BRAIN. Broad Research in Artificial Intelligence and Neuroscience
e-ISSN: 2067-3957 | p-ISSN: 2068-0473
Covered in: Web of Science (ESCI); EBSCO; JERIH PLUS (hkdir.no); IndexCopernicus; Google Scholar; SHERPA/RoMEO; ArticleReach Direct; WorldCat; CrossRef; Peeref; Bridge of Knowledge (mostwiedzy.pl); abcdindex.com; Editage; Ingenta Connect Publication; OALib; scite.ai; Scholar9; Scientific and Technical Information Portal; FID Move; ADVANCED SCIENCES INDEX (European Science Evaluation Center, neredataltics.org); ivySCI; exaly.com; Journal Selector Tool (letpub.com); Citefactor.org; fatcat!; ZDB catalogue; Catalogue SUDOC (abes.fr); OpenAlex; Wikidata; The ISSN Portal; Socolar; KVK-Volltitel (kit.edu)
2025, Volume 16, Issue 3, pages: 102-128
Submitted: April 16th, 2025 | *Accepted for publication:* August 4th, 2025

Adoption of AI in Digital Marketing: Comparing Gen Z and Gen Y through the Technology Acceptance Model

Adriana Manolică
Faculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iași, Romania.
manolica@uaic.ro
https://orcid.org/0000-0003-1724-1516

Olga Bucătaru
Faculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iași, Romania.
olga.bucataru.2001@gmail.com

Cristina Teodora Roman
Faculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iași, Romania.
throman@uaic.ro

Patricea Elena Bertea
Faculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iași, Romania.
patricea.bertea@gmail.com
https://orcid.org/0009-0002-4169-5673

Alexandra Raluca Jelea
Faculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iași, Romania.
alexandra.jelea@uaic.ro
https://orcid.org/0009-0001-9651-1475

Abstract: *The study aims to investigate the degree of acceptance of Artificial Intelligence Implications in Digital Marketing, from a consumer perspective. More specifically, the research proposed to examine the significant differences between Gen Z and Gen Y regarding the level of technology acceptance. The research follows the Technology Acceptance Model and aims to explore various aspects of consumer attitudes towards AI applications in digital marketing. The main objectives include examining the cognitive and emotional components of consumer attitudes, assessing perceived usefulness and perceived ease of use, analysing the intention to use AI applications, and evaluating the extent of actual usage. The study hypothesises that perceived usefulness positively influences the adoption of AI applications, while generational differences impact both attitude and intention to use AI technologies. The research has hypotheses which were firstly formulated and subsequently tested through quantitative research, using questionnaires to collect data from Gen Z and Gen Y respondents. The findings reveal that Gen Z demonstrates higher familiarity and willingness to engage with AI applications, while Gen Y expresses more concerns about data privacy and reliability. Additionally, the results confirm that perceived usefulness significantly influences the intention to adopt AI applications, whereas perceived ease of use does not show a notable difference between the generations.*

Keywords: *artificial intelligence; digital marketing; generation Z; generation Y; TAM.*

How to cite: Manolică, A., Bucătaru, O., Roman, C. T., Bertea, P. E., & Jelea, A. R. (2025). Adoption of AI in Digital Marketing: Comparing Gen Z and Gen Y through the Technology Acceptance Model. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, *16*(3), 102-128.
https://doi.org/10.70594/brain/16.3/9

©2025 Published by EduSoft Publishing. This is an open-access article under the CC BY-NC-ND license

1. Impact of Artificial Intelligence (AI) within Digital Marketing

The future of Digital Marketing is increasingly characterised by the integration of Artificial Intelligence implications. In this digital era, the implementation of Artificial Intelligence provides a significant competitive advantage to companies that employ automation in their marketing strategies (Columbus, 2019). Therefore, understanding generational differences in the acceptance and use of the Artificial Intelligence implications benefits companies to develop their marketing strategies efficiently. Gen Z and Gen Y are known as the generations with the highest purchasing power. Understanding their behaviours and attitudes leads to increased brand loyalty and customer satisfaction.

Artificial Intelligence (AI) has a significant positive influence on digital marketing. AI-based platforms, such as Microsoft Cognitive Services, Amazon Lex, and Google Assistant, improve businesses' market forecasting and efficiency while improving customer connection across marketing channels (Vlačić et al., 2021). Furthermore, the digital environment facilitates the collection of data from consumers. AI-powered marketing provides incomparable measurability when compared to traditional marketing (Miklosik et al., 2019). Based on the findings of the qualitative research conducted by Ribeiro & Reis (2020), the future of marketing will be strongly impacted by AI, and even small enterprises can employ it. As a result, businesses that are presently using non-AI-based marketing techniques need to be adaptable to change.

In this digital era, the implementation of Artificial Intelligence provides a significant competitive advantage to companies that utilise it in their marketing strategies. According to a study conducted by Forbes Insights (Columbus, 2019), AI enables marketers to increase revenues by 52%, improve customer retention by 51%, and develop successful new products (49%). These statistics demonstrate clearly the benefits of integrating technologies on the competitive advantage of a company. Taking into consideration the evolving global market, having a competitive advantage is a "must" for every business.

The followingt figure illustrates the impact of Artificial Intelligence in Digital Marketing, providing a higher understanding of its effectiveness:

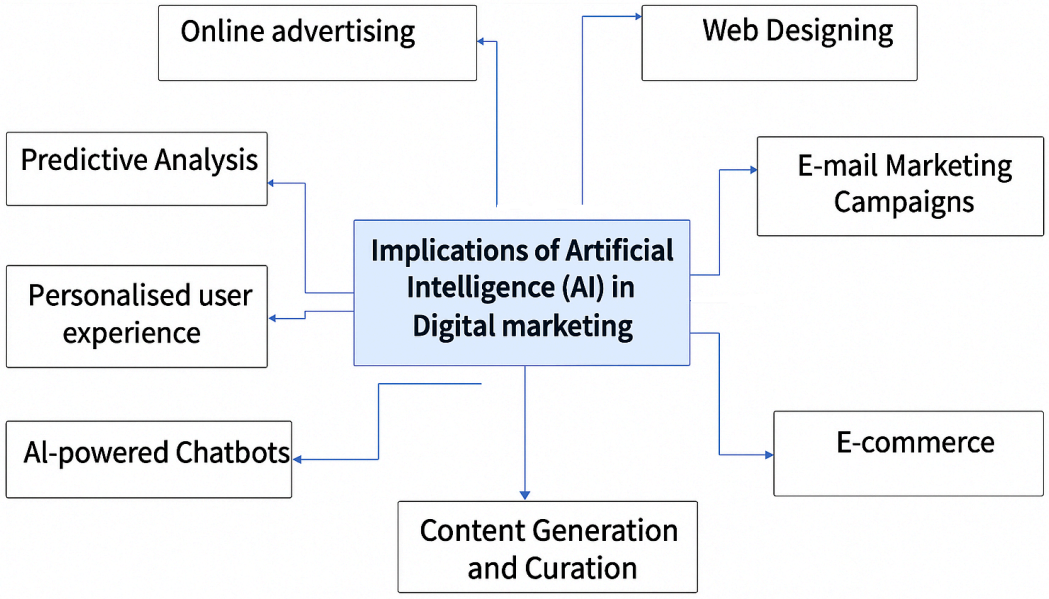


Figure 1. Implications of Artificial Intelligence (AI) in Digital Marketing (Battina, 2017)

As Artificial Intelligence (AI) has a significant positive impact on digital marketing techniques, online advertising has become an essential area that has undergone substantial evolution

in recent years. Traditional advertising methods are more expensive, time-consuming, and insight-limited. In the digital age, big data resulted in readily available and personalised consumer data. Artificial Intelligence has established a significant role in online advertising. To deeply investigate behavioural and lifestyle trajectories of online consumers, brand agencies utilise AI and Machine Learning, optimising their marketing strategies (Kumar and Gupta, 2016; cited in Tahoun & Taher, 2021).

