significant effects resulting from disclosure. Their findings indicate that AI-generated ideas can enhance collective diversity but not individual creativity. The Stanford report (Maslej *et al.,* 2024) states that analyzing extreme AI risks is complex, sparking debate among experts on prioritizing immediate risks, such as algorithmic bias, versus long-term existential threats. This makes it difficult to distinguish between scientifically supported claims and those that influence policymaking. The challenge increases with the gap between tangible short-term risks and theoretical threats. Additionally, AI-related incidents increased to 123 in 2023, representing a 32.3% rise from 2022 and more than twentyfold since 2013

(Maslej *et al.,* 2024). Thus, while AI aids innovation and idea generation, human intervention is crucial for practical application, ethical oversight, and quality control.

The success of AI proposal adoption relies on various complex conditions, as explored in several studies (Tursunbayeva *et al.,* 2024; Kelly *et al.,* 2023; Oliveira *et al.,* 2024). The topic is influenced by numerous technological and human-centred variables. Key factors include the perceived utility of AI systems (Rane *et al.,* 2024). Oliveira *et al.* (2024) emphasize the importance of comprehensive plans that consider both technological and human elements for balanced AI adoption. Norton (2023) notes that while AI evolves rapidly, it cannot replace human intelligence; it automates tasks and enhances decision-making but lacks emotional understanding, reasoning, and empathy.

The above facts inspired us to conduct an experiment focused on the application of artificial intelligence in the development of communication tools for a specific furniture product, specifically a selected kitchen unit from a Slovak furniture company. The aim of this experiment is to evaluate and compare attitudes towards the use of artificial intelligence in the development of marketing communication tools for a selected kitchen unit, with a focus on the customer.

MATERIALS AND METHODS

The experimental research method is the primary research approach applied in this paper. The following were the objects of the experiment:

- Product name for a selected furniture product,
- Sklik advertising in the form of short text belonging to the chosen furniture product, which is a tool to display text and banner ads in search results (Netmarketer, 2025),
- Visual display of the product by a picture.

For the purposes of the experiment, the Decodom kitchen unit was selected as the examined furniture product. The main characteristics of the product are shown in Fig. 1:

Name: Kitchen unit SMILE 150 X 300 B (DECODOM company)

Sklik advertising text: "Clean lines, simplicity, and timeless design are the main features of our new sector kitchen Smile. In addition to being aesthetically pleasing, it is also practical and carefully designed to fulfil your daily requirements ".

Fig. 1 Selected kitchen unit for an experiment (Decodom, 2024).

In order to carry out the experiment, the research group consisted of the following individuals as participants:

- Professional advertisement designers represented by Slovak furniture company Decodom (2024),
- Graduates of Innovation management and marketing as the experts due to the actual educational base according to the analyzed issue,
- Artificial intelligence – AI – Deeply.cz. Deeply.cz was selected for research in artificial intelligence due to its specialization in marketing content generation and visual design tools tailored for commercial use.

In the experiment, each participant was given the task of proposing, based on the kitchen unit that was displayed by picture, the following:

- the product name under which the kitchen unit should be sold,
- and a short Sklik advertising text for the kitchen unit.

Except for the product name and Sklik advertising text, the professional proposal of Decodom also included a picture of the monitored kitchen unit. Following that, we developed a concept using AI, where the AI created a picture of the kitchen unit based on the product name and a Sklik text. In this manner, we gathered research materials for the actual experiment: two pictures, ten name options, and ten Sklik advertising texts. Afterwards, we created a questionnaire using our collected data, including Sklik advertising texts and name recommendations. The questions in the questionnaire were designed to allow participants to rate the parameters that we tracked using a Likert scale (ranging from 1 to 5, where 1 indicated an agreeable attitude or suitability and 5 indicated a disagreeable attitude or unsuitability of the studied parameter for the kitchen unit).

