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COMPARISON OF HUMANS AND ARTIFICIAL INTELLIGENCE IN THE AHP METHOD-BASED CONTENT CREATION FOR DIGITAL MARKETING

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In digital marketing, the ability to create engaging and relevant content is a key success factor. Advancements in technology present new opportunities, with artificial intelligence (AI) reshaping various business sectors. AI can assist or fully manage content creation, helping marketers enhance work processes and outcomes. Using a multicriteria analysis model, it is possible to evaluate criteria and make decisions between alternatives for content creation. This paper uses the Analytical Hierarchy Process (AHP) to evaluate the alternatives, namely humans, AI, and a combination of the two, with the aim of improving content creation based on the criteria of creativity, speed, cost, content quality, adaptability, and conversion. The results of the paper indicate that marketing professionals consider humans to be most effective for content creation, particularly in creativity, content quality, adaptability, and conversion. While the combination of humans and AI offers advantages in cost efficiency and speed, it does not surpass the human-driven approach.

Keywords: humans, artificial intelligence, digital marketing, content creation, AHP method

JEL Classification: M31, C44, O33, D83, L86

INTRODUCTION

In the field of digital marketing, any organization seeking to attract potential customers, and ensure that its products remain consumers' preferred choice must continuously provide high-quality content and work diligently on its improvement and development. Given the rapid technological advancements, it is crucial for companies to adapt to these changes in order to avoid falling behind their competitors (Yeğin, 2020).

In the 1950s, computer-generated content was mainly focused on music and visual arts. These early computer-generated pieces could be easily distinguished from human-created content. With the advancements in artificial intelligence, particularly in the realm of visual content, AI-generated works have become highly realistic, thanks to techniques such as generative adversarial networks and diffusion

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models (Ma, Liu, Yi, Cheng, Huang, Lu & Liu, 2023). Marketing professionals play a key role in integrating artificial intelligence into business operations so as to enhance the digital development of companies, create relevant content, and define strategies (Yeğin, 2020).

The subject of this paper is the comparative analysis and evaluation of humans, artificial intelligence (AI), and their combination in the content creation process for digital marketing, using the Analytical Hierarchy Process (AHP) method. This approach aims to identify the most valued criteria by marketing professionals when selecting content creation strategies and to assess how these alternatives perform in producing engaging and high-quality content.

Drawing on the existing research (Amabile, Conti, Coon, Lazenby & Herron, 1996; Gao & Chen, 2021; Chintalapati & Pandey, 2022; Deekshith, 2023; Singh, 2024), two hypotheses have been formulated, namely:

H1: Creativity and content quality are the most critical factors for marketing professionals when selecting a content creation method in digital marketing.

This hypothesis is supported by previous studies emphasizing the importance of creativity as a key component of successful content (Amabile *et al*, 1996), as well as the role of high-quality content in achieving marketing objectives (Gao & Chen, 2021). While AI offers significant advantages in efficiency and scalability, it has been criticized for its limitations in generating content with emotional resonance and originality, traits typically associated with human creators (Chintalapati & Pandey, 2022).

H2: Combining humans and artificial intelligence in content creation for digital marketing yields superior business outcomes, striking a balance between creativity, speed, content quality, adaptability, conversion and cost efficiency, thereby outperforming the use of only human resources or AI tools alone.

This hypothesis aligns with the research suggesting that human-AI collaboration leverages the strengths of both approaches. Humans bring innovation and emotional intelligence, while AI enhances efficiency, scalability, and speed (Deekshith, 2023; Singh, 2024). This synergy is particularly relevant in dynamic digital environments where adaptability and cost management are critical.

This multicriteria decision-making problem focuses on identifying the success criteria that marketing professionals prioritize most in digital marketing and content creation and determining which of the three approaches best supports the achievement of these goals. Accordingly, a multicriteria decision-making model was developed in the *SuperDecisions* software so as to evaluate the model's elements, criteria, and alternatives. The introduction outlines multicriteria decision-making, reviews the relevant literature, and describes the research methodology. The paper emphasizes the application of the AHP method, which has proven to be an effective and validated tool for solving complex multicriteria decision-making problems. The key aspects include the proper structuring of the decision-making problem and the selection of appropriate criteria to identify optimal alternatives. The hierarchical decomposition of the problem significantly contributes to transparency and more efficient problem solving, increasing decision-making consistency and reducing the likelihood of errors.

THE THEORETICAL FOUNDATIONS OF THE RESEARCH

Digital marketing and content creation

Digital marketing can be described as a set of activities, organizations, and processes that use digital technologies to create, communicate, and deliver value to customers and other relevant parties. It includes methods such as search engine optimization, social media, email, content marketing, and online advertising, aiming to enable more precise and personalized interaction with consumers compared to traditional marketing (Saadah, Suliyanto & Rahab, 2023).

The concept of digital content marketing refers to the promotion of products where both the products and their delivery are digital (Rowley, 2008). It includes various formats like news, videos, e-books, infographics, newsletters, blogs, and more, all aimed at attracting the target audience (Kose & Sert, 2017). Creating effective content requires time, effort and skills, such as persuasive writing and producing high-quality visuals or audio (Blank, 2013).

Criteria for success in digital marketing and content creation

To effectively assess the success of digital marketing and optimize content creation strategies, it is essential to consider the key criteria that directly impact the performance and results of marketing campaigns. These criteria include creativity, speed, cost, content quality, conversion, and adaptability. Each of these factors plays a crucial role in shaping how digital content can be optimized for the maximum impact and efficiency in the modern digital environment.

Creativity helps differentiate the brand and capture user attention. According to the research by T. M. Amabile *et al* (1996), creativity is defined as the ability to generate new and useful ideas that contribute to innovation and the improvement of business processes. Creativity in content creation can have a direct impact on the quality and effectiveness of marketing campaigns, enabling the production of unique and engaging materials that better resonate with the target audience.

The speed of content production and distribution refers to the ability of content to quickly reach the target audience and provoke rapid responses, affecting how quickly campaigns can address viral topics or trends. The speed at which content spreads through social media can significantly contribute to the success of viral marketing by allowing messages to reach a large number of users swiftly (Kaplan & Haenlein, 2011). In the context of digital marketing, efficient and rapid content distribution is increasingly important, as users expect instant information and the immediate gratification of their needs. The speed of interactions between consumers and brands via social media directly impacts marketing outcomes, as quick responses can increase engagement and positive feedback from consumers (Rapp, Beitelspacher, Grewal & Hughes, 2013).

