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Evaluating the Promotional Effectiveness of AI-Generated vs. Traditional Images: A Comparative Study of Visual Styles

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Abstract

This research aims to examine the impact of different types of images—including Human-designed images, real images, semi-realistic images, and AI-generated images—on promotional metrics in digital campaigns. Data were analyzed from posts on the Moslim Leader Facebook page between 2023 and 2024, assessing the promotional performance of images using key performance indicators (KPIs) such as reach, interactions, and interaction rate (Inter%). The findings indicate that semi-realistic images outperformed all other types in organic campaigns during 2023, achieving the highest reach and interaction rates, suggesting their effectiveness in capturing audience attention. AI-generated images demonstrated moderate performance in organic campaigns but achieved high interaction rates in paid campaigns, reflecting their ability to enhance engagement in sponsored advertisements. In contrast, real images and heman-designed images did not show a significant advantage over other types in terms of promotional performance. In 2024, the data did not reveal significant differences among the various image types, which may indicate market saturation with AI-generated visual content or advancements in design technologies that have made all categories more competitive. This study highlights the importance of selecting the appropriate image type based on the nature of the campaign. Semi-realistic images can yield outstanding results in organic promotion, while AI-generated images are an effective choice for paid campaigns. The study recommends developing design strategies that integrate artificial intelligence with human creativity to achieve optimal promotional performance amid ongoing digital transformations.

Keywords

Artificial Intelligence, Image Generation, Islamic Content, Graphic Design Patterns, Digital Design.

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1. Introduction

Visual content is a fundamental component of digital marketing, with its effectiveness varying depending on factors such as design style and origin—whether it is hand-designed, real photography, semi-realistic imagery, or AI-generated visuals. With the rapid advancements in artificial intelligence technologies, it has become increasingly possible to produce high-quality digital images with significantly less time and effort. As a result, many businesses and marketers have begun integrating these tools into their promotional campaigns.

Drawing upon the researcher's experience in founding *Moslim Leader* Publishing House and managing several marketing campaigns that combined AI-generated visuals with traditional imagery, notable differences were observed in audience reach and engagement levels across these different visual types. These observations raised critical questions regarding the ability of AI-generated content to compete with traditional visual design methods, and whether automatically generated images can achieve the same promotional impact as those created by professional designers or photographers.

This study focuses on evaluating the performance of different image types using promotional metrics within both organic and paid advertising campaigns. The analysis is based on data extracted from Facebook posts published during 2023 and 2024. The images have been categorized into four main groups:

1. Human-Designed Images
2. Real Photos

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3. Semi-Realistic Images
4. AI-Designed Images

Through this analytical approach, the study aims to provide a clearer understanding of how image type influences the promotional performance of digital content. This will contribute to a better grasp of audience interaction dynamics with visual content in light of the ongoing technological transformation.

2. Research Problem:

With the rapid development of artificial intelligence technologies, the creation of digital images has become easier and faster, leading many businesses and marketers to increasingly rely on AI-generated visuals in their promotional campaigns. However, there remains an ongoing debate regarding the effectiveness of these images compared to traditional visuals—such as hand-designed graphics or real-life photographs—in terms of their ability to attract audiences and enhance digital engagement. The core research problem lies in the lack of clarity surrounding the impact of image type on the promotional performance of digital content, particularly within the context of organic and paid campaigns. While AI-generated images may offer a more visually appealing aesthetic, real photographs might still hold a stronger capacity for evoking emotional engagement from viewers. Furthermore, the variations in key performance indicators—such as reach, interactions, and interaction rate (Inter%)—among these different image types have yet to be precisely defined, making it difficult to determine the optimal content strategy for digital marketing efforts.

Accordingly, this study seeks to address the following central research question:

To what extent do different types of images (hand-designed, real photos, semi-realistic visuals, and AI-generated images) influence promotional performance in digital campaigns, whether organic or paid?

From this main question, several sub-questions emerge:

- Which image type achieves the highest reach in organic and paid campaigns?
- How does image type affect interaction levels with promotional posts?
- Does the interaction rate (Inter%) vary significantly between AI-generated images and other types?
- How do these performance metrics evolve between 2023 and 2024, and what factors might influence these changes?

By analyzing statistical data drawn from promotional posts, this study aims to offer a clear, evidence-based understanding of the effectiveness of various visual content types in digital marketing. The findings are intended to support improved visual content strategies for businesses and media organizations alike.

3. Significance of the Study

(A) Theoretical Significance

- This study contributes to the growing body of academic literature on the impact of artificial intelligence in digital marketing by offering a data-driven comparative analysis of various image types and their influence on promotional performance.
- It helps clarify the distinctions between AI-generated images and traditional visuals (real photos, semi-realistic images, and hand-designed graphics) in terms of reach and engagement rates, thus aiding in the advancement of theories related to visual marketing and digital interaction.
- The study presents a fresh perspective on the evolution of audience responses to visual content over time, by comparing data across the years 2023 and 2024.
- It supports future research on the role of AI in digital media and paves the way for more detailed investigations into the success factors of visual content across different marketing environments.