Subsequently, a laboratory experiment was carried out in the laboratory of simulated market testing of the Department of Marketing, Trade and World Forestry at the Technical University of Zvolen, where artificial conditions were created for a product test of selected furniture products from the perspective of using human, professional and artificial intelligence for the creation of selected innovative elements of marketing communication. This article presents only the results of the experiment for the kitchen unit, which is the object of research.

The participants ranked the individual names, Sklik texts and pictures (research objects) of the selected kitchen unit and rated them on a Likert scale according to their parameters:

- Ranking
- Attractiveness
- Comprehensibility
- Originality
- Emotional impact
- Trustworthiness and credibility
- Memorability
- Relevance to the promoted product.

The examined parameters represent a modified CRUSH model (Bergh, Behrer, 2012; Aaker 2003).

Respondents were also presented with pictures of the selected product: one created initially as a professional Decodom design and one made by AI. Based on the simulated

situation created, the subjects had the opportunity to equally evaluate these pictures on a Likert scale from the perspective of the above-mentioned parameters.

Students of *innovation and marketing management* were chosen as the target group for the actual laboratory experiment because they were both potential customers of Generation Z and possible implementers of innovative marketing communication elements. This sample of 15 participants was selected for the study due to their expertise in marketing management and innovation, as well as their status as the first generation to have grown up with everyday access to portable digital devices and the internet (Strauss, 2019).

Using fundamental statistical indicators, such as the arithmetic average, median, and mode, descriptive statistics have been employed to assess the participants' identified attitudes. The arithmetic average is defined as the sum of the measured values divided by their number n. The median divides an ordered set of values of a statistical characteristic into two equal parts, i.e. each of them contains 50% of the statistical units. The mode of a data set is any value whose frequency of occurrence is greater than one and is equal to or greater than the frequency of occurrence of any other value (Ostertagová, 2015).

The following research question was set as part of the research:
Does the use of artificial intelligence in the development of marketing communication tools for a selected kitchen unit impact customers?
and hypothesis:
There is a statistical relationship between the use of artificial intelligence in the development of marketing communication tools for a selected kitchen unit and its impact on customers.

To verify the statistical significance of the hypothesis, we first calculated the F-test value, which allows us to examine the equality of dispersion among indicators within the two-factor analysis of the individual factors. Based on the results of the F-test, we proceeded to test the hypotheses using a t-test for equality, specifically for the dispersion inequality of the examined data. We determined the significance of the hypotheses using the correlation coefficient, which ranges from -1 to 1. The sign of the correlation coefficient indicates whether the correlation is positive or negative. A coefficient close to zero suggests a weaker relationship between the examined variables, while a value closer to 1 or -1 indicates a stronger relationship (Hanák, 2016). The interpretation of the correlation coefficient follows Cohen´s guidelines (1988): 0.0 - 0.1 indicates a trivial correlation, 0.1 - 0.3 indicates a slight correlation, 0.3 - 0.5 indicates a medium correlation, 0.5 - 0.7 indicates a significant correlation, 0.7 - 0.9 indicates a considerable correlation, 0.9 - 1.0 indicates an almost perfect correlation.

RESULTS AND DISCUSSION

The collected data were processed into a database, where the fundamental statistical indicators of the research were assessed. This analysis shows that, in terms of ranking, professional name suggestions are most positively perceived from the perspective of the average, with the most frequently occurring value of name suitability identified among experts.

Even though attractiveness also achieved highly favourable values among experts (median = 1, mode = 1), professional proposals were the most popular regarding the evaluated attractiveness of the product name proposals (lowest average value = 1.8, mode =

1). Similar opinions can be observed in other factors that have been studied, such as the impact of emotions, credibility and trustworthiness, memorability, and relevance to the product being advertised. There is a notable difference, primarily in originality, where AI generated the most creative name idea for the product offered, as seen in the basic statistical data. However, from the perspective of the most commonly occurring value of the positive evaluation of the suggested names, these are among the experts. From the perspective of the lowest average, the name suggestions are also evaluated very positively in terms of the examined parameters, such as emotional impact, credibility, believability, and memorability.