Costs directly influence the efficiency and sustainability of various content creation approaches in digital marketing. In the digital environment, the effective cost management of marketing campaigns can significantly enhance profitability and resource efficiency (Kannan & Li, 2017). Given the growing importance of online channels, reducing costs through digital campaign optimization is becoming increasingly relevant as companies seek to achieve the maximum impact with minimal resources (Rust, Moorman & Bhalla, 2010). Additionally, the ability to precisely quantify return on investment (ROI) across different digital channels allows for a better budget allocation, which is crucial for success in modern marketing (Wiesel, Pauwels & Arts, 2011).

Content quality is critical for long-term user loyalty and brand trust, as it reflects the ability of a material to meet user needs and expectations while simultaneously positively influencing their opinions and behaviors. According to C. Homburg, L. Ehm and M. Artz (2015), the quality of content in digital marketing significantly affects brand perception and public opinion about a company. Their research emphasizes the importance of understanding and managing user emotions in the digital age, which directly depends on the relevance, accuracy, and attractiveness of the content. High-quality content not only informs but also engages the audience, fostering loyalty and positive reactions. It is also noted that content quality significantly contributes to conversions and user engagement. Quality content generates higher engagement and increases user satisfaction.

Adaptability refers to the ability of content to dynamically adjust to changing user and market needs. According to E. Constantinides and S. J. Fountain (2008), adaptability is a crucial characteristic in the Web 2.0 era, where users expect interactivity and real-time content personalization. The authors

emphasize that flexibility and the ability to rapidly adjust content based on user preferences and feedback are essential for success in digital marketing. Adaptive content allows brands to remain relevant and engaged with their audience.

Conversion is considered a key metric of success in digital marketing and relates to the ability of content to encourage users to take desired actions, such as making a purchase, subscribing to a newsletter, or downloading content. Research by H. van der Heijden (2003) indicates that conversion success on websites depends on several factors, including user experience, information relevance, and ease of navigation. The author notes that users are more likely to convert when the content and site interface clearly communicate value and facilitate an easy execution of actions. In the context of digital marketing, conversion can be regarded as a critical indicator of content success.

Humans, artificial intelligence, and a combination of humans and artificial intelligence in content creation

In content creation, humans play an essential role due to their ability to infuse creativity and a deep understanding of the target audience. Human creativity enables the development of original ideas that capture attention and engage the audience emotionally. Content creators use artistic skills and personal experiences to produce the material that is both aesthetically appealing and aligned with the values and interests of the target group (Amabile *et al*, 1996). The importance of writing skills, understanding audience psychology, and tailoring content to user needs is emphasized. These elements support the creation of relevant, engaging, and high-quality content. Human creators bring unique perspectives and emotional depth to the process (Gao & Chen, 2021).

Artificial Intelligence (AI) significantly contributes to content creation in digital marketing. AI assists marketing professionals in analyzing consumer data, optimizing content, and targeting it accurately to specific demographic groups (Haleem, Javaid, Qadri, Singh & Suman, 2022). The application of AI simplifies the understanding of consumer behavior through social media analysis and contributes to creating content that is better aligned with audience interests (Chintalapati & Pandey, 2022).

The focus of this study includes both the generative AI tools that can independently create content and the AI tools that assist human users in content creation. While generative AI tools offer significant efficiency and speed advantages, they still lack the emotional depth and market-specific understanding provided by human creators. However, when combined, human creativity and AI can complement each other, enhancing content quality, creativity, and cost-effectiveness, thus offering superior outcomes compared to using either approach alone.

A combination of humans and artificial intelligence provides significant advantages by merging human creativity with the analytical power of AI. Humans have the ability to understand, empathize, and think innovatively, while AI facilitates the processing of large amounts of data, pattern recognition, and content personalization to a level that would be difficult for humans alone to achieve. This synergy enables marketing professionals to create content that is not only technically optimized but also emotionally resonates with the target audience. The advantages of AI in content creation depend on the type and context of the generated content. AI-generated content may be somewhat lower in quality compared to the content produced by humans (Chintalapati & Pandey, 2022).

RESEARCH METHODOLOGY

T. L. Saaty (2008) developed the Analytic Hierarchy Process (AHP) as a decision support tool for multicriteria decision-making and for analyzing the decision-making process itself. The AHP uses decision-makers' subjective judgments such as input data, while the output values are the quantified weights of each alternative. This approach allows both objective issues to be easily quantified and subjective issues, which lack theoretical values, to

be assessed. Due to these characteristics, the AHP is broadly applied in various decision-making contexts, such as economic issues, policy evaluation, and urban planning (Sato, 2005).

The AHP addresses decision problems through a hierarchical structure that includes the overall goal, a set of alternatives, and a set of criteria that link alternatives to the goal. T. L. Saaty (2008) distinguishes between two types of measurement in the AHP method: absolute and relative measurement. In absolute measurement, each alternative is compared to an ideal alternative that is known or imaginable. In contrast, relative measurement involves comparing alternatives with each other individually, a process known as pairwise comparison. Pairwise comparisons are typically conducted by asking the decision-maker to evaluate the extent to which one criterion is more important compared to another criterion relative to the overall goal. Similarly, alternatives can be compared with each other, asking the decision-maker to assess the alternative A in comparison to the alternative B according to a specific criterion. Based on the assessments given by decision-makers during pairwise comparisons, a pairwise comparison matrix is formed. While the diagonal elements of the matrix equal 1, the other elements differ in the values specified in Table 1 and in their inverse values. To evaluate the consistency of the subjective judgments provided by the decision-maker, T. L. Saaty (2008) introduces the Consistency Index (CI). If the obtained consistency index is less than 10%, the priorities are considered acceptable; otherwise, decision-makers are called to revise their comparisons (Oztaysi, 2014).