(B) Practical Significance

- The study provides actionable insights for marketers, designers, and digital content managers on the most effective strategies for utilizing images in promotional campaigns, both organic and paid.
- It helps companies and media organizations make data-informed decisions when selecting the most impactful types of visuals to attract audiences and boost engagement.
- It enables content creators to enhance the design of digital advertisements by leveraging the most effective image types according to the nature of the campaign and the target audience.
- It offers recommendations for educational institutions and training centers on how to integrate AI technologies into graphic design and digital marketing curricula, thereby equipping students and researchers with relevant skills for the evolving digital landscape.

4. Research Delimitations

(A) Spatial Delimitation:

This study focuses on the Egyptian audience, as the data analyzed were extracted from user interactions with the *Moslim Leader* Facebook page. The

findings reflect the preferences and responses of Egyptian users to different types of images, offering more accurate and relevant recommendations for the digital content market in Egypt. However, the applicability of these findings to other markets may be limited, given potential differences in cultural and behavioral preferences.
(B) Temporal Delimitation:
The study covers data from the years 2023 and 2024, analyzing the performance of promotional posts published during this period. This timeframe allows for an assessment of how audience responses to digital images have evolved over time, providing insight into recent trends in visual content consumption and the growing influence of artificial intelligence on digital engagement.
(C) Thematic Delimitation:
The research is specifically concerned with analyzing the impact of different types of images—human-designed, real photos, semi-realistic visuals, and AI-generated images—on the promotional performance of digital campaigns. The analysis focuses on three key metrics: reach, interactions, and interaction rate (Inter%). The study compares these image types within both organic and paid campaign contexts to evaluate their effectiveness in shaping digital marketing strategies.

5. Previous Studies

5.1. Kaplan & Haenlein (2010): The Impact of Digital Media Design on Social Media Engagement
Objective:
This study aimed to examine how different graphic design styles affect user engagement on social media platforms by comparing interaction rates with real-life photos, semi-realistic visuals, and modern digital designs.
Methodology:
The study utilized digital content analysis of a sample of social media posts, measuring likes, comments, and shares for each visual type.
Findings:

- Designs that balanced realism with graphic appeal achieved the highest engagement levels.
- Semi-realistic images created using ready-made templates were more attractive to audiences than traditional or less visually enhanced images.
- Hand-designed visuals and real photos generated lower engagement due to a lack of modern graphic creativity.
  (K*aplan & Haenlein, 2010)*

5.2. Tuten & Solomon (2020): Digital Marketing Strategies and Their Effect on Content Engagement
Objective:
The study focused on analyzing the role of graphic design in digital marketing and its impact on engagement and conversion rates across social media platforms.
Methodology:
The researchers used data analysis tools from digital ad management platforms to compare the performance of paid versus organic ads and assess the influence of design types on purchase decisions and user interactions.
Findings:

- Visually appealing and easily understandable designs increased digital content engagement.
- Ads using semi-realistic or digitally enhanced visuals achieved higher conversion rates than those using traditional or unedited images.
- While AI-based designs were attention-grabbing, they required refinement to become more persuasive for targeted audiences.
  (Tuten & Solomon, 2020)

5.3. Al-Jundi (2019) – Arabic Study: The Impact of Artificial Intelligence on Designing Media Content for Children
Objective:
This study explored how AI-generated educational content for children compares to traditional design methods in terms of audience response.
Methodology:
The study analyzed user engagement with AI-designed educational posts and compared their performance with posts featuring traditional designs.
Findings:

- AI-generated content was effective at attracting attention but sometimes lacked the emotional depth needed to foster strong engagement.
- While AI visuals achieved higher interaction rates than traditional designs, they were not universally the most effective.
  (al-Ǧundī, 2019)

5.4. As-Sabbagh (2021) – Arabic Study: Digital Marketing Strategies for Educational Products and Their Effect on Engagement
Objective:
This study aimed to assess the effectiveness of digital marketing strategies in promoting educational products through social media engagement.

Methodology:

Performance data from digital advertisements for educational products on social media platforms were analyzed, focusing on how different design elements influenced purchase decisions and engagement levels.
Findings:

- Targeted, sponsored advertisements yielded significantly higher engagement than general, non-sponsored ones.
- Visual content featuring digitally enhanced graphic elements increased the likelihood of engagement compared to real-life photos or traditional designs.
  (aṣ-Ṣabbāġ, 2021)

6. Key Concepts of the Study

6.1. Artificial Intelligence (AI)

Artificial Intelligence refers to a field of computer science aimed at developing intelligent systems capable of performing tasks that typically require human intelligence, such as learning, decision-making, and data analysis. In this study, AI is utilized in the design of educational content targeted at Muslim children, offering advanced tools for creating innovative visuals and analyzing digital engagement with promotional posts. It also contributes to improving digital marketing strategies by predicting interaction patterns and enhancing the user experience.
(Russell & Norvig, 2020)

6.2. Digital Promotion

Digital promotion encompasses a set of strategies used to increase awareness of content or products through online platforms, including paid advertisements, interactive content, and data analytics. In the context of this study, digital promotion serves as a primary tool for distributing AI-generated educational content on social media platforms, enabling the analysis of how different design styles affect audience engagement and purchasing decisions.
(Chaffey & Ellis-Chadwick, 2019)

6.3. Digital Engagement Analysis

Digital engagement analysis refers to the process of measuring and evaluating user responses to digital content by tracking metrics such as likes, shares, comments, and click-through rates. This study employs digital engagement analysis to assess the impact of various design styles on audience interaction with educational posts and to identify which styles perform best. This concept supports the enhancement of content design strategies based on analytical insights.
(Voorveld, 2019)