AI-powered chatbots represent another effective application of AI in the field of digital marketing. A chatbot, also known as a virtual assistant, is an AI-driven software that facilitates communication between the human and the bot (Gupta, Hathwar, & Vijayakumar, 2020). The key advantage of this implication is the increase in companies' effectiveness, improving hardware and software resources. In this way, the amount of data that can be collected from the communication with customers is maximised (Andrade & Tumelero, 2022), allowing companies to predict consumer behaviour. Chatbots are widely used to offer rapid and precise answers to FAQs (Frequently Asked Questions), improving customer service and experience. Studies have demonstrated that 45.8% of people prefer messaging instead of email when contacting companies, and 49.5% chose this mode of communication over the telephone. Furthermore, 51% of people expect 24/7 customer service, and organisations that don't manage to accomplish it have the risk of losing customers to competitors who are faster and more accessible (Hawkins, 2019). Popular chatbots, such as Amazon Lex, Google Assistant, and Facebook Messenger Bot, can benefit businesses by increasing revenues, reaching a younger demographic, and offering customer support during non-business hours (Bucuy, 2023; Tucker, 2017).

Furthermore, ChatGPT, a recently launched AI-powered chatbot, holds a strong potential for revolutionising Digital Marketing. The chatbot is perceived as a useful tool, generating texts and replicating the human writing style. One of the main advantages of this implication in the digital market is that it is able to improve the relations between businesses and customers. The AI-powered chatbot creates engaging user experiences, offering relevant suggestions and information (Mutoffar et al., 2023). In addition, this software can analyse the target audience and create personalised content, reducing the efforts of marketers. Furthermore, it can suggest interactive titles, opening words, and structure customer reviews (Haleem, Javaid, & Singh, 2022). The increased benefits of its perceived usefulness led to an enormous increase in the number of users of ChatGPT software.

The next figure presents the growth rate of ChatGPT users from its launch:

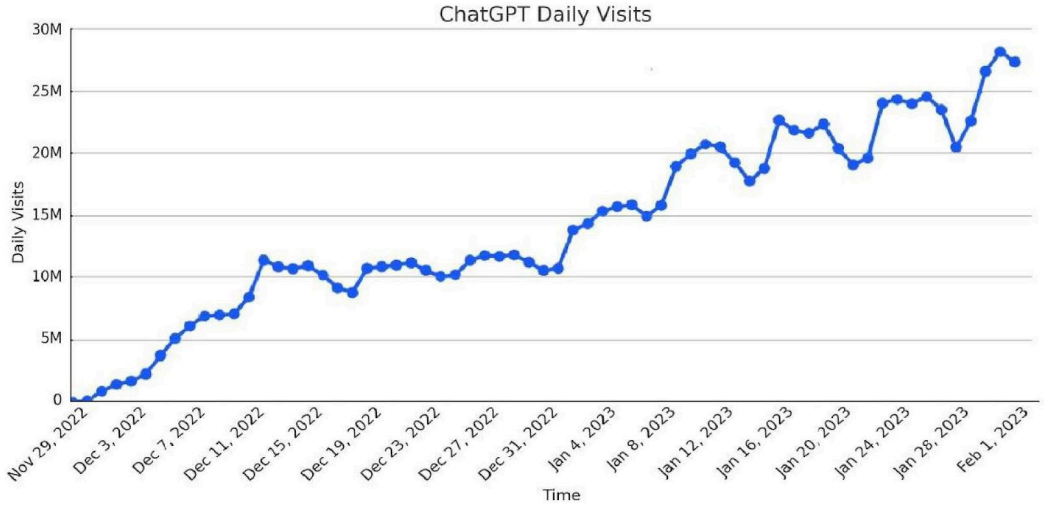


Figure 2. ChatGPT growth rate (Carr, 2023)

Furthermore, consumers have a positive attitude towards an Artificial Intelligence integration in Digital Marketing, if it can increase their productivity. As an example, AI-powered chatbots are perceived as tools that increase the efficiency of consumers. According to a study

conducted by Brandtzaeg & Følstad (2017), people state that their main factor in influencing the decision to interact with chatbots is increasing their productivity. In addition, consumers enjoy the rapidity, accessibility, and ease of interacting with chatbots. Obtaining relevant information and assistance is another key element in the motivation factors for using chatbots. It is important to note that most consumers prefer interacting with chatbots in comparison with human assistance, as it helps them reduce their time consumption. Fokina (2023) states that around 90% of consumer problems are solved in ten texts or fewer with a chatbot, thereby enhancing the user experience. Furthermore, users usually interact with the technology in circumstances such as verifying the status of the order, looking for products, obtaining promotions and deals information, placing an order, scheduling a meeting, giving contact information, making payments, and processing returns.

In addition, voice search assistants represent another Artificial Intelligence implication in Digital Marketing that has led to increased consumer productivity. Uță (2019) emphasises that consumers use voice search assistants in order to facilitate multitasking, to obtain information in a faster and more efficient way, and experience more natural, human-like interactions. Furthermore, people who frequently use voice-activated speakers state that they are willing to make purchases through these technologies. According to a study conducted by PWC (2018), involving participants aged between the ages of 18-64 years, half of the representative consumers use voice search assistance to buy or order a product. The most frequent products or services purchased through the technology are: food (takeout), groceries, books, homecare items, and transportation. Furthermore, the consumers state that voice search assistants are useful in circumstances when manual input is impractical, such as while cooking, multitasking, or watching TV.

Customers' increasing demand for more complex services with fewer efforts requires the implementation of voice search optimisation in digital marketing (Nyagadza, 2020). Voice search optimisation significantly impacts search engine optimisation rankings through voice-based query-results. It includes improving services, location data, and information about the business and content. In addition, voice search assistants benefit e-commerce, as well. Previous findings show that the probability of customers taking an offer from an interaction with a voice assistant is higher, as this application provides a more personal and natural connection. Furthermore, voice shopping assistants collect data regarding the characteristics of the consumers and help companies to predict behaviours, and to offer personalised recommendations. Additional notable benefits that this implication offers to businesses are: brand recognition, more visitors to webpages, and improved click-through performance (Donepudi, 2014). According to Web CEO (2019), voice searches constitute 10% of Google's daily search volume, emphasising the high importance of the implementation of Artificial Intelligence in voice search optimisation. Advertisers are investing substantial resources to local language artificial intelligence voice search, such as Google Assistant, Alexa, and Cortana. These tools facilitate the evaluation and gathering of data.

In addition to the previously mentioned implications, Artificial Intelligence significantly improves email marketing campaigns, both from a marketer and consumer perspective. A primary objective in email marketing is to personalise content broadly, and AI facilitates this process. Based on the user's previous interactions, which include reading the articles, items on wish lists, or the most time spent on a page, Artificial Intelligence leverages data to generate personalised email content for every subscriber of the company. It is noteworthy that a user who regularly visits product pages may receive different email campaigns compared to a user who is more interested in the content (Murgai, 2018). Analysing consumer data, Machine Learning can also determine the best times and days of the week to send emails, the recommended frequency, and which email headers and themes provide the most clicks (Mustak et al., 2021). Overall, the implications of technologies in email marketing campaigns can lead to enhanced personalisation, improved user engagement, and, as a result, to a more efficient use of marketing techniques.