The AHP can be applied to solve multicriteria decision-making (MCDM) problems. Once criteria are defined and their weights calculated using a pairwise comparison matrix, the same procedure is used to calculate the weights of the alternatives. A pairwise comparison matrix for alternatives is formed for each individual criterion, resulting in a reciprocal square matrix with its corresponding eigenvector. This process is repeated for all criteria to calculate the values of each alternative and criterion. The value of each alternative is then multiplied by the weight of the corresponding criterion, and the overall score for each alternative is obtained by summing all the values, allowing for the ranking of alternatives based on the computed values (Oztaysi, 2014).

Table 1 The comparison scale from 1 to 9

Intensity of importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the goal.
3	Moderate importance	Experience and assessment slightly favor one criterion or alternative over another.
5	Strong importance	Experience and assessment strongly favor one criterion or alternative over another.
7	Very strong or demonstrated importance	One criterion or alternative is very strongly favored over another.
9	Extreme importance	Evidence strongly supports one criterion or alternative over another at the highest level of confirmation.
2, 4, 6, 8	Intermediate values between two judgments	A compromise is needed between the judgments.
Reciprocal values of the above intensity of importance	If the criterion or alternative i is assigned one of the non-zero numbers above when compared to another criterion or alternative j, then j has the reciprocal value of i.	

Source: Mimović, Budimčević & Marcikić-Horvat, (2018)

The structure of the AHP research model

Based on previous research and the literature, the key criteria for evaluating different content creation approaches have been defined, focusing on the business aspects: creativity, speed, cost, content quality, adaptability, and conversion. S. Mayahi and M. Vidrih (2022), emphasize that creativity, content quality, and adaptability (or personalization) are the key elements in content creation. Creativity plays a crucial role in producing distinctive and engaging content, while content quality ensures alignment with marketing goals and audience engagement. Adaptability, or personalization, highlights the need to tailor content to specific audience preferences, enhancing relevance and user experience. In addition, the importance of speed, cost, and conversion are essential for achieving economic success in a dynamic business environment (Deekshith, 2023; Singh, 2024). Speed enables a timely market response, cost efficiency supports sustainable resource management, and conversion measures content effectiveness in achieving business objectives. These criteria form a comprehensive framework for evaluating content creation approaches. To examine and validate Hypothesis 1 and Hypothesis 2, an AHP model was developed in order to evaluate the importance of these criteria and compare the performance of human, AI, and combined content creation methods.

In the AHP model, creativity is assessed as a critical criterion for comparing human labor, artificial intelligence, and their combination, because it evaluates how each approach contributes to innovation and originality in content creation. The content quality criterion assesses how well each alternative creates the content that delivers an effective message and achieves digital marketing goals. The conversion criterion is used to evaluate how different content creation alternatives contribute to achieving high conversion rates through optimized presentation and content relevance. The adaptability criterion evaluates how effectively different content creation alternatives can respond to these demands, ensuring that content remains relevant and tailored to users. The speed criterion assesses how quickly different alternatives in content creation can deliver effective content that meets the dynamic nature of the digital marketing environment. The cost criterion evaluates how cost-effective different alternatives are in the context of creating high-quality content.

Figure 1 illustrates the hierarchical structure of a multicriteria decision-making problem developed using the AHP software. This structure facilitates the evaluation and ranking of the three content creation approaches, with the criteria deemed essential for business operations.

The research was focused on marketing employees as the target population in July 2024. The data were collected through an online questionnaire. The link to the online questionnaire was distributed to the employees via LinkedIn and email. Having agreed to participate, the employees were instructed to compare the relative importance of each pair of the six criteria at the second level of the AHP hierarchy, resulting in 15 pairwise comparisons. Subsequent comparisons were made at the third hierarchical level for the alternatives within each criterion, each comparison involving three pairwise evaluations. In total, each respondent provided 33 comparisons during the study. The standard Saaty scale ranging from 1 to 9 was employed, where 1 denotes "equal importance" and 9 indicates the "extreme importance" of one element over another (Saaty, 2008). The AHP analysis was conducted using the SuperDecisions and Excel pieces of software.

The AHP applications in digital marketing and content creation

Similar studies applying the AHP model include research into the adoption of AI-generated news articles (Kim & Kim, 2020), the analysis of the quality of AI-generated articles and publications on decision support systems (Forgionne, Kohli & Jennings, 2002), the evaluation of the role of AI-based smart sensors in smart cities (Khan & Nazir, 2023), the prioritization of the impact of AI-based visual communication for long-term learning (Liu, Al-Atawi, Khan, Gohar & Zaman, 2023), the selection of information technologies (Oztaysi, 2014), and others. The Analytic

Hierarchy Process has broadly been applied in digital marketing and content marketing research to address various challenges and optimize decision-making processes. K. H. Leung and D. Y. Mo (2019) proposed a fuzzy-AHP framework for evaluating and selecting digital marketing tools, streamlining internal processes and enhancing strategic alignment with marketing objectives. Ü. Şengül and M. Eren (2016) employed a combination of the fuzzy AHP and TOPSIS to prioritize digital marketing tools, with a focus on balancing cost-efficiency and performance. Similarly, M. S. Şalvarlı (2025) applied the AHP method to evaluate social media marketing tools, emphasizing factors like cost, effectiveness, and audience relevance, and providing practical guidelines for maximizing ROI. S. Wiwatkajornsak and C. Phuaksaman (2024) integrated the fuzzy AHP to assess the key success factors in digital marketing for the food retail industry, addressing complexities like content relevance and campaign performance. B. T. Mukhsinov and S. D. Ergashxodjayeva (2022) used the AHP in selecting appropriate digital marketing communication technologies, offering actionable insights for businesses in tailoring strategies to their target markets. These studies collectively demonstrate the versatility and effectiveness of the AHP in evaluating and optimizing digital marketing strategies across diverse industries and contexts.

The application of the AHP in this research provides a systematic and robust framework for evaluating and comparing the contributions of humans, artificial intelligence, and their combination in the content creation process for digital marketing. The AHP is particularly suitable for this study because it enables the decomposition of complex decision-making problems into a structured hierarchy of criteria, allowing for pairwise comparisons and the calculation of relative weights. This methodology is crucial for addressing the multifaceted nature of content creation, where criteria like creativity, speed, cost, content quality, adaptability, and conversion must be balanced so as to achieve optimal outcomes. Unlike the prior studies that applied the AHP to tool selection or marketing strategies, this research uniquely focuses on comparing the performance of humans, AI, and their synergy, filling a critical gap in the literature. By leveraging the AHP, the study provides actionable insights into how marketing professionals can optimize their content creation approaches, offering a valuable contribution to both academic discourse and practical applications in the dynamic field of digital marketing.