6.4. User Interaction with Digital Content

User interaction with digital content refers to the various ways users engage with online posts, including liking, commenting, sharing, and clicking on links. In this study, audience interaction with AI-generated educational content on social media is analyzed to understand the influence of different visual designs on user participation and responsiveness. This concept is essential for evaluating the effectiveness of digital marketing strategies for educational content.
(Tuten & Solomon, 2020)

6.5. Semi-Realistic Mockups

Semi-realistic mockups are a design approach that presents images resembling real-life scenarios but enhanced visually to make them more appealing. In this study, semi-realistic mockups are used to create educational visuals that strike a balance between aesthetics and realism, thereby increasing the likelihood of audience engagement. The study's findings indicate that semi-realistic images yield the highest engagement rates compared to real photos or AI-generated designs, highlighting the importance of this concept in designing digital educational content.
(Scholz & Duffy, 2018)

7. Methodological Procedures

7.1. Type and Approach of the Study

(A) Type of Study:

This study is a quantitative analytical research that relies on the statistical analysis of data extracted from promotional posts on the Facebook platform. It aims to evaluate the impact of different image types on promotional performance. The study is also applied in nature, seeking to offer practical recommendations applicable in the fields of digital marketing and graphic design.

(B) Research Methodology:

The study adopts a descriptive-analytical approach, involving:

- Quantitative description of the reach, interactions, and interaction rates for different image types used in digital campaigns.
- Comparative analysis of the performance of hand-designed images, real photos, semi-realistic visuals, and AI-generated images in both organic and paid campaigns.
- Statistical analysis to compare the impact of each image type, using both descriptive and inferential statistical methods to identify significant differences among variables.

Data were analyzed using descriptive statistics (mean ± standard deviation, median [min: max]) in addition to statistical tests to compare promotional metrics across image types. A p-value threshold of <0.1 was adopted to determine statistical significance. Multiple comparison analyses were performed when necessary, enabling a deeper understanding of differences among image types and their influence on digital promotional performance.

This methodology allows for accurate, data-driven conclusions, supporting a better understanding of digital engagement dynamics with visual content and enhancing marketing strategies based on empirical evidence.

7.2. Study Population and Sample

(A) Sample Justification:

The study population consists of Egyptian

Facebook users who engaged with posts on the *Moslim Leader* page during the years 2023 and 2024. This focus allows the study to analyze user responses to various types of images used in promotional content.

(B) Sample Characteristics:

A purposive non-probability sample was selected, consisting of promotional posts that featured hand-designed images, real photos, semi-realistic visuals, and AI-generated images. The analysis was based on Key Performance Indicators (KPIs) to assess the impact of each image type on reach and engagement within both organic and paid campaign contexts.

The sample included actual marketing campaign examples, enhancing the study's practical relevance. Data from Meta Business Suite provided accurate performance statistics. The researcher's professional experience in managing promotional campaigns supported the selection of diverse posts covering two consecutive years, enabling the study of trends in audience responses to visual content within the digital landscape.

7.3. Research Tools

(A) Data Analysis Methods:

The data were analyzed using both descriptive and inferential statistical techniques to evaluate the impact of different image types on promotional campaign performance. The analysis included:

- Descriptive statistics to present the mean, standard deviation, median, minimum, and maximum values for reach, interactions, and interaction rate (Inter%).
- Comparative statistical analysis, including:
  - Shapiro-Wilk test to assess normal distribution.
  - If parametric assumptions were met, One-Way ANOVA was used to test for statistical significance among groups, with Levene's test applied to verify homogeneity. If homogeneity was assumed, Tukey's HSD was used for pairwise comparisons; otherwise, Tamhane's T2 test was employed.
  - If parametric assumptions were not met, the Kruskal-Wallis test was used for group comparisons, followed by the Mann-Whitney U test for pairwise differences.
  - A p-value of <0.1 was considered statistically significant in all tests.
- Multivariate comparisons were conducted based on image type, publication year (2023 vs. 2024), and campaign nature (organic vs. paid), providing more detailed insights into each variable's effect on visual content performance.

(B) Analytical Tools Used:

- Statistical Software: Data analysis and visualization were conducted using Python version 3.12.7, which facilitated organizing the data, performing statistical operations, and generating visual comparisons across image types to identify the most effective promotional visuals.
- Graphical Representations: Visualization tools such as Box Plots were used to visually compare the performance of different image categories.

(**C) Justification for the Analytical Approach:**

This approach is grounded in the use of actual social media data, ensuring the relevance and accuracy of results within the digital marketing context. The use of statistical analysis enables evidence-based conclusions, offering marketers and content creators data-driven recommendations to refine their future strategies.

8. Theoretical Framework

Visual content is one of the fundamental elements influencing the success of digital marketing campaigns. It plays a vital role in capturing audience attention and enhancing engagement with online posts. With the rapid advancement of artificial intelligence technologies, it has become possible to generate digital images automatically without direct human input, leading to new trends in digital content design and its impact on consumer behavior in digital environments.

8.1. Visual Content and Digital Marketing

Visual content is a core component of digital marketing and social media strategies, as it directly affects engagement and reach rates. Research indicates that visually appealing and creative images significantly increase the likelihood of user interaction compared to text-only content. The quality of images and their design style greatly contribute to improved click-through and sharing rates, ultimately enhancing the effectiveness of marketing campaigns. According to a report by Facebook, posts that include images generate 2.3 times more engagement than those containing text alone.