Table 1. AI Applications in Digital Marketing: Generational Differences in Usage and Perception

AI Application	Primary Function	Gen Z Response	Gen Y Response	Cognitive Mechanism
Chatbots	Instant Q&A and assistance	High adoption, seen as convenient	More cautious, less trusting	Reward feedback loop, perceived control
Voice Assistants	Hands-free search, ordering	Less frequent use; multitasking benefit	Higher usage for productivity	Cognitive ease, auditory processing, habitual behaviour
Personalised Recommendations	Product discovery, relevance	Perceived as engaging and helpful	Seen as useful but occasionally intrusive	Attention capture, decision fatigue reduction
Email Automation	Timed, tailored communication	Passive interaction	Acceptable if unobtrusive	Helpful timing and gentle reminders that support memory and encourage action

Source: own development from the following articles: (Lee, Tan, & Goh, 2025), (Ding, Chen, & Hu, 2025), (Fusion & Fusion, 2025), (Gen Z Leads in Gen AI's Widespread Adoption, 2024)

Recent studies in cognitive neuroscience and artificial intelligence (AI) have created a robust foundation for understanding how intelligent systems are shaped by human cognitive behaviours. Scholars such as Hassabis et al. (2017) and Lake et al. (2017) emphasise that AI architectures, which refer to deep learning systems, like convolutional neural networks (CNNs) and recurrent neural networks (RNNs), are inspired by the hierarchical and temporal processing mechanisms of the human brain. These AI systems are increasingly embedded in digital marketing through applications such as personalised recommendation engines, AI-powered chatbots, and voice search assistants, each reflecting neural-like structures that simulate memory, reward prediction, and pattern recognition (LeCun, Bengio, & Hinton, 2015; Friston, 2010). Cognitive neuroscience has demonstrated that human decision-making is governed by the reward-based dopaminergic system, a principle now replicated in reinforcement learning algorithms, where agents learn through prediction errors. This is a model that informs how users engage with adaptive marketing content (Schultz, 2015). In this context, Generation Z, as digital natives, exhibits higher familiarity and cognitive ease when interacting with AI-driven platforms, supporting the claim that early digital exposure enhances neural adaptability and user trust (Prensky, 2001; Berkup, 2014). Conversely, Generation Y demonstrates more cautious engagement, often driven by stronger concerns around data privacy and algorithmic reliability. These concerns align with cognitive risk evaluation mechanisms in adult prefrontal cortex development (Tversky & Kahneman, 1974; Slovic, 1987). Thus, the integration of neurocognitive models into AI design not only modulates consumer interaction but also highlights how digital marketing strategies must evolve to align with the psychological and neurological profiles of generations.

E-commerce is another digital marketing field that has been evolving significantly with the implementation and development of Artificial Intelligence. With the support of multimodal data streams, the new technologies can evaluate the company's objectives and recommend the most suitable customer acquisition strategies. As an example, Machine Learning can be used to optimise prices and increase a company's revenues. Furthermore, these technologies benefit companies by developing customer recommendations and market basket evaluation. Artificial Intelligence technologies benefit e-commerce businesses with effective management of inventory, too. Analytical research based on past sales is elaborated by AI software, and, as a result, a correlation between the present and future sales is made. So, companies have the advantage of tracking the inventory well and forecasting sales effectively (Pallathadka et al., 2006). The pandemic crisis resulted in a surge in the number of online purchases with sustained post-pandemic impact. According to a study conducted by Influencer Marketing Hub (2022), the leaders in E-commerce,

including Amazon, Walmart, eBay, and Etsy, had a 51% increase in their online sales after the pandemic.

The evolution of Artificial Intelligence in digital marketing has completely changed the interaction paradigm between companies and their customers. Artificial Intelligence enables marketers to share information with their customers in a more efficient way, increasing their satisfaction as a result. According to a study conducted by "Customer Data Platform Resource" (2022), 81% of consumers have a positive attitude towards the implementation of Artificial Intelligence in offering personalised recommendations.

Furthermore, the majority of consumers prefer recommendations that are based on their past behaviours. Such elements include their search history, past interactions or ratings, and previous purchases of the specific products or services. Further evidence of enhanced customer experience, through the implementation of Artificial Intelligence in Digital Marketing, is the fact that 51% of the consumers affirmed that AI is improving their overall shopping experiences (Onorato, 2022). Furthermore, the increased satisfaction of consumers is linked to several factors. Firstly, they prefer personalised interfaces that are intuitivelyy navigable and to require minimal effort. Another key element is the relevance of context-aware product or service suggestions. Consumers have a positive attitude towards receiving recommendations that align with their needs and preferences. Another important aspect is that offering target promotions and following up with the consumer post purchase led to a higher positive attitude towards accepting personalised recommendations. In addition, consumers prefer a more personal connection, affirming that personally addressed messages and active engagement for the initial purchase experience are very important (Arora et al., 2021).

Even though Artificial Intelligence has a high potential in revolutionising Digital Marketing, data privacy remains a noticeable concern. Nowadays, it is extremely challenging for marketers to use collected data effectively and to respect people's right to privacy at the same time. In online shopping, customers desire to be informed about the use of their private data. Consumers want to know what personal information is shared about them, who collects the data and what is the purpose of using it (Wang, Lee, & Wang, 1998).

According to statistics, 82% perceive data collection as a significant ethical concern associated with AI in Digital Marketing, to some extent (Onorato, 2022). Furthermore, Aytekin et al. (2021) state that consumers perceive the violation of their privacy as one of the highest risks of Artificial Intelligence in E-commerce. Consumers believe that there are not sufficient measures taken to ensure data security, and they are afraid that fraudsters could hack their accounts. In addition, they are concerned that their personal data can be used against their will. In consequence, companies must enhance consumer trust in order to improve their confidence regarding the safe use of their personal data.

Furthermore, the impact of Artificial Intelligence applications in digital marketing varies among different demographic variables, including age. When it comes to online shopping, Gen Y prioritises rational decision-making. In comparison, Gen Z seeks pleasure, obtaining knowledge, investigation, and promotions. Another distinctive trait of Gen Z is the fact that they care considerably about product feedback and online ratings. It is important to mention that representatives of Gen Y employ technologies purposely. On the other hand, Gen Z exhibits greater emotional engagement with the integration of technology (Agrawal, 2022).

2. The Conceptual Model

While traditional technology adoption models such as the Technology Acceptance Model (TAM) (Davis, 1989) emphasise perceived usefulness and ease of use, emerging interdisciplinary perspectives have begun to explore the cognitive dimensions that underpin how individuals perceive and interact with technological innovations. This broader interpretive framework is often referred to as cognitive acceptance theory which is a term used to describe how fundamental mental processes influence an individual's openness, judgment, and decision to adopt or reject a given technology.

At its core, cognitive acceptance theory is rooted in cognitive psychology, which investigates mechanisms such as attention, perception, memory, trust formation, and the decision-making process. These processes are particularly relevant in the context of digital environments, where users are constantly exposed to complex stimuli, automated systems, and algorithmically generated interactions. Unlike purely behavioural models, cognitive acceptance theory emphasises how individuals process information about a technology, and how they assess its trustworthiness, interpret its outcomes, and assign value or risk to its use.

A useful way to operationalise these cognitive mechanisms is through Dual Process Theory (Kahneman, 2011), which posits that individuals make decisions through two mental systems: System 1, which is fast, automatic, and intuitive, and System 2, which is slow, reflective, and analytical. In the context of AI-powered tools in digital marketing, Generation Z often engages with technology through system 1 processes, responding quickly to well-designed interfaces, instant personalisation, and seamless integration with their digital habits. By contrast, Generation Y may activate system 2 thinking, evaluating the implications of data use, reliability, or long-term engagement more cautiously.