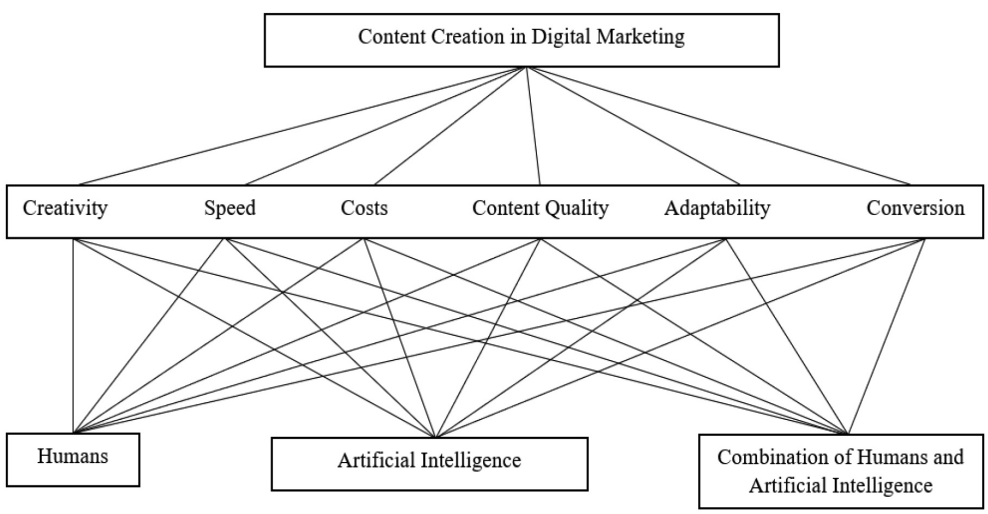

Figure 1 The AHP model for evaluating human and AI contributions to content creation for digital marketing

Source: The author

RESULTS AND DISCUSSION

The sample consists of 80 respondents, whose demographic characteristics are summarized in Table 2. The majority are female (77.5%), and most hold undergraduate (50%) or master's degrees (40%). Regarding employment, most work in companies with 51-250 employees (33.8%), only to be followed by those working in companies with 10-50 employees (26.3%). Most respondents are employed in companies operating for over 10 years (62.5%). Geographically, the largest proportion is from Novi Sad (38.8%), only to be followed by Belgrade (28.3%).

A higher proportion of the respondents use AI for content creation in digital marketing (56.25%) compared to those who do not (43.75%).

The respondents who use AI (56.25%) cited several reasons for its adoption, which can be categorized as follows:

- Efficiency: Speed, process facilitation, content checking (e.g. grammar, readability).
- Creativity and idea development: Generating additional ideas and inspiration, trend tracking, idea development, personal education.
- Specific applications: Assistance in various stages of content creation, creating professional content for social media, email template creation, text adaptation, photo editing, long-form content writing, client industry research, AI tools in Photoshop, translation, and improving content quality with unique solutions. The tools mentioned include ChatGPT, AI features in Canva, Illustrator, Photoshop, Descript, Gemini, Monday, Content at Scale, Surfer SEO, Ideogram, Midjourney, Monica, CoPilot, CapCut, Claude, Jasper, SubMagic, Freepik AI Generator, Opus, and Leonardo AI.

Among the AI users, the largest group has been using these tools for 1-2 years (23.8%), only to be followed by those using it for 6 months to 1 year (20%), then those using it for less than 6 months (10%), and finally those using it for more than 2 years (3.8%).

The respondents who do not use AI for content creation (43.75%) provided various reasons for their choice, which can be categorized as follows:

- Skepticism: The belief that AI is not advanced enough to understand local consumer habits, satisfaction with their own creativity, belief in the importance of the human factor for video content creation, and a lack of trust.
- Barriers: Insufficient mastery of tools and processes, insufficient knowledge and experience, finding AI solutions generic and easily recognizable, and concerns about data security.
- Exploration: The ongoing evaluation of AI tools, considering future use, or concerns about alignment with the company's visual identity (which AI tools have not been developed for yet).

Table 2 The demographic characteristics of the sample

Category	Percentage (%)
Gender	
Female	77.5
Male	22.5
Education Level	
Undergraduate Academic Degree	50
Master's Academic Degree	40
Higher Education Diploma	6.3
High School Diploma	2.5
Doctoral Degree	1.35
Company Size	
51-250 employees	33.8
10-50 employees	26.3
More than 250 employees	18
Fewer than 10 employees	17.5
Company Longevity	
Over 10 years	62.5
1-5 years	20
6-10 years	13.8
Less than 1 year	3.8
Geographical Distribution	
Novi Sad	38.8
Belgrade	28.3
Čačak	7.5
Subotica	6.3
Inđija, Kraljevo	3.8 (each)
Čenej, Zrenjanin	2.5 (each)
Gornji Milanovac, Rumenka, Veternik, Vrnjačka Banja, Area around Zrenjanin	1.3 (each)

Source: The author

Among the non-users, the largest group plan to adopt AI in the future without specifying a timeframe (20%), only to be followed by those with no plans to use it at all (13.8%), then come those planning its adoption within the next 6 months (8.8%), whereas the smallest group of the respondents intend to adopt it within the next year (1.3%).

After defining the elements of the decision-making problem, comparative calculations followed. First, all the criteria were compared in pairs relative to the main goal so as to determine their relative importance and contribution to the main goal. For each respondent, a pairwise comparison matrix was generated for the criteria at the second level of the analytical hierarchy, as well as the pairwise comparison matrices for the alternatives at the third level of the analytical hierarchy for each criterion individually. Tables 3 through 9 illustrate the pairwise comparison matrices constructed as part of the AHP methodology used in this research. The tables are derived from the responses provided by one participant as an illustrative example. Each table consists of the rows and columns representing the criteria or the alternatives being compared. The elements in the matrix quantify the relative importance or preference of one element over another, based on a scale typically ranging from 1 (equal importance) to 9 (extreme importance). The diagonal elements always equal 1, as each element is equally important when compared to itself. A value greater than 1 indicates that the row criterion/alternative is more important than the column criterion/alternative. A value less than 1 indicates that the row criterion/alternative is less important than the column criterion/alternative (Mimović *et al*, 2018).