(Laing & Masoodian, 2014; Lu & Huang, 2022)

8.2. Types of Visuals Used in Digital Marketing on the *Moslim Leader* Platform

The promotional and advertising posts analyzed in this study used four main categories of visual content, each with a distinct impact on audience engagement:

- Real Photos:
  Characterized by authenticity and the ability to build consumer trust. However, they may lack the creative innovation found in other visual types.
- Human-Designed Images:
  Offer high creative control and precision in

visual messaging but require significant time and effort for production.

- Semi-Realistic Images:
  Strike a balance between realism and artistic enhancement, making them highly attractive to targeted audiences.
- AI-Designed Images:
  Enable the rapid creation of unique visuals with high efficiency. However, they may fall short in delivering the emotional depth typically found in human-created designs.

This classification provides the foundation for analyzing how each image type performs in digital campaigns and contributes to shaping visual content strategies in the era of AI-driven marketing.

The posts were categorized into four main groups based on the type of image used, as illustrated in the following table:

Table (1): Types and Styles of Images Used

Image Type	Description	Example
Real Photo	A realistic photograph that has not been edited or enhanced in any way.	
Semi-Realistic Image (Semi-Real)	An image that has been slightly edited or created using professional mockups, giving it a highly realistic appearance as if it were a real photograph.	
AI-Designed Image	An image generated using artificial intelligence tools, often characterized by its creativity and uniqueness.	
Human-Designed Image	A graphic design created by a human using professional design software such as Adobe Photoshop, Illustrator, or InDesign. The output reflects the designer's creative skills, technical expertise, and understanding of the visual communication goal.	

This classification serves as a basis for the comparative analysis of promotional performance across different visual styles used in digital campaigns.

8.3. Artificial Intelligence in Image Generation and Its Impact on Digital Marketing

Artificial Intelligence (AI) has significantly transformed the way visual content is created. Modern algorithms are now capable of analyzing visual patterns and generating designs aligned with current market trends. These developments have led to reduced production costs and improved marketing campaign efficiency, prompting many companies to adopt automated design tools to enhance their digital content performance. However, there is still debate surrounding the effectiveness of AI-generated images compared to traditional visuals. While some studies suggest that AI images may lack the emotional resonance of human-made visuals, others highlight their unlimited potential for creativity and innovation in marketing.

8.4. Organic vs. Paid Campaigns and the Impact of Image Type

The influence of visual content differs between organic and paid campaigns. Organic campaigns rely on the natural appeal of posts to generate engagement, while paid campaigns benefit from audience targeting strategies that boost reach regardless of content type. Research suggests that image type plays a more significant role in organic campaigns, where audience interaction is driven

primarily by visual and emotional appeal, whereas factors such as budget and targeting strategy have a greater impact on paid campaign performance.

8.5. Theoretical Frameworks on Digital Engagement and Visual Content

This study draws on a set of marketing and promotional theories to understand how various types of images influence digital engagement and campaign performance. These theories help explain the psychological and behavioral mechanisms that shape audience responses to visual content, supporting deeper interpretation of the research findings.

(A) Stimulus-Response Theory

This theory, rooted in behavioral psychology, posits that stimuli lead to direct audience responses. In digital marketing, image design and quality act as visual stimuli that influence audience interaction. Research shows that visual stimuli strongly shape consumer behavior and engagement, especially in digital contexts (Wu & Lai, 2021). For example, the quality and emotional tone of online content can trigger immediate emotional reactions that impact purchase intentions (Kim & Lennon, 2013).

The S-O-R model (Stimulus-Organism-Response) explains how external stimuli (e.g., eye-catching visuals) influence internal processes (emotional and cognitive responses), which in turn drive observable behaviors such as clicks or purchases (Kim et al., 2018). Studies have linked high-quality visuals to increased consumer engagement and impulsive buying behavior (Ming et al., 2021).

Application in this study:

- Attractive designs or vibrant colors can increase user attention and stimulate engagement.
- This theory explains why semi-realistic and AI-generated images often achieve higher reach due to their distinctive visual stimuli.
- It helps understand visual marketing strategies aimed at prompting specific responses, such as more clicks or social sharing.

(B) Third-Person Effect Theory

This theory suggests that individuals tend to believe media has a greater effect on others than on themselves. In marketing, some users perceive AI-generated images as less persuasive than real photos, even when data indicates otherwise.Research by Mou et al. (2024) indicates that AI-generated visuals can trigger consumer resistance, especially if perceived as artificial substitutes rather than complements to traditional visuals.Many consumers assume they can objectively evaluate AI influence, while believing others are more easily swayed—this false sense of immunity can affect AI acceptance in marketing.

Application in this study:

Explains why users may favor real photos despite statistical evidence showing higher reach for AI-generated images.

Aids in analyzing the discrepancy between perception and actual engagement, offering insight into user biases toward image types.

(C) Visual Information Processing Theory

This theory emphasizes that visual information is processed faster and more effectively than text, making images critical in marketing communication. Studies show that visuals grab attention quickly and enhance audience comprehension and interaction (Laing & Masoodian, 2014; Lu & Huang, 2022; Yunyue, 2023).

Well-designed graphics enhance message clarity and increase engagement. Also integrating visual elements like illustrations, color, and text positively influences audience information retention and responsiveness (Shen & Sheng, 2023; Firosha et al., 2023).