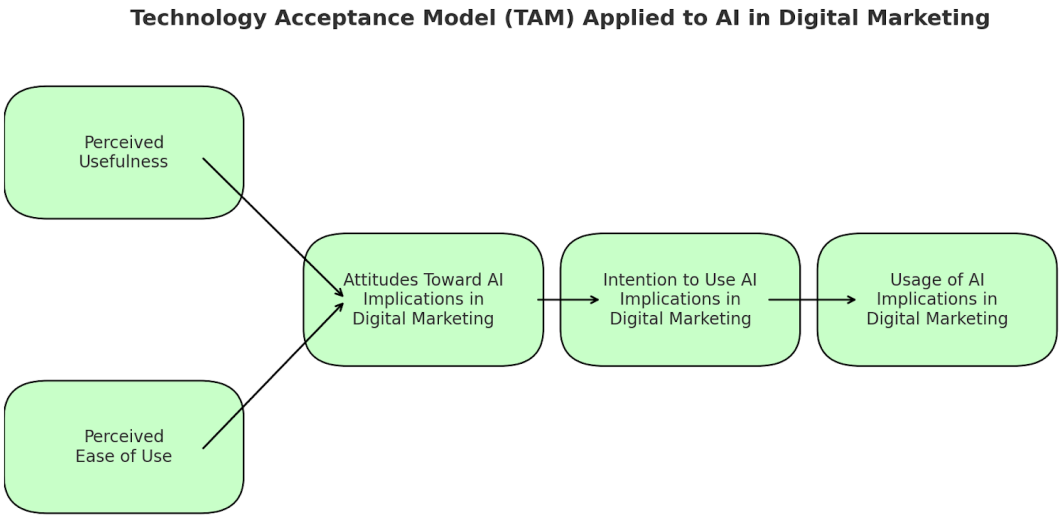
Complementing this, the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986) introduces the concepts of central and peripheral routes to persuasion, which further explain how users develop evaluative judgements towards technologies. Central processing involves high cognitive involvement with the content, as often observed in Gen Y's critical evaluation of AI tools. Peripheral processing, on the other hand, is more heuristic and superficial, an approach more commonly associated with Gen Z's rapid adoption of technology based on visual appeal, convenience, or social influence. The application of ELM in the context of AI acceptance offers a refined insight of how individuals cognitively justify their trust in algorithmic decision-making or chatbot interactions.

Trust formation is another central psychological construct within cognitive acceptance theory. Studies by Gefen & Keil (1998) and McKnight, Choudhury, & Kacmar (2002) emphasise that trust in technology is not solely behavioural, but emerges from cognitive evaluations of system reliability, transparency, and predictability. For Gen Y consumers, who experienced the transition from traditional to digital commerce, trust must often be earned through repeated, consistent system behaviour. Gen Z users, by contrast, may develop trust more rapidly if the technology exhibits social prompts, such as personalised language or peer validation.

In digital marketing contexts, AI systems such as recommendation engines, voice assistants, or chatbots trigger attention mechanisms by presenting users with adaptive, targeted content. Memory, such as reminding users of past purchases or wish-listed items, supports ongoing engagement and facilitates cognitive fluency, which is a state where interaction feels intuitive and mentally effortless (Alter & Oppenheimer, 2009).

These principles suggest that Gen Z may prefer AI tools that offer minimal cognitive load and high interaction fluidity, while Gen Y seeks systems that align with deliberate reasoning and perceived control.

The conceptual model for this research study is represented by the Technology of Acceptance Model (TAM) (Davis, 1989), which will be illustrated in the following figure. The conceptual model aligns with the aim of the research, specifically to investigate the degree of acceptance of the implementation of Artificial Intelligence in digital marketing, perceived by Generation Z and Generation Y.



Source: own computing, adapted from Davis (1989)

Figure 3. Conceptual Model, adapted from "The Technology Acceptance Model" (Davis, 1989)

The Technology Acceptance Model was created by Fred D. Davis in 1989, and it is widely regarded as one of the most significant research models in investigations of the factors influencing the acceptance of technologies. It is used to forecast people's willingness to use and attitudes towards digital tools and information technologies. In recent years, researchers have shown growing interest in this model and started to implement it across disciplines (Chen, Li, & Li, 2011). According to Legris, Ingham, & Collerette (2003), the Technology Acceptance Model has been demonstrated to be an efficient theoretical model, benefiting researchers with clear justifications related to people's attitudes towards technologies. Furthermore, after being repeatedly tested, the model was confirmed to lead to findings that are statistically trustworthy and of high quality (Legris, Ingham, & Collerette, 2003).

According to Davis (1989), perceived usefulness represents "the degree to which a person believes that using a particular system would enhance his or her job performance". Furthermore, the author relates the concept to increased productivity and effectiveness. According to Gefen & Keil (1998), Perceived Usefulness is correlated with improved quality of work and accelerated task completion. In accordance with the concepts presented by the authors, the study will further analyse how consumers perceive the usefulness of AI implementation in digital marketing, in delivering personalised and relevant experiences.

Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort". In addition, the technology should be transparent, comprehensible, and user-governable (Davis, 1989). According to the concept, the study will investigate how consumers experience the ease of use of Artificial Intelligence in digital marketing techniques, including chatbots, personalised recommendations, and voice searches.

Davis (1989) states that attitudes towards using technology are related to "the degree to which an individual evaluates and associates the target system with his or her job". A consumer's attitude towards adopting is shaped by evaluative affect, encompassing both positive and negative emotional responsive toward the behaviour (Ajzen & Fishbein, 2000; Shroff, Deneen, & Ng, 2011). Therefore, the study will investigate the attitudes and perceptions of the sample about the technology implementation in digital marketing. In addition, the study will investigate the factors that impact attitudes.

As a result, attitudes towards using technology are positively correlated with the intention to use and usage of technology. The study will, therefore, examine consumers' intention and actual use of AI-driven solutions in digital marketing, analysing factors that impact the intentions, including perceived ease of use, perceived usefulness, and external factors.

3. Methodology

Positivist objectivism is employed by the quantitative research in this study. According to Cooper & Schindler (2006), the philosophy of objectivism is strongly correlated with positivism. The philosophies argue that researchers express their perspective to assess society, employing objectivism instead of subjectivism. Therefore, the study aims to collect and analyse quantitative data objectively, by adopting the positivist objectivism philosophy. This will benefit the study to better comprehend the phenomenon and to validate the hypothesis developed from the literature and qualitative research findings.

The study employs a deductive reasoning approach. According to Saunders, Lewis, & Thornhill (2016), by adopting a deductive approach, the theoretical background is tested through data collection. Deductive Reasoning aims to develop specific hypotheses and afterward to collect practical evidence to confirm or invalidate these hypotheses. Therefore, the approach aligns with the aim of the study- to investigate the degree of acceptance of artificial intelligence applications in Digital Marketing, from a consumer perspective. The hypotheses of the research seek to determine whether there are significant differences between Generation Z and Generation Y in their degree of acceptance of Artificial Intelligence implications in Digital Marketing.

The study employs a stratified random sampling technique in order to investigate the differences between Generation Z and Generation Y. According to Kothari (2004), stratified random sampling is a technique that comprises the division of the population into several categories, according to an established criterion. A random sample is chosen from each subgroup to ensure that it is representative. The sampling technique will ensure that there will be selected representative samples from each generation group, providing a comparison between generations of the level of acceptance towards AI in Digital Marketing.