Table 3 presents the pairwise comparison matrix for all the criteria relevant for the evaluation of the effectiveness of humans, artificial intelligence, and their combination in content creation for digital marketing. The criteria include creativity, speed, costs, content quality, adaptability, and conversion. The matrix allows for the analysis of the interrelationships between these factors. Creativity is considered significantly more important than speed and costs, with the scores of 9 (creativity vs. speed) and 8 (creativity vs. costs), respectively, which implies that creativity is perceived as nine times more crucial than speed, and eight times more important than costs in achieving marketing success. Conversely, speed and costs are rated 1/9 and 1/8 relative to creativity, reflecting their lower perceived importance. Content quality is highly valued, with a score of 7 (content quality vs. speed) and 7 (content quality vs. costs). These values indicate that content quality is seen as seven times more significant than both speed and costs. Adaptability has a moderate importance level, being rated as 1/5 (adaptability vs. creativity) and 1/5 (adaptability vs. content quality), which is indicative of the fact that, while adaptability is less critical than creativity or content quality, it still remains more impactful than speed (5 (adaptability vs. speed)) and costs (3 (adaptability vs. costs)). While not the top priority, conversion holds significant weight when compared to speed (3 (conversion vs. speed)) and costs (7 (conversion vs. costs)), which suggests that, although conversion is not as critical as creativity or content quality, it is still a vital metric in evaluating campaign success.

Table 3 The example of the pairwise comparison matrix for the criteria

Criteria	Creativity	Speed	Costs	Content Quality	Adaptability	Conversion
Creativity	1	9	8	2	5	2
Speed	1/9	1	1	1/7	1/5	1/3
Costs	1/8	1	1	1/7	1/3	1/7
Content Quality	1/2	7	7	1	5	4
Adaptability	1/5	5	3	1/5	1	1
Conversion	1/2	3	7	1/4	1	1

Source: The author

Tables 4 through 9 provide a detailed analysis of the pairwise comparisons between different alternatives (humans, AI, and their combination) within each criterion. These matrices show how humans, AI, and their combination are compared within each criterion, based on the respondents' subjective assessments.

Table 4 (Creativity) demonstrates the comparative effectiveness of humans, Artificial Intelligence, and their combination in delivering creativity in digital marketing strategies. Humans are perceived to be significantly more effective than AI in terms of creativity, with the relative effectiveness score of 4 (humans vs. AI), which indicates that humans are considered four times more creative than AI. Conversely, AI has a reciprocal score of 1/4 relative to humans, highlighting its lower perceived creative ability compared to humans. Humans are also deemed equally effective as the combination of humans and AI, as evidenced by a score of 4 (humans vs. combination), which suggests that the collaborative approach does not surpass the inherent creative strengths of humans alone. The combination of humans and AI are twice as effective than AI alone (combination vs. AI), with the reciprocal value of 1/2 showing AI's reduced creative capacity relative to the combination. These results emphasize the fact that, while AI can contribute to creativity, it still remains subordinate to human capabilities in this area. Even when humans and AI are combined, their creative output does not exceed that of humans working independently. Therefore, human involvement is indispensable for achieving high levels of creativity, a key factor in successful digital marketing campaigns.

Table 5 (Speed) shows that AI is faster than humans in content creation. While the combination of humans and AI is less efficient than AI alone, it is faster than humans alone. These findings suggest that AI excels in speed, but the combination of human expertise and AI balances quality and speed.

Table 6 (Costs) shows that AI is more cost-effective than humans. The combination of humans and AI is more cost-effective than humans alone, but AI remains the most cost-efficient. These results suggest that AI offers the greatest cost savings in content creation

Table 7 (Content Quality) shows that humans are more effective than AI in producing high-quality content, and the combination of humans and AI

Table 4 The example of the pairwise comparison matrix for the *creativity* criterion

CREATIVITY	Humans	Artificial Intelli-gence	Combination of Humans and Artificial Intelligence
Humans	1	4	4
Artificial Intelligence	1/4	1	1/2
Combination of Humans and Artifi-cial Intelligence	1/4	2	1

Source: The author

Table 5 The example of the pairwise comparison matrix for the *speed* criterion

SPEED	Humans	Artificial Intelli-gence	Combination of Humans and Artificial Intelligence
Humans	1	1/6	1/6
Artificial Intelligence	6	1	2
Combination of Humans and Artifi-cial Intelligence	6	1/2	1

Source: The author

outperforms AI alone. However, human involvement is still essential for maintaining content quality.

Table 8 (Adaptability) shows that humans are more adaptable than AI, with the combination of humans and AI outperforming AI alone. However, human involvement is key for flexibility in content creation.

Table 9 (Conversion) shows that humans are more effective than AI in achieving conversions. The combination of humans and AI is more effective than AI alone, suggesting that human involvement is critical for optimizing conversions.

Table 6 The example of the pairwise comparison matrix for the *costs* criterion

COSTS	Humans	Artificial Intelligence	Combination of Humans and Artificial Intelligence
Humans	1	1/5	1/7
Artificial Intelligence	5	1	1/3
Combination of Humans and Artifi-cial Intelligence	7	3	1

Source: The author

Table 7 The example of the pairwise comparison matrix for the *content* quality criterion

CONTENT QUALITY	Humans	Artificial Intelligence	Combination of Humans and Artificial Intelligence
Humans	1	5	8
Artificial Intelligence	1/5	1	4
Combination of Humans and Artificial Intelligence	1/8	1/4	1

Source: The author

Table 8 The example of the pairwise comparison matrix for the *adaptability* criterion

ADAPTABILITY	Humans	Artificial Intelligence	Combination of Humans and Artificial Intelligence
Humans	1	8	4
Artificial Intelligence	1/8	1	1/3
Combination of Humans and Artifi-cial Intelligence	1/4	3	1

Source: The author

Table 9 The example of the pairwise comparison matrix for the *conversion* criterion

CONVERSION	Humans	Artificial Intelligence	Combination of Humans and Artificial Intelligence
Humans	1	6	3
Artificial Intelligence	1/6	1	1/4
Combination of Humans and Arti-ficial Intelligence	1/3	4	1

Source: The author

The previous procedure was conducted on a sample of 80 respondents. In the end, the calculations were completed for 65 respondents, while the others were excluded due to inconsistencies in their answers and the insufficient understanding of the AHP methodology. When multiple decision-makers are involved, the final weights of the criteria and the ranking of the alternatives are determined using the following formula to calculate the geometric mean

$$w_i = \sqrt[K]{\pi_{k=1}^{k=K} w_{ik}} \quad \forall \ i \tag{1}$$

where w_i represents the final weight of the i^{th} criterion, and w_{ik} denotes the relative weight of the i^{th} element calculated using the k^{th} evaluator.