Application in this study:

Explains why semi-realistic and AI-generated visuals often outperform others in engagement metrics—they provide novel, stimulating visuals.

Supports analysis of how colors, composition, and visual effects improve post performance.

Useful in evaluating how quickly users respond to different image types.

(D) Affective Response Theory

This theory posits that visual elements trigger emotional reactions, which in turn influence decision-making and consumer behavior. In digital marketing, images evoke feelings that motivate user interaction and loyalty (Laing & Masoodian, 2014; Lu & Huang, 2022).

Application in this study:

Real photos often generate stronger emotional responses due to their authenticity and credibility.

AI-generated images may create visual admiration but might lack emotional depth.

This theory supports efforts to enhance emotional impact through thoughtful visual design.

(E) Visual Appeal Theory

This theory focuses on aesthetic value as a driver of attention and interaction. Users are more likely to engage with content that is visually attractive, even if they are less interested in the message itself.

- Studies confirm that advanced graphic design increases engagement potential (Vessel et al., 2019; Chen, 2023).
- Visual appeal influences how users evaluate and interact with content across social media (Rietveld et al., 2020).

Application in this study:

- Explains why some images achieve high reach even if they don’t align emotionally with the user.

- Supports the idea that sophisticated design boosts interaction likelihood.
- Helps clarify why semi-realistic and AI visuals may outperform traditional images in organic campaigns.

9. Statistical Analysis

The data were analyzed using descriptive statistics (mean ± standard deviation and median [min: max]), in addition to inferential statistical tests to compare promotional performance metrics across image types. A p-value threshold of < 0.1 was used to determine statistical significance, and multiple comparison tests were conducted when necessary. The two primary performance indicators analyzed were:

- Reach: Refers to the extent to which posts spread among the audience.
- Interactions: Includes user actions such as likes, comments, and shares.

The The data presented in this analysis are based solely on posts that were shared organically on Facebook, without the use of paid advertisements. The insights derived from this data reflect natural engagement and organic reach, highlighting the impact of different image types on user interaction and content engagement**.**

This means that performance metrics, including reach and interactions, represent the effectiveness of the content itself, without any additional promotion or spending on paid advertising**.**

9.1. Statistical Analysis of Promotional Image Performance (2023–2024)

Table 2 Comparing promotion metrics among different types of Organic Image

Promotion Metric	Type of Image	Mean±STD	Median[Min:Max]	p-val	Multi-
2023					
Reach	Designed By Human	1848.47±835.28	1601.0[1141.0:4560.0]	0.076	a
	Real Photo	2331.75±1081.78	1905.0[1480.0:4391.0]	0.076	ab
	Semi real	3153.5±1520.89	2528.5[1203.0:5217.0]	0.076	b
	Designed By AI	2201.5±661.72	2449.0[1227.0:2681.0]	0.076	ab
Interactions	Designed By Human	31.67±30.58	23.0[5.0:134.0]	0.017	b
	Real Photo	33.75±18.69	39.0[10.0:59.0]	0.017	b
	Semi real	82.62±66.43	64.0[16.0:234.0]	0.017	a
	Designed By AI	42.75±22.49	42.0[16.0:71.0]	0.017	ab
Inter%	Designed By Human	1.55±0.72	1.55[0.31:2.94]	0.111	a
	Real Photo	1.47±0.73	1.3[0.68:2.39]	0.111	ab
	Semi real	2.42±0.94	2.21[1.33:4.49]	0.111	b
	Designed By AI	1.88±0.75	1.61[1.3:2.99]	0.111	ab
2024					
Reach	Desigened By Human	1960.09±538.62	1985.0[959.0:2963.0]	0.944	a
	Real Photo	1829.33±619.65	1845.0[1202.0:2441.0]	0.944	a
	Semi real	---	---		
	Desigened By AI	2064.5±1250.91	1720.0[9.0:4827.0]	0.944	a
Interactions	Desigened By Human	28.91±20.22	24.0[10.0:72.0]	0.709	a
	Real Photo	29.0±7.0	26.0[24.0:37.0]	0.709	a
	Semi real	---	---		
	Desigened By AI	30.6±19.04	27.5[12.0:79.0]	0.709	a
Inter%	Desigened By Human	1.37±0.58	1.27[0.55:2.43]	0.523	a
	Real Photo	1.72±0.64	2.0[0.98:2.16]	0.523	a
	Semi real	---	---		
	Desigened By AI	14.59±41.72	1.55[0.92:133.33]	0.523	a

Performance of Images in Organic Campaigns (2023 and 2024)

First: Year 2023

Reach:

Semi-realistic images recorded the highest average reach of (3153.5 ± 1520.89), indicating their superiority in attracting a wider audience compared to other image types.

This increase was statistically significant when compared to human-designed images, which had a lower average reach (p = 0.076).

This result suggests that semi-realistic images were the most widely circulated in organic campaigns during 2023.

Interactions:

Semi-realistic images also achieved the highest number of interactions, with an average of (82.62 ± 66.43), indicating a strong user engagement with this image type.

This finding was statistically significant when compared with both human-designed and real photos, which showed lower interaction rates (p

= 0.017).

AI-generated images showed moderate engagement levels, but the differences were not statistically significant when compared with semi-realistic images.