The population is represented by Gen Z and Gen Y consumers of AI applications in Digital Marketing. The research comprises a total sample size of 140 participants, of which 70 are Gen Z and 70 are Gen Y respondents. The balanced sample size benefits the study, as it allows for an equal comparison between the generations. The descriptive characteristics of the participants are presented in Table 1.

Table 2. Descriptive characteristics of the sample. Source: own computing

Variable	Category		Number of participants	Frequency (%)
Age	Gen Z	18-20	18	12.86%
		21-23	40	28.57%
		24-26	12	8.57%
	Gen Y	27-32	13	9.29%
		33-38	26	18.57%
		39-43	31	22.14%
Gender	Female		86	61.43%
	Male		53	37.86%
	Undisclosed		1	0.71%
Occupation	Employed		72	51.43%
	Student		61	43.57%
	Entrepreneur		6	4.29%
	Freelancer		1	0.71%
Nationality	Romanian		107	76.43%
	Moldovan		33	23.57%

The research analyses primary data, due to its reliability and accuracy in comparison with secondary sources. The study employs a questionnaire for the data collection tool, which includes the following elements extracted from the Technology Acceptance Model (Davis, 1998): perceived usefulness, perceived ease of use, attitude (including cognitive and emotional components), intention to use, and actual usage of Artificial Intelligence implications in Digital Marketing. The questionnaires were distributed to the participants in digital format, through the platform Google Forms.

Reliability and validity are the criteria for quality in Quantitative Research. According to Saunders, Lewis, & Thornhill (2016), the validity of the research is achieved when the study measures what it intends to measure. Therefore, the study accurately captures and measures the concepts related to the acceptance of artificial intelligence in digital marketing, in alignment with the Technology Acceptance Model (Davis, 1998). Furthermore, the reliability shows that consistent findings were obtained in the study that can be replicated by other researchers.

Throughout the data collection process, all the provisions of the General Data Protection Regulation (GDPR, 2018) were respected. Firstly, the confidentiality and anonymity of the respondents were respected, with clear explanations of these criteria provided at the beginning of the questionnaires. Secondly, in terms of transparency, the respondents were informed of the purpose of the research and where all the data would be collected. Additionally, particular attention was paid to the emotional well-being of the respondents. (GDPR, 2018).

4. Results

The data analysis of the quantitative research will begin by utilising graphs to visually represent the differences between Generation Z and Generation Y in their acceptance of AI appplications in digital marketing. Therefore, independent t-tests will be utilised to analyse if there is a significant difference between these generations. Additionally, correlation coefficients will be calculated and tested to examine the potential associations between perceived usefulness and actual usage, as well as perceived ease of use and actual usage of AI in digital marketing implications. The results interpretation is divided into the objectives set. The hypotheses are addressed within the discussion of each corresponding objective. In addition to p-values, Cohen's d was calculated for each t-test to assess the practical significance of observed differences. Where applicable, 95% confidence intervals were also reported to support interpretation.

O1: To examine whether a difference between Gen Z and Gen Y in the cognitive component of the attitude towards using Artificial Intelligence (AI) implications in digital marketing.

RQ11: How do partcipants understand the concept "Artificial Intelligence"?

Before proceeding with the interpretation of the results, it is important to clarify that any unnumbered segments in the upcoming figures represent a value of one (1). These labels were omitted to avoid potential misinterpretation or visual distortion of the charts.

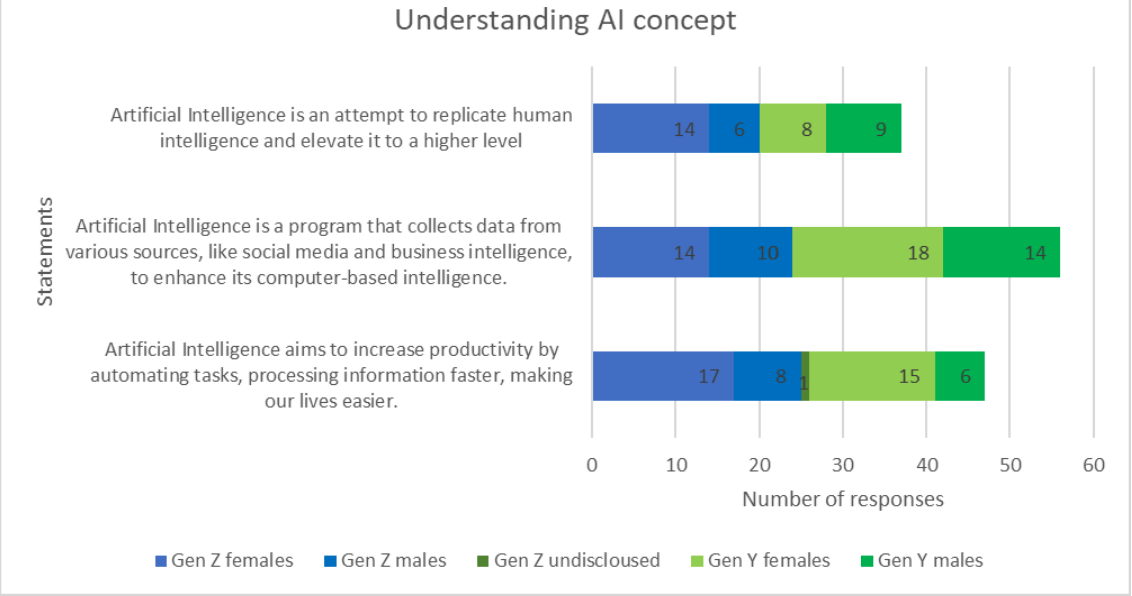


Figure 4. Questionnaire findings. Understanding the concept "Artificial Intelligence"; Source: own computing

The first research question reveals that 40% of respondents defined artificial intelligence as "a program that collects data from various sources to enhance its intelligence." This definition was most selected by 32 Gen Y and 24 Gen Z individuals, with Gen Y showing a stronger awareness of data collection (45.71% of Gen Y). Gen Y women (43.9%) and men (48.27%) were more concerned about data collection than Gen Z women (31.11%) and men (41.66%).

The second most selected definition, with 34% of responses, described AI as a program for enhancing productivity. This was favoured by 26 Gen Z and 21 Gen Y individuals, with Gen Z showing a greater awareness of AI's benefits (37.14%). Gen Z women (37.77%) understood AI benefits more than Gen Y women (36.58%), and similarly, Gen Z men (33.33%) were more aware than Gen Y men (20.68%). Women showed a higher understanding of AI benefits than men.

The least chosen definition linked AI to replicating human intelligence, selected by 26% of respondents. Of this, 28.57% were Gen Z and 24.28% were Gen Y. Gen Z females (31.11%) showed more understanding than Gen Y females (19.51%), while Gen Y men (31.03%) were more inclined than Gen Z men (25%) to select this definition.

RQ12: How do consumers understand the concept of "digital marketing"?