Accordingly, the geometric mean of all 65 evaluations of the criteria obtained from all the respondents is as follows:

$$w_i = \sqrt[65]{\pi_{k=1}^{k=65} w_{ik}} \quad \forall \ i \tag{2}$$

For the criterion K1, the final weight of the evaluations obtained from all 65 respondents is calculated as follows:

$$w_{K_1} = \sqrt[65]{w_{K_1 1} \times w_{K_1 2}, \ldots, \times w_{K_1 65}} = 0{,}40787 \tag{3}$$

Using the same method, the priorities of the criteria were calculated by applying the geometric mean of the weighted coefficients obtained from all the individual AHP evaluations within the model (Table 10). Analyzing the obtained criteria weights, it is evident that creativity (0.408) is the most important factor in content creation for marketing employees, followed by content quality (0.284), conversion (0.134), and adaptability (0.087). The least prioritized factors are speed (0.042) and costs (0.032), which indicates that employees rated speed and costs as the least important when choosing content creation alternatives, while creativity was rated as the most crucial.

The advantage of the AHP method is its ability to measure the model's consistency index (CI). In the following table, the consistency indicator is approximately 0.085, which is within the acceptable limits as it is below 0.10 (10%). If CI exceeds 10%, the reasons for inconsistency should be identified and pairwise comparisons should be repeated. If repeating the process does not result in an acceptable limit of 0.10, all the results should be discarded, and the entire process should be restarted.

In this model, the evaluations were repeated whenever inconsistency exceeded 0.10 in order to ensure acceptable consistency levels. The number of the iterations varied; some respondents provided consistent judgments immediately, while others needed multiple attempts to refine their pairwise comparisons. This iterative process aligns with the AHP methodology, which emphasizes consistency and reliability. Allowing the respondents to adjust their evaluations follows the AHP best practices as CI values below 0.10 are considered acceptable. These repetitions improved both the validity of the individual responses and the overall credibility of the study itself.

Calculated as the geometric mean of all individual consistency indices, the overall consistency index concluded at approximately 0.085, which falls well within the acceptable threshold. By addressing the inconsistencies through the repeated evaluations, the study maintained methodological rigor and ensured that the final results reflected a high level of reliability.

Table 10 The obtained criteria weights in the AHP method

Criteria	Priority
Creativity	0.40787
Speed	0.04201
Costs	0.03251
Content Quality	0.28396
Adaptability	0.08674
Conversion	0.13374
Consistency Index	0.08468 (8.5%)

Source: The author

After comparing the criteria, the next step was to conduct the pairwise comparisons of all the alternatives for each criterion so as to calculate their local priorities and the final rankings by finding the geometric mean of all the respondent ratings. When comparing two alternatives against a specific criterion, the general preference for the alternative is calculated as the weighted sum of the criterion weights and the alternative's scores for that criterion. First, pairs of alternatives are compared with respect to each criterion in order to obtain their local priorities, while their global priorities are obtained by simultaneously synthesizing the results with respect to all the criteria (Mimović *et al*, 2018). The final results show the ranking of the alternatives for each criterion, as is presented in Table 11.

Based on the data given in Table 11, the most recommended option for content creation in digital marketing is human engagement, which is logical given the fact that AI is still a developing technology. Humans rank highest, with the preference score of 0.55778, excelling in the key criteria such as creativity (0.67010), content quality (0.54641), adaptability (0.56494), and conversion (0.54191). These results confirm that human-driven content creation is the most effective when high-quality and adaptable content are prioritized. The combination of humans and AI ranks second, with the preference score of 0.21172, showing the strengths in cost efficiency (0.59305) and moderate advantages in speed (0.29194) and adaptability (0.29372). The combination offers benefits by leveraging AI to accelerate content creation and reduce costs, still relying on human creativity and adaptability. Artificial intelligence alone ranks lowest, with the preference score of 0.18239, excelling in speed (0.58052) and cost savings (0.25478), but performing poorly in creativity (0.09323), content quality (0.29888), adaptability (0.09697), and conversion (0.13770). These findings highlight the current limitations of AI tools, including a lack of trust and poor performance in the areas that require nuanced human judgment.

Hypothesis 1: "Creativity and content quality are the most critical factors for marketing professionals when selecting a content creation method in digital marketing." is confirmed. The results show that creativity (0.67010 for humans) is the most influential criterion. However, adaptability (0.56494 for humans) ranks slightly higher than content quality (0.54641 for humans). While creativity and content quality are important, adaptability also plays a crucial role in decision-making.

Hypothesis 2: "Combining humans and artificial intelligence in content creation for digital marketing yields superior business outcomes, balancing creativity, speed, content quality, adaptability, conversion, and cost efficiency, thereby outperforming the use of only human resources or AI tools alone."