These results indicate that semi-realistic images were not only the most widespread but also the most effective in capturing user attention and encouraging engagement with the content.

Interaction Rate (Inter%):

Semi-realistic images recorded the highest interaction rate, with an average of (2.42 ± 0.94), significantly outperforming human-designed images (p = 0.111).

This result reinforces the idea that semi-realistic images are not only superior in terms of reach but also in the quality of engagement they generate.

Second: Year 2024

Reach:

No significant differences were observed in average reach among the different image types, as performance levels were similar across human-designed images, real photos, semi-realistic images, and AI-generated images (p = 0.944).

This suggests that the impact of image type on reach in organic campaigns became less pronounced in 2024 compared to 2023.

Interactions and Interaction Rate (Inter%):

No statistically significant differences were found between image types in terms of interactions (p = 0.709) or interaction rate (p = 0.523).

This result indicates that the effectiveness of images in driving engagement was less evident in 2024 than in the previous year, possibly reflecting market saturation with visual content or changing user behavior in digital content consumption.

9.2 Statistical Analysis of Image Performance in Paid Campaigns (2023–2024)

Table (3): Comparison of Promotional Metrics Across Different Image Types in Paid Campaigns

Promotion Metric	Type of Image	Mean±STD	Median[Min:Max]	p-val	Multi-comparison
2023					
Reach	Designed By Human	92546.25±141488.88	17765.5[2715.0:381914.0]	0.61	a
	Real Photo	46651.5±20249.42	46651.5[32333.0:60970.0]	0.61	a
	Semi real	24456.0±13931.42	24456.0[14605.0:34307.0]	0.61	a
	Designed By AI	29369.2±34608.26	11438.0[4626.0:103860.0]	0.61	a
Interactions	Designed By Human	243.25±230.14	150.0[17.0:762.0]	0.476	a
	Real Photo	342.5±157.68	342.5[231.0:454.0]	0.476	a
	Semi real	423.0±216.37	423.0[270.0:576.0]	0.476	a
	Designed By AI	462.2±587.44	217.0[89.0:1976.0]	0.476	a
Inter%	Designed By Human	0.95±0.96	0.67[0.1:2.74]	0.117	b
	Real Photo	0.89±0.72	0.89[0.38:1.4]	0.117	ab
	Semi real	1.76±0.12	1.76[1.68:1.85]	0.117	ab
	Designed By AI	1.8±0.51	1.91[0.74:2.72]	0.117	a
2024					
Reach	Desigened By Human	29781.67±29382.6	21393.0[2450.0:97825.0]	0.853	a
Reach	Real Photo	22656.25±16344.94	24047.0[5566.0:57152.0]	0.853	a
Reach	Semi real	21141.5±13487.9	23917.5[2460.0:34271.0]	0.853	a
Reach	Desigened By AI	30307.56±43279.15	14113.0[1470.0:130018.0]	0.853	a
Interactions	Desigened By Human	304.67±351.86	186.0[58.0:1199.0]	0.797	a
Interactions	Real Photo	294.75±367.89	149.5[32.0:1157.0]	0.797	a
Interactions	Semi real	189.25±129.67	202.5[33.0:319.0]	0.797	a
Interactions	Desigened By AI	330.0±458.26	75.0[15.0:1184.0]	0.797	a
Inter%	Desigened By Human	1.14±0.51	1.0[0.66:2.37]	0.961	a
Inter%	Real Photo	1.48±1.33	1.48[0.13:4.34]	0.961	a
Inter%	Semi real	0.98±0.3	0.98[0.62:1.34]	0.961	a
Inter%	Desigened By AI	1.1±0.57	0.93[0.42:1.97]	0.961	a

First: Year 2023

Reach:

No statistically significant differences were observed among the different image types in paid campaigns, as the performance of human-designed images, real photos, semi-realistic

images, and AI-generated images was relatively similar (p = 0.61).

This indicates that campaign funding played a more significant role in increasing reach, regardless of the image type used.

Interactions:

All image types showed comparable performance in terms of the number of interactions, with no significant differences (p = 0.476).

This suggests that engagement in paid campaigns was influenced more by other factors such as audience targeting and advertising budget, rather than the type of image used.

Interaction Rate (Inter%):

Although there were no statistically significant differences, AI-generated images and semi-realistic images recorded higher interaction rates compared to other types.

AI-generated images had the highest median interaction rate at (1.91 [0.74: 2.72]), indicating a trend toward significance compared to human-designed images (p = 0.117).

This suggests that users were more likely to interact with AI-generated visuals in paid campaigns, although the effect was not strong enough to be statistically conclusive.

Second: Year 2024

Reach:

No significant differences were observed among image types in terms of reach in paid campaigns for 2024 (p = 0.853).

This indicates that the impact of image type became even less relevant in determining ad reach, as other factors such as Facebook's algorithms and targeting strategies played a more influential role.

Interactions and Interaction Rate (Inter%):

There were no statistically significant differences between the various image types in terms of interactions (p = 0.797) or interaction rate (p = 0.961).

This result suggests that paid campaigns in 2024 became less dependent on image quality or type to drive engagement, possibly indicating that users had grown more accustomed to AI-generated visuals and were no longer interacting with them to the same extent observed in 2023.