The following figure presents the data findings for the second research question:

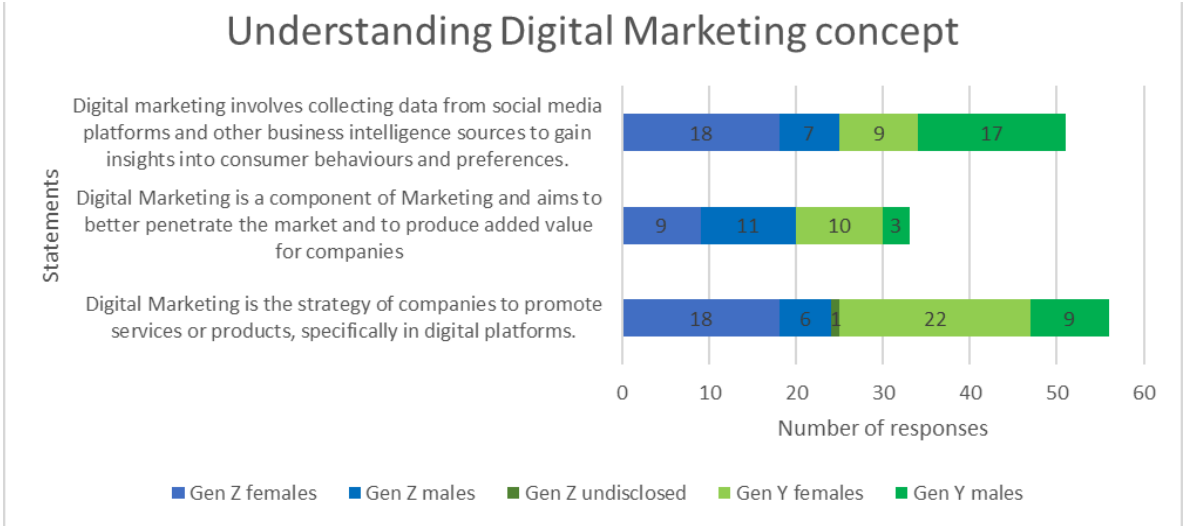


Figure 5. Questionnaire findings. Understanding the concept "Digital Marketing"; Source: own computing

The majority of the respondents, corresponding to 40% of respondents defined Digital Marketing as "the strategy of companies to promote products or services on digital platforms." This definition was selected by 31 Gen Y (44.28%) and 25 Gen Z (35.71%) individuals (together with the Gen Z respondents which did not want to disclose their gender information). Gen Y women (53.65%) showed more awareness of digital marketing functions compared to Gen Z women (40%), and Gen Y men (31%) were more aware than Gen Z men (25%).

The second most chosen definition emphasised "data collection" in digital marketing, selected by 36% of the sample. Of this, 26 Gen Y (37.14%) and 25 Gen Z (35.71%) chose it. Gen Y men (58.62%) showed more awareness of data collection than Gen Z men (29.16%), while Gen Z women (40%) were more aware than Gen Y women (21.95%).

The least chosen definition, linking digital marketing to market penetration and added value, was selected by 24% of the respondents. Among them, 13 Gen Y (18.57%) and 20 Gen Z (28.57%) emphasised its positive impact. Gen Z men (45.83%) showed greater awareness than Gen Y men (10.34%), while Gen Y women (24.39%) were more aware than Gen Z women (20%).

RQ13: Which AI applications in digital marketing are participants familiar with?

The following figure presents the data findings for the second research question:

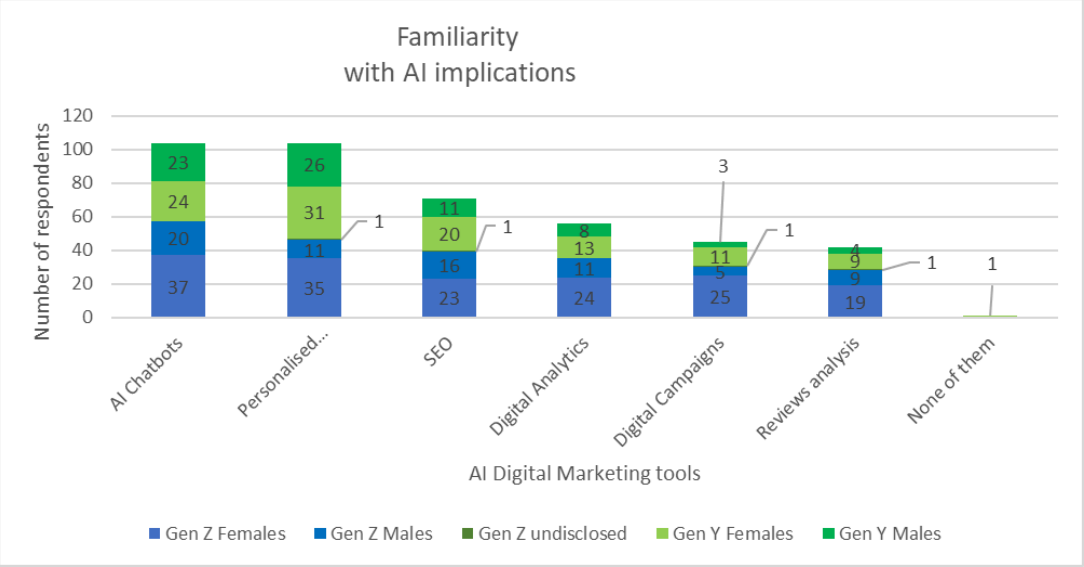


Figure 6. Questionnaire findings. Familiarity with AI in Digital Marketing"; Source: own computing

AI-powered chatbots represent the implication of artificial intelligence in digital marketing that participants report the highest familiarity with (selected by 104 respondents, representing 24.82% of total responses). On the other hand, the lowest number of consumers are familiar with Product Review Analysis (selected by 42 respondents, representing 9.92% of total responses).

The findings show that Gen Z women are most familiar with the implications (163 responses, representing 38.53% of total responses). On the other hand, Gen Y women's responses account for 25.76% of the total (109 out of 423). However, Gen Y males are more familiar with the implications (75 responses, representing 17.77% of the total) than Gen Z males (72 responses, representing 17.02% of the total).

Based on data findings, overall, Gen Z is more familiar with the implications, with the responses accounting for 56.65% (239 out of 423 total selected options). Therefore, the only participant who reported complete unfamiliarity with all listed applications is a Gen Y representative.

The fact that just one person from the whole sample stated that he is not familiar with any of the implications, and the majority of respondents selected more options, demonstrates a high overall familiarity with artificial intelligence implications in digital marketing.

O2: To analyse if there is a difference between Gen Z and Gen Y in the emotional component of the attitude towards using artificial intelligence (AI) appplications in digital marketing.

RQ21: What are consumers' feelings regarding the use of artificial intelligence (AI) implications in digital marketing?

H0: There is no significant difference in the emotional component of the respondents' attitude towards using AI implications in digital marketing between Gen Z and Gen Y. ($\mu1=\mu2$)

Ha: There is a significant difference in the emotional component of the respondents' attitude towards using AI implications in digital marketing between Gen Z and Gen Y. ($\mu1\neq\mu2$)

(Based on qualitative research results, Euromonitor International (2022), The Atlantic (2019))

The next table presents mean ratings given by Gen Z and Gen Y respondents on a scale of 1-5 to the following statements related to the emotional component of the attitude towards using artificial intelligence (AI) implications in digital marketing:

Table 3. Questionnaire results + statistical analysis results (second objective). Source: own computing

	Gen Z	Gen Y	P-value	Decision
I feel that AI in digital marketing makes my interactions more efficient and convenient.	3.90	3.74	0.17	P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.
I feel that AI in digital marketing provides me with a more enjoyable and interactive user experience.	3.97	3.67	**0.038***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
I feel that AI in digital marketing enhances my level of satisfaction with the products or services I receive.	3.56	3.31	0.08	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
I feel concerned about the potential impact of AI in digital marketing on employment opportunities.	3.47	3.04	**0.021***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
I am uncomfortable with sharing my personal information because I have concerns about how AI is used in digital marketing.	3.03	3.37	**0.046***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
I feel skeptical about the reliability of data insights generated by AI in digital marketing.	3.01	3.34	0.065	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
I feel that AI interactions in digital marketing can be impersonal and less engaging.	3.20	3.19	0.47	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
I feel that society's increasing dependence on AI in digital marketing is a cause for concern.	2.81	2.91	0.08	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.