Table 11 The alternative preferences

Alternative	Criterion Weight						Degree of Preference	Preference Rank
	Creativity	Speed	Costs	Content Quality	Adaptability	Conversion		
	0.40787	0.04201	0.03251	0.28396	0.08674	0.13374		
Humans	0.67010	0.09755	0.11472	0.54641	0.56494	0.54191	0.55778	1
Artificial Intelligence	0.09323	0.58052	0.25478	0.29888	0.09697	0.13770	0.18239	3
Combination of Humans and Artificial Intelligence	0.21596	0.29194	0.59305	0.11058	0.29372	0.26332	0.21172	2

Source: The author

is partially confirmed. The combination of humans and AI performs strongly in cost efficiency (0.59305) and moderately in speed (0.29194) and adaptability (0.29372). However, humans alone dominate in the key criteria, including creativity (0.67010), content quality (0.54641), adaptability (0.56494), and conversion (0.54191), making them the most effective choice. AI alone excels in speed (0.58052) and moderately in cost efficiency (0.25478) but has limitations in creativity, content quality, adaptability, and conversion. While the combination of humans and AI shows the potential for balancing multiple criteria, it still does not outperform human-driven content creation. Further optimization, especially in creativity, adaptability, and conversion, is needed to achieve superior results across all the aspects.

CONCLUSION

For an accurate assessment of digital marketing success, it is crucial to consider the criteria that directly impact marketing campaign performance. Criteria such as creativity, speed, costs, content quality, conversion, and adaptability are essential when choosing between humans, artificial intelligence, or a combination of humans and artificial intelligence in the content creation process. Each of these factors plays a key role in optimizing strategies for maximum impact in the digital environment, allowing for informed decisions about the best content creation alternatives in digital marketing.

The research has demonstrated significant theoretical and practical contributions, providing valuable guidelines for resource selection in digital content creation. The results have revealed that the AHP method for multicriteria analysis enables a comprehensive comparison and evaluation of humans, artificial intelligence, and their combination, aimed at enhancing the content creation process in digital marketing.

A detailed analysis must consider all the relevant criteria in digital marketing that impact content creation. The AHP method helped identify and assess the key criteria for evaluating content success. The research results have indicated that marketing employees view creativity, content quality, and conversion as the most important criteria, whereas adaptability, speed and costs rate as less significant. Regarding the ranking of the alternatives, humans emerged as the most desirable option based on the selected criteria, whereas the combination of humans and artificial intelligence was the second-best choice, and artificial intelligence alone ranked the least desirable option. These findings confirm Hypothesis 1, which posits that creativity and content quality are critical factors for marketing professionals. While creativity was the highest-ranked criterion, adaptability also played a significant role in decision-making. The results also partially confirm Hypothesis 2, which suggests that combining humans and artificial intelligence would yield superior business outcomes. While the combination of humans and AI demonstrated strengths in cost efficiency and speed, it did not outperform human-driven content creation in the most critical areas, such as creativity and content quality, which indicates that, while the integration of AI holds a potential, further optimization is necessary to enhance its effectiveness in content creation.

Despite these contributions, it is important to acknowledge the limitations of this research study. The limitations include the data collection methods, the sample structure, and the number of the criteria analyzed. The sample size may not fully represent a broader population of marketing professionals, and the limited number of the criteria could restrict the comprehensiveness of the findings. Additionally, the study primarily focused on short-term outcomes, which may not capture the long-term effects of integrating AI in content creation. However, based on the available data, only the relative relationship between the observed variables can be concluded. Further research is needed to more precisely examine the effects of using AI and its combination with the human factor under specific conditions. Future research should aim to broaden the empirical scope by including a larger sample size and a more diverse set of criteria over an extended period, which on its

part would provide more comprehensive insights and guidelines for future researchers. To date, no study has utilized the AHP method for comparative analysis and evaluation of humans, artificial intelligence, and their combination with the aim of improving the content creation process in digital marketing.

To enhance their strategies, marketing professionals should focus on creativity, content quality, and conversion when making decisions on content creation. Additionally, they should consider how to effectively integrate artificial intelligence tools to complement human creativity, particularly in areas where speed and adaptability are crucial. As AI technology continues to evolve, its role in content creation is likely to expand, and marketing teams should remain open to exploring these innovations, simultaneously prioritizing the quality and creativity provided by the human input.

In conclusion, not only does this study enrich the existing literature by clearly defining the studied factors, but it also equips marketing professionals with actionable insights for decision-making in the content creation process. The confirmation of Hypothesis 1 and the partial confirmation of Hypothesis 2 provide a solid foundation for future research and practical applications in the evolving landscape of digital marketing. The innovative aspect of this research lies in its integration of AI tools with human creativity, addressing a timely and relevant topic in digital marketing. By bridging the gap between technology and marketing strategies, this study offers new insights and methodologies that can significantly impact both the academic literature and practical applications.

REFERENCES

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, *39*(5), 1154-1184. https://doi.org/10.2307/256995

Blank, G. (2013). Who creates content? Stratification and content creation on the Internet. *Information, Communication & Society, 16*(4), 590-612. https://doi.org/10.1080/1369118X.2013.777758

Chintalapati, S., & Pandey, S. K. (2022). Artificial intelligence in marketing: A systematic literature review. *International Journal of Market Research*, *64*(1), 38-68. https://doi.org/10.1177/14707853211018428

Constantinides, E., & Fountain, S. J. (2008). Web 2.0: Conceptual foundations and marketing issues. *Journal of Direct, Data and Digital Marketing Practice*, *9*, 231-244. https://doi.org/10.1057/palgrave.dddmp.4350098

Deekshith, A. (2023). Scalable machine learning: Techniques for managing data volume and velocity in AI applications. *International Scientific Journal for Research*, *5*(5).

Forgionne, G. A., Kohli, R., & Jennings, D. (2002). An AHP analysis of quality in AI and DSS journals. *Omega*, *30*(3), 171-183. https://doi.org/10.1016/S0305-0483(02)00025-7

Gao, Q., & Chen, Y. (2021). Human Factors in social media. In G. Salvendy & W. Karwowski (Eds.), *Handbook of Human Factors and Ergonomics* (pp. 1143-1186). Wiley Online Library.