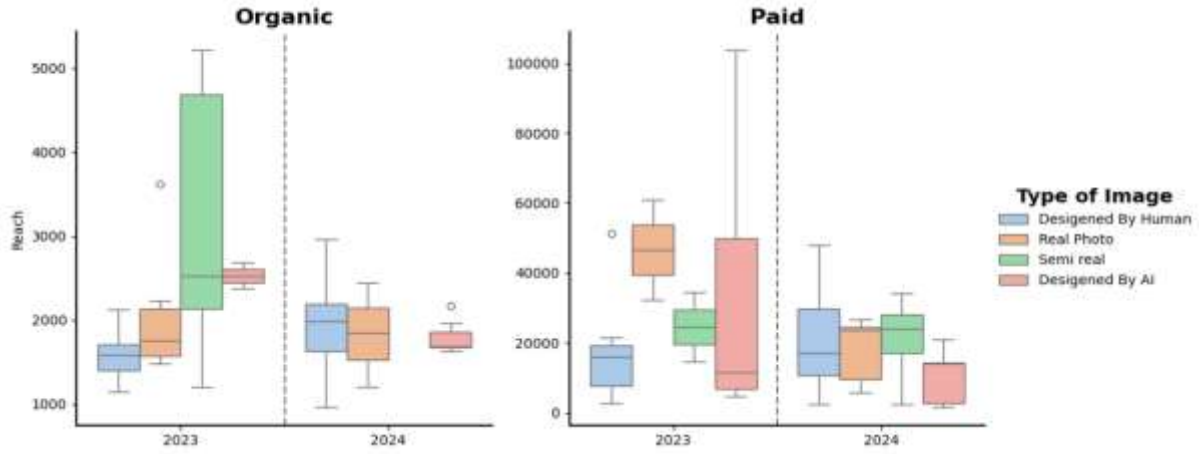

Figure (1)

In - Figure (1) - chart illustrates a comparison of reach across four types of images (Human-Designed, Real Photos, Semi-Realistic, and AI-Designed) within organic and paid campaigns for the years 2023 and 2024.

In organic campaigns for 2023, semi-realistic images (green) achieved the highest reach compared to the other image types.

In 2024, the differences between image types became less pronounced, with reach values becoming more comparable.

In paid campaigns, there were no significant differences between image types, suggesting that advertising targeting may have played a greater role in achieving reach, regardless of image type.

The dashed line separates the data for 2023 and 2024, and the Y-axis scale differs between the organic and paid campaign charts.

Figure (2), illustrates a comparison of interaction rates among four types of images (Human-Designed, Real Photos, Semi-Realistic, and AI-Designed) in organic and paid campaigns for the years 2023 and 2024.

In organic campaigns of 2023, semi-realistic images (green) recorded the highest interaction rate, with a statistically significant difference compared to human-designed and real photos. The different letters indicate the presence of statistical differences among image types.

In 2024, no significant differences were observed between the image types, as interaction rates became more uniform.

In paid campaigns, no clear statistical differences were found among the image types, suggesting that advertising budget may have had a greater influence on interaction than the image type itself.

The dashed line separates the data for 2023 and 2024, and the Y-axis scale varies between the organic and paid campaigns, reflecting the differences in interaction range across the two categories.

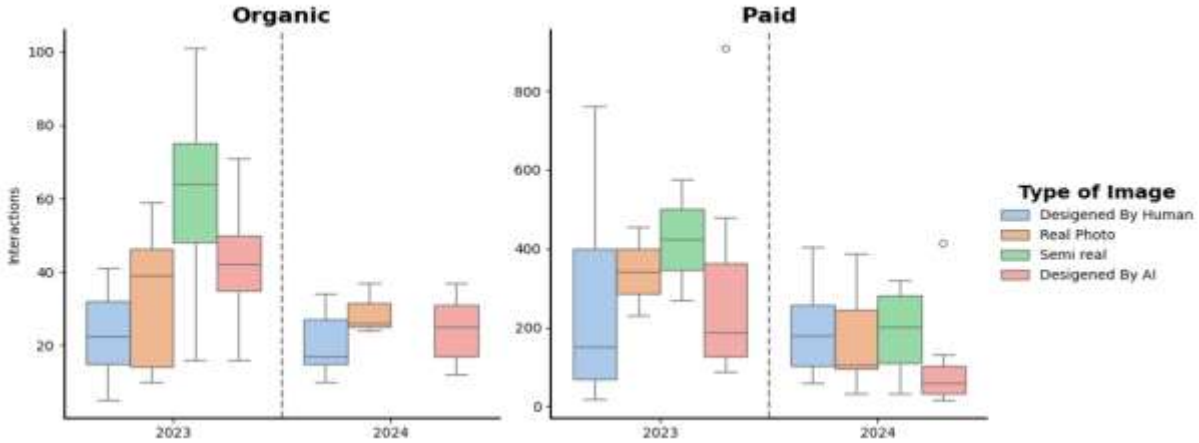

Figure (2)

In figure (3) shows a comparison of interaction rates (Inter%) across four image types (Human-Designed, Real Photos, Semi-Realistic, and AI-Designed) in organic and paid campaigns for the years 2023 and 2024.

In organic campaigns of 2023, semi-realistic and AI-generated images recorded higher interaction rates compared to the other image types.

In 2024, there were no significant differences between image types, as interaction rates became more aligned.

In paid campaigns of 2023, semi-realistic and AI-generated images also achieved the highest interaction rates, suggesting their potential positive impact on the effectiveness of paid advertising campaigns.