The study identifies generational differences in the affective attitudes towards AI's role in digital marketing. A statistical analysis using t-tests further explored these differences, revealing variations between generations. A significant difference was found between Gen Z and Gen Y in usability of AI, where Cohen's d of 0.541, indicating a small-to-moderate effect size. The key differences were found in responses to statements like: "AI in digital marketing provides a more enjoyable and interactive user experience" (p=0.038), "AI's impact on employment concerns me," (p=0.021), and "I am uncomfortable sharing personal information due to AI in digital marketing." (p=0.046). Although the p-values approach the conventional threshold of 0.05, they still show the existence of some differences.

Overall, the study concludes that generations differ in their perceived user experience, concerns about unemployment, and privacy worries.

Furthermore, the research aims to analyse whether there is a significant overall difference between Gen Z and Gen Y, using a t-test that comprises an analysis of all the statements:

Table 4. Statistical analysis t-test results. Source: own computing

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	3.3375	3.35
Variance	0.37787591	0.23600264
Observations	70	70
Hypothesised Mean Difference	0	
df	131	
t Stat	-0.1334805	
P(T<=t) one-tail	0.44700911	
t Critical one-tail	1.65656865	
P(T<=t) two-tail	0.89401822	
t Critical two-tail	1.97823854	

According to the Independent t-test, the mean value for Gen Z was 3.3375 and for Gen Y=3.35. Furthermore, the p-value > 0.05, indicating that the null hypothesis (H_0) cannot be rejected. Therefore, there is no overall significant difference between Gen Z and Gen Y.

O23: To examine whether a significant difference exists between Generation Z and Generation Y in the perceived usefulness of artificial intelligence (AI) applications in digital marketing.

RQ23: **How do consumers perceive the usefulness of artificial intelligence (AI) applications in digital marketing?**

H_0: There is no significant difference in the perceived usefulness of using AI applications in digital marketing between Gen Z and Gen Y. ($\mu 1 = \mu 2\ \mu 1 = \mu 2$)

H_a: There is a significant difference in the perceived usefulness of using AI implications in digital marketing between Gen Z and Gen Y. ($\mu 1 \neq \mu 2\ \mu 1 \neq \mu 2$)

(Based on qualitative research results, conducted by Gorynski (2023), Selig (2023))

The next table presents mean ratings given by Gen Z and Gen Y respondents on a scale of 1-5 to the following statements related to the perceived usefulness of using artificial intelligence (AI) implications in digital marketing:

Table 5. Questionnaire results + statistical analysis (third objective). Source: own computing

	Gen Z	Gen Y	P-value	Decision
Personalised recommendations save me time.	3.97	3.60	**0.042***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
Personalised recommendations provide consistent information.	3.80	3.43	0.06	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
Personalised recommendations help me discover new products and services.	4.23	3.74	**0.004***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
I feel actively engaged with personalised recommendations.	3.67	3.16	**0.006***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**

Personalised recommendations enhance my overall shopping experience.	3.81	3.13	**0.003***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
Interacting with chatbots saves me time when I need assistance or information.	3.71	3.74	0.65	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
Chatbots help me to quickly solve the problems or issues I encounter.	3.47	3.34	0.54	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
Chatbots provide consistent and reliable information.	3.44	3.37	0.69	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
I believe that voice search assistants reduce my time consumption of inserting everything manually.	3.64	3.86	0.32	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
I believe that voice search assistants are useful, when you are not able to type.	4.39	4.34	0.39	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.

The study reveals generational differences in the perceived usefulness of AI in digital marketing. A t-test analysis was conducted to explore these differences and confirm their significance. A significant difference was found between Gen Z and Gen Y in perceived usefulness, with a Cohen's d of 0.34, indicating a small-to-moderate effect size. The statements such as: "Personalised recommendations save me time," (p=0.042), "Personalised recommendations help me discover new products," p=0.004, "I feel engaged with personalised recommendations," p = 0.006, and "Personalised recommendations enhance my shopping experience" p = 0.003. The study concludes that Gen Z finds personalised recommendations more useful than Gen Y in their purchasing experiences.

Furthermore, the research aims to analyse whether there is a significant overall difference between Gen Z and Gen Y, using a t-test that comprises an analysis of all the statements:

Table 6. Statistical analysis t-test results, Source: own computing

t-Test: Two-Sample Assuming Equal Variances

	Variable 1	*Variable 2*
Mean	3.81166667	3.57142857
Variance	0.46388164	0.53424431
Observations	70	70
Pooled Variance	0.49906297	
Hypothesised Mean Difference	0	
df	138	
t Stat	2.01186216	
P(T<=t) one-tail	0.02309059	
t Critical one-tail	1.65597038	
P(T<=t) two-tail	0.04618118	
t Critical two-tail	1.97730354	

According to the independent t-test assuming equal variances, the mean value for Gen Z is 3.8116 and for Gen Y=3.5714. Furthermore, the p-value < 0.05, indicating that the null hypothesis (H_0) is rejected in favour of the alternative hypothesis (H_a). Therefore, there is an overall significant difference between Gen Z and Gen Y.

O24: To examine whether a significant difference exists between Generation Z and Generation Y in the perceived ease of use of artificial intelligence (AI) applications in digital marketing.

RQ241: How do consumers perceive the ease of use of artificial intelligence (AI) applications in digital marketing?

H_0: There is no significant difference in the perceived ease of use towards using AI implications in digital marketing between Gen Z and Gen Y. ($\mu 1 = \mu 2\ \mu 1 = \mu 2$)

H_a: There is a significant difference in the perceived ease of use towards using AI implications in digital marketing between Gen Z and Gen Y. ($\mu 1 \neq \mu 2\ \mu 1 \neq \mu 2$)

(Based on qualitative research results, Berkup (2014))

The next table presents mean ratings given by Gen Z and Gen Y respondents on a Likert scale from 1 (strongly disagree) to 5 (strongly agree) to the following statements related to the perceived ease of use of artificial intelligence (AI) applications in digital marketing:

Table 7. Questionnaire results + statistical analysis results *(forth objective). Source: own computing*

	Gen Z	Gen Y	P-value	Decision
Interacting with personalised recommendations requires minimal effort on my part.	3.886	3.414	**0.013***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
The navigation of personalised recommendation systems is easy and intuitive.	4.129	3.871	0.084	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
It is effortless for me to navigate through the options and choices presented by personalised recommendations.	3.957	3.586	**0.019***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
Interacting with chatbots requires minimal effort on my part.	3.886	3.800	0.197	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
Chatbots are easy to navigate and understand.	4.101	4.014	0.572	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
I find chatbots user-friendly and reliable, thanks to their well-developed system.	3.671	3.729	0.379	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
Interacting with voice search assistants requires minimal effort on my part.	3.629	3.929	0.104	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
Voice search assistants accurately recognise and understand my voice commands.	3.271	3.657	**0.032***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**
I find voice search assistants familiar and easy to use.	4.186	4.043	0.414	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.