In the case of Sklik texts, the evaluation of the data points in favour of a professional proposal and partly artificial intelligence. The most appealing, comprehensible, unique, reliable, and credible Sklik texts are unquestionably professional proposals, as is the one with the strongest connection to the advertised product. From the standpoint of the best average, respondents find artificial intelligence appealing when considering order, emotional impact, memorability, and relevance to the promoted product. However, when considering other fundamental statistical indicators, these values are not evident.

When creating a promotional picture for a kitchen unit, a professional photographer's image was edited and modified to meet the product's promotional requirements. However, when the artificial intelligence-generated image was compared, it was rated higher.

Tab. 1 Results.

PRODUCT NAME									
Parameters studied	Experts			Professional			AI		
	Average	Median	Modus	Average	Median	Modus	Average	Median	Modus
Ranking	5.62	4	1	5.07	3	3	5.40	4	2
Attractiveness	2.54	1	1	1.80	1	1	2.07	2	2
Comprehensibility	2.37	1	1	2.20	2	1	2.33	2	2
Originality	2.28	2	1	2.20	2	1	1.67	1	1
Emotional impact	2.78	1	1	2.07	2	2	2.07	2	2
Trustworthiness and credibility	2.28	1	1	1.93	2	2	1.67	2	2
Memorability	2.29	1	1	2.20	2	3	2.00	2	2
Relevance to the promoted product	2.66	1	1	1.93	2	2	2.07	2	2
SKLIK TEXTS									
	Experts			Professional			AI		
	Average	Median	Modus	Average	Median	Modus	Average	Median	Modus
Ranking	5.98	4	4	3.73	3	1	3.40	5	4
Attractiveness	2.33	2	2	1.40	1	1	1.87	2	1
Comprehensibility	2.14	2	2	1.40	1	1	1.73	2	2
Originality	2.23	2	2	1.67	1	1	1.73	2	2
Emotional impact	2.41	2	2	2.27	2	2	2.13	2	2
Trustworthiness and credibility	2.25	2	2	1.67	2	1	2.07	2	2
Memorability	2.18	3	1	2.33	2	1	2.00	2	2
Relevance to the promoted product	2.46	2	1	1.93	2	2	1.93	2	2

VISUAL DISPLAY						
	Professional			AI		
						
	Average	Median	Modus	Average	Median	Modus
Ranking	2.73	2	2	1.20	1	1
Attractiveness	1.87	1	1	1.40	1	1
Comprehensibility	1.67	1	1	1.80	1	1
Originality	1.87	1	1	1.60	1	1
Emotional impact	2.07	1	1	1.93	1	1
Trustworthiness and credibility	1.67	1	1	1.67	1	1
Memorability	2.13	1	1	1.73	1	1
Relevance to the promoted product	2.07	2	1	1.53	1	1

For the statistical evaluation of the established research hypothesis, we used the F-test to assess the normality of variables and conducted a t-test to examine the difference in variances, as shown in Table 2. The hypothesis under investigation - *There is a statistical relationship between the use of artificial intelligence in the development of marketing communication tools for a selected kitchen unit and its impact on customers* - was accepted based on these evaluations. The normality of the data distribution was confirmed, and the t-test revealed a statistically significant relationship between the analyzed variables. The t-stat value (1.37794) falls within the evaluation range, indicating that the t-stat test statistic lies in the area of acceptance of the null hypothesis, which is defined by the interval -1.999085 to 1.999085. Furthermore, the strength of the relationship between the examined variables is very strong and positive (0.850075).

Tab. 2 Results of statistical hypothesis testing.