Haleem, A., Javaid, M., Qadri, M. A., Singh, R. P., & Suman, R. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. *International Journal of Intelligent Networks*, *3*, 119-132. https://doi.org/10.1016/j.ijin.2022.08.005

Homburg, C., Ehm, L., & Artz, M. (2015). Measuring and managing consumer sentiment in an online community environment. *Journal of Marketing Research*, *52*(5), 629-641. https://doi.org/10.1509/jmr.11.0448

Kannan, P. K., & Li, H. A. (2017). Digital marketing: A framework, review and research agenda. *International Journal of Research in Marketing*, *34*(1), 22-45. https://doi.org/10.1016/j.ijresmar.2016.11.006

Kaplan, A. M., & Haenlein, M. (2011). Two hearts in three-quarter time: How to waltz the social media/viral marketing dance. *Business Horizons*, *54*(3), 253-263. https://doi.org/10.1016/j.bushor.2011.01.006

Khan, H. U., & Nazir, S. (2023). Assessing the role of AI-based smart sensors in smart cities using AHP and Moora. *Sensors*, *23*(1), 494. https://doi.org/10.3390/s23010494

Kim, S., & Kim, B. (2020). A decision-making model for adopting AI-generated news articles: Preliminary results. *Sustainability, 12*(18), 7418. https://doi.org/10.3390/su12187418

Kose, U., & Sert, S. (2017). Improving content marketing processes with the approaches by artificial intelligence. *ArXiv*. https://doi.org/10.48550/arXiv.1704.02114

Leung, K. H., & Mo, D. Y. (2019, December). *A fuzzy-AHP approach for strategic evaluation and selection of digital marketing tools*. Paper presented at the 2019 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), Macao, China (pp. 1422-1426). http://doi.org/10.1109/IEEM44572.2019.8978797

Liu, Y., Al-Atawi, A. A., Khan, I. A., Gohar, N., & Zaman, Q. (2023). Using the fuzzy analytical hierarchy process to prioritize the impact of visual communication based on artificial intelligence for long-term learning. *Soft Computing*, *27*(1), 157-168. https://doi.org/10.1007/s00500-022-07556-0

Ma, Y., Liu, J., Yi, F., Cheng, Q., Huang, Y., Lu, W., & Liu, X. (2023). AI vs. Human-Differentiation Analysis of Scientific Content Generation. *ArXiv*. https://doi.org/10.48550/arXiv.2301.10416

Mayahi, S., & Vidrih, M. (2022). The impact of generative AI on the future of visual content marketing. *ArXiv*. https://doi.org/10.48550/arXiv.2211.12660

Mimović, P., Budimčević, K., & Marcikić-Horvat, A. (2018). Measuring performance of Middle East airlines-AHP approach. *International Journal of the Analytic Hierarchy Process*, *10*(3). https://doi.org/10.13033/ijahp.v10i3.595

Mukhsinov, B. T., & Ergashxodjayeva, S. D. (2022, December). Application of analytical hierarchy process model in selecting an appropriate digital marketing communication technology: A case study of a textile company. In *Proceedings of the 6th International Conference on Future Networks & Distributed Systems* (pp. 273-278). http://doi.org/10.1145/3584202.3584241

Oztaysi, B. (2014). A decision model for information technology selection using AHP integrated TOPSIS-Grey: The case of content management systems. *Knowledge-Based Systems, 70*, 44-54. https://doi.org/10.1016/j.knosys.2014.02.010

Rapp, A., Beitelspacher, L. S., Grewal, D., & Hughes, D. E. (2013). Understanding social media effects across seller, retailer, and consumer interactions. *Journal of the Academy of Marketing Science*, *41*, 547-566. https://doi.org/10.1007/s11747-013-0326-9

Rowley, J. (2008). Understanding digital content marketing. *Journal of Marketing Management*, *24*(5-6), 517-540. http://doi.org/10.1362/026725708X325977

Rust, R. T., Moorman, C., & Bhalla, G. (2010). Rethinking marketing. *Harvard Business Review*, *88*(1/2), 94-101.

Saadah, A., Suliyanto, S., & Rahab, R. (2023, October). The role of artificial intelligence (AI) in digital marketing: How personalization of content has implications for purchase intention in ecommerce. *Proceeding of International Conference Sustainable Competitive Advantage*, *4*(1). Retrieved March 05, 2024 from: http://jp.feb.unsoed.ac.id/index.php/sca-1/article/viewFile/3844/2550

Saaty, T. L. (2008). Decision making with the analytic hierarchy process. *International Journal of Services Sciences*, *1*(1), 83-98. https://doi.org/10.1504/ijssci.2008.017590

Peniwati, K. (2017). Group decision making: drawing out and reconciling differences. *International Journal of the Analytic Hierarchy Process, 9*(3). https://doi.org/10.13033/ijahp.v9i3.533

Şalvarlı, M. S. (2025). Determining social media marketing tools using AHP method in evaluating digital marketing initiatives. *International Journal of Commerce and Management Research*, *11*(1), 24-29.

Sato, Y. (2005). Questionnaire design for survey research: Employing weighting method. *Proceedings of the Eighth International Symposium on the Analytic Hierarchy Process* (ISAHP), Honolulu, Hawaii, July 8-10.

Şengül, Ü., & Eren, M. (2016). Selection of digital marketing tools using fuzzy AHP-fuzzy TOPSIS. In A. Kumar & M. Kumar Dash (Eds.), *Fuzzy Optimization and Multi-Criteria Decision Making in Digital Marketing* (pp. 97-126). IGI Global.

Singh, V. K. (2024). Human intelligence in the age of AI: Why machines won't take over jobs. *International Journal of Scientific Research and Engineering Trends*, *10*(5), 1871-1874. http://doi.org/10.61137/ijsret.vol.10.issue5.237

van der Heijden, H. (2003). Factors influencing the usage of websites: The case of a generic portal in the Netherlands. *Information & Management, 40*(6), 541-549. https://doi.org/10.1016/s0378-7206(02)00079-4

Wiesel, T., Pauwels, K., & Arts, J. (2011). Practice prize paper - Marketing's profit impact: Quantifying online and off-line funnel progression. *Marketing Science*, *30*(4), 604-611. https://doi.org/10.1287/mksc.1100.0612

Wiwatkajornsak, S., & Phuaksaman, C. (2024, May). Fuzzy AHP-based evaluation of key success factors in digital marketing for the food retail industry. In P. Meesad, S. Sodsee, W. Jitsakul, & S. Tangwannawit (Eds.), *Proceedings of the 20th International Conference on Computing and Information Technology - IC2IT 2024* (pp. 73-84). Cham, CH: Springer Nature Switzerland.

Yeğin, T. (2020). The place and future of artificial intelligence in marketing strategies. *Ekev Akademi Dergisi*, *81*, 489-506.

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