In 2024, the differences among all image types in paid campaigns narrowed, indicating that the influence of image type on interaction rate became less distinct.

The dashed line separates data from 2023 and 2024, and the Y-axis scale differs between organic and paid campaigns, reflecting differences in interaction dynamics across the two categories.

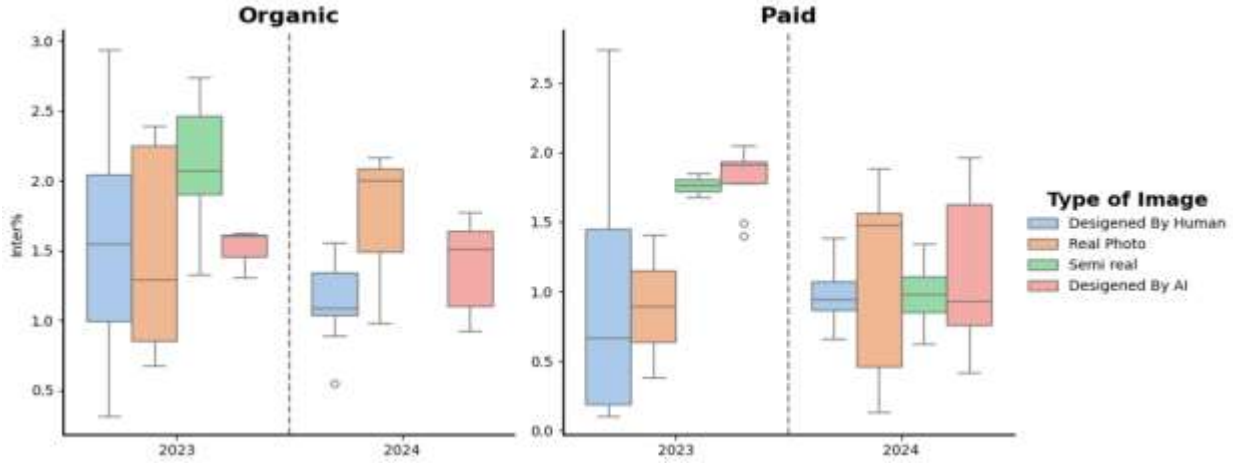

Figure (3)

10. Research Findings, Discussion, and Recommendations

(A) Research Findings

The study results indicate that semi-realistic images outperformed other types in organic campaigns during 2023, achieving the highest reach, interactions, and interaction rates compared to real photos and human-designed images. This superiority reflects the ability of semi-realistic visuals to attract users' attention and stimulate greater interaction, which aligns with Visual Appeal Theory, suggesting that innovative and attractive designs lead to more interactive responses.

On the other hand, the results of paid campaigns showed that the type of image had no significant effect on promotional performance metrics, as the reach, interactions, and interaction rates were similar across all image types. This suggests that ad targeting and other factors, such as campaign budget, may play a larger role than image quality in achieving visibility and engagement.

In 2024, no significant differences appeared

between the different image types in both organic and paid campaigns. This may indicate a saturated market with visual content or changes in digital platform strategies, such as Facebook algorithm modifications, which may affect reach and engagement regardless of image quality.

(B) Discussion

These results reflect several key trends that can help improve digital marketing strategies:

1. The Importance of Innovation in Organic Campaigns
   The success of semi-realistic images in 2023 organic campaigns indicates that innovative and visually appealing content achieves higher reach and interaction rates, confirming the need to design unique and creative visuals to attract the audience.
   This finding can be linked to Visual Information Processing Theory, as semi-realistic images provide unfamiliar yet realistic-enough designs to stimulate interaction.
2. Limited Influence of Image Type in Paid Campaigns
   The results confirm that paid ads rely more on targeting algorithms and selected audiences than on the type of image used.
   This may be because reach in paid campaigns is controlled by social media advertising systems, reducing the impact of creative elements on actual campaign performance.
   This explanation is supported by Media Gratification Theory, where users seek content that meets their needs rather than just visually attractive material.
3. Temporal Changes and Market Influence
   In 2024, the lack of significant differences between image types suggests possible changes in how users interact with visual content.
   This may be the result of improved quality across all image types over time, reducing the gaps between them.
   Social media platform algorithms may also directly influence content distribution, leading to more balanced results among the various image types.

(C) Recommendations Based on these findings, the study recommends:

1. Improving Organic Content Strategies
   Focus on creative and innovative designs, such as semi-realistic images, in organic campaigns, as they have proven to generate the highest interaction rates in non-paid environments.
   AI can be used to enhance the quality of these images while maintaining content originality to increase audience appeal.
2. Developing Paid Campaign Strategies
   Since image type was not a decisive factor in paid campaigns, it is essential to improve targeting strategies to ensure ads reach the most interested audiences.
   A/B testing is recommended to select the most impactful images for achieving marketing goals, rather than relying solely on one image type.
3. Studying Market Effects and Temporal Changes
   Further research is advised to understand why differences between image types diminished in 2024—whether due to market saturation or changes in platform algorithms.
   It is beneficial to analyze data from upcoming years to track future trends in audience response to visual content.
4. Exploring the Impact of Multimedia Content
   Since image type alone was not always the determining factor in paid campaigns, it is useful to study the effect of using diverse visual content (such as videos and animations) alongside images to determine its effectiveness in improving promotional performance.

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