Research Objective	To evaluate and compare attitudes towards the use of artificial intelligence in the development of marketing communication tools with the customer for a selected kitchen unit
Research Question	Does the use of artificial intelligence in the development of marketing communication tools for a selected kitchen unit have an impact on customers?
Hypothesis	There is a statistical relationship between the use of artificial intelligence in the development of marketing communication tools for a selected kitchen unit and its impact on customers.
F-test	1.3389
F critical	1.704465
Assessing the Normality of Variables with the F-Test	We accept the hypothesis of equality of variances
Hypothesis Testing t-Test for Difference of Variances	The test for equality of variances applies
Minus Area	-1.99085
Plus Area	1.990847
t Stat	1.37794
Hypothesis Testing t-Test for Equality of Variances	The hypothesis is accepted
Pearson Correlation Coefficient	0.850075
Strength of Relationship - Pearson Correlation Coefficient	Very strong positive

Our findings are also supported by a study by Si *et al.* (2024), which claims AI is a valuable tool for improving interactive and virtual design (the best score was obtained by AI in creating a kitchen unit visual display by picture), while simultaneously AI can reduce the uniqueness of designers' identities. Similarly, AI-generated ideas were rated as more original and attractive than those of human participants, but they face problems such as incomprehensibility and credibility issues. This suggests that although AI-generated ideas can be innovative, human evaluation and modification are necessary to make them feasible in practice (Si *et al.,* 2024; Zahra, 2023; Ashkinaze *et al.,* 2024). AI-generated ideas increase diversity, but they do not necessarily support individual creativity, are not always understandable to customers, and are not always adaptable to the products they relate to, which is also indicated by the study by Ashkinaze *et al.* (2024). From this context, it can be concluded (Tursunbayeva *et al.,* 2024; Kelly *et al.,* 2023; Oliveira *et al.,* 2024) that AI can contribute to innovation and idea generation; however, human intervention is necessary for their practical application, ethical control, and quality assurance. The perception of the

usefulness of AI is crucial for developing comprehensive plans based on a deep understanding of both technological capabilities and human elements, as AI cannot replace human intelligence (Norton, 2023; Rane *et al.,* 2024). Although it automates tasks and generates inspiring ideas, it lacks the understanding, reasoning, and empathy that humans possess. In addition, AI is also associated with certain risks and long-term existential threats and challenges (Maslej *et al.,* 2024), which need to be increased in guiding the creation of AI use.

It is clear from the above that the furniture industry should adopt digital trends while staying ahead of technological advancements to sustain its growth. Innovation and adaptability to market trends are crucial for creating value, fostering creativity, and meeting evolving customer needs. For generations that did not know life before the internet and had access to portable digital technologies from an early age, the use of AI as a recent digitalization is not a new reality in a society that recognizes its importance and sets standards for quality, sustainability, and customer satisfaction (Rame *et al.,* 2023).

This research underlines that while AI can generate ideas, human input remains vital, particularly highlighting the importance of a professional approach. Artificial intelligence excels in specific tasks, but it still surpasses the professionalism of the human factor.

CONCLUSION

The research confirmed the existing relationship between the use of artificial intelligence in the development of marketing communication tools for a selected kitchen unit and its impact on customers. Moreover, the research indicates a highly positive relationship. Based on the experiment performed, we can draw the following conclusions: The designs created by artificial intelligence are original and attractive to customers, indicating its potential to create visually appealing concepts. Artificial intelligence has also proven to be a valuable tool in improving interactive and virtual design, suggesting its relevance in modern creative processes. Therefore, the furniture industry should embrace digital trends and actively incorporate the use of artificial intelligence.

On the other hand, customers often struggle to understand and associate the generated designs with the specific product, which may reduce their credibility. While artificial intelligence is capable of developing innovative ideas, the human factor remains irreplaceable – especially in terms of context, emotional impact and authenticity. Furthermore, maintaining a professional approach is essential when creating selected marketing communication tools to ensure their effectiveness and proper targeting.

A limitation of the study is that the attractiveness and understandability of AI-generated designs were rated by respondents, which is a subjective assessment that may vary according to individual preferences. Also, the research focused on a specific single kitchen set, which may limit the generalizability of the conclusions to other types of furniture or products. Based on these findings, the research can be applied in the future to other selected products, offering valuable insights into the use of artificial intelligence in broader marketing contexts.

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