The study highlights generational differences in the perceived ease of use of AI applications in digital marketing. An independent samples t-test was conducted to assess these differences. A significant difference was found between Gen Z and Gen Y in perceived ease of use of AI, with a Cohen's d of 0.13, indicating a small-to-moderate effect size. A significant difference was found in statements like: "Interacting with personalised recommendations requires minimal effort," p = 0.013, "Navigating through personalised options is effortless," (p=0.019), and "Voice search assistants accurately recognise my commands" (p=0.032). The findings show that Gen Z finds personalised

recommendations easier to use than Gen Y. However, Gen Y perceives voice search assistants as more accurate in recognising commands compared to Gen Z.

Furthermore, the research aims to analyse whether there is a significant overall difference between Gen Z and Gen Y, using a t-test that comprises an analysis of all the statements:

Table 8. Statistical analysis t-test results. Source: own computing

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	3.87003968	3.78253968
Variance	0.50997515	0.43350714
Observations	70	70
Hypothesised Mean Difference	0	
df	137	
t Stat	0.75368556	
P(T<=t) one-tail	0.22616571	
t Critical one-tail	1.65605208	
P(T<=t) two-tail	0.45233142	
t Critical two-tail	1.97743121	

According to the Independent t-test, the mean value for Gen Z was 3.87 and for Gen Y=3.782. Furthermore, the p-value obtained was 0.452 ($p > 0.05$), which exceeds the conventional threshold for statistical significance. Therefore, there is no overall significant difference between Gen Z and Gen Y.

O25: To examine whether there is a significant difference between Gen Z and Gen Y regarding the intention to use artificial intelligence (AI) applications in digital marketing.

RQ251: What is the level of intention among individuals to adopt and utilise artificial intelligence (AI) applications in Digital Marketing?

H_0: There is no significant difference in the intention to use AI implications in digital marketing between Gen Z and Gen Y. ($\mu 1 = \mu 2\, \mu 1 = \mu 2$)

H_a: There is a significant difference in the intention to use AI implications in digital marketing between Gen Z and Gen Y. ($\mu 1 \neq \mu 2\, \mu 1 \neq \mu 2$)

(Based on qualitative research results, Agrawal (2022))

The next table presents mean ratings given by Gen Z and Gen Y respondents on a Likert scale from 1 to 5 to the following statements related to the intention to use Artificial Intelligence (AI) applications in digital marketing:

Table 9. Questionnaire results + statistical analysis results *(fifth objective). Source: own computing*

	Gen Z	Gen Y	P-value	Decision
If I find an artificial intelligence implication useful in my performance, I intend to use it.	4.29	4.31	0.837	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
If I find an artificial intelligence implication easy to use and requiring minimal effort, I intend to use it.	4.13	3.90	0.152	P-value>0.05->Fail to Reject Ho->There is not a significant difference between Gen Z and Gen Y.
I am more likely to interact with a company that uses these implications.	3.67	3.34	**0.043***	**P-value<0.05->Reject Ho->There is a significant difference between Gen Z and Gen Y.**

Based on the previous table, the study can conclude that there are certain differences between generations regarding the intention to use artificial intelligence (AI) applications in digital marketing. A statistical analysis using independent t-tests was conducted to analyse these differences in greater

depth. The statistical analysis will demonstrate whether there is a significant difference between generations.

According to the results, the significant difference in the intention to use AI was observed in the following statement: "I am more likely to interact with a company that uses these applications" p = 0.043.

Therefore, Gen Z is slightly more likely to interact with a business that employs artificial intelligence (AI) implications in digital marketing, compared to Gen Y. A significant difference was found between generations, with a Cohen's d of 0.24, indicating a small effect size.

Furthermore, the research aims to analyse whether there is a significant overall difference between Gen Z and Gen Y, using a t-test that comprises an analysis of all the statements:

Table 10. Statistical analysis t-test results. Source: own computing

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	4.02857143	3.85238095
Variance	0.5273522	0.5173453
Observations	70	70
Hypothesised Mean Difference	0	
df	138	
t Stat	1.44223547	
P(T<=t) one-tail	0.07575083	
t Critical one-tail	1.65597038	
P(T<=t) two-tail	0.15150167	
t Critical two-tail	1.97730354	

According to the independent t-test, the mean value for Gen Z is 4.02 and for Gen Y=3.85. Furthermore, the resulting p-value was 0.152 ($p > 0.05$), exceeding the conventional threshold for statistical significance. Therefore, there is no overall significant difference between Gen Z and Gen Y.

O26: To examine whether there is a significant difference between Gen Z and Gen Y in the actual usage of artificial intelligence (AI) applications in digital marketing.

(Based on qualitative research results, Narvar (2018), Benaich & Hogarth (2023))

RQ261: How often do consumers use voice search assistants?

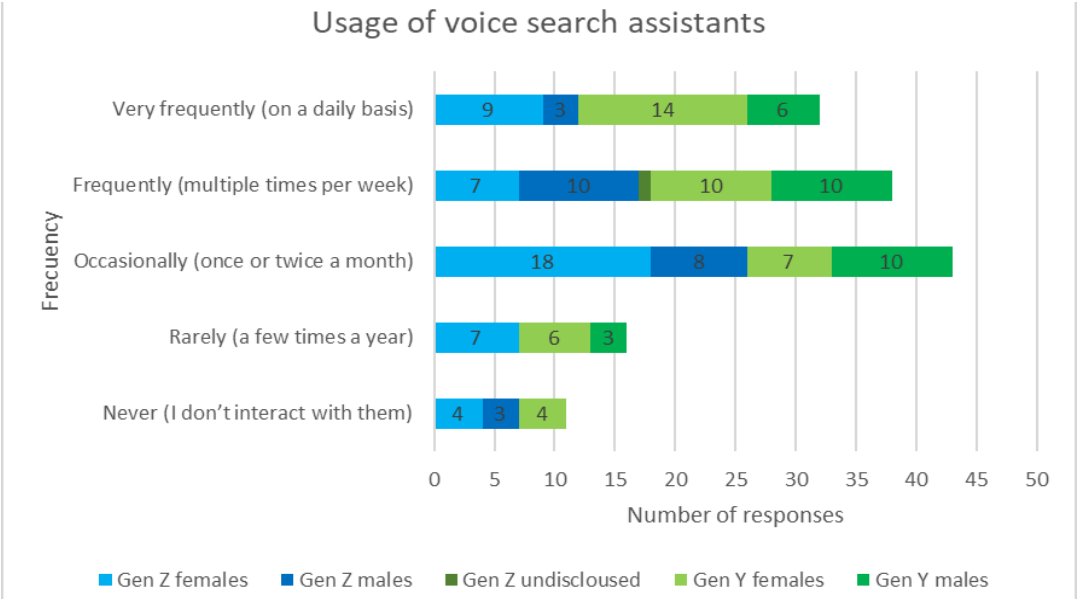


Figure 7. Questionnaire findings. Actual usage of voice search assistants; Source: own computing

The above figure presents the data findings for the first research question:

According to the results, Gen Y utilises voice search assistants the most frequently. Out of the total Gen Y respondents, 40 participants (57.17% of the Gen Y group) mentioned that they utilise voice search assistants frequently or on a daily basis. On the other hand, in comparison, only 29 Gen Z respondents (41.42% of the total Gen Z group) reported exhibiting this behaviour. In addition, Gen Y females employ the tool more often than Gen Y males. Specifically, 58.53% of Gen Y females expressed a higher frequency of using the application, compared to 55.17% of Gen Y males.

Furthermore, Gen Z males use this implication more often than Gen Z females, with 54.17% of Gen Z males using the voice assistant frequently or very frequently, while only 35.56% of Gen Z females express the same behaviour. Furthermore, 43 respondents (26 Gen Z and 17 Gen Y), representing the majority of the consumers, state that they employ this implication occasionally. In addition, 18.57% of Gen Y and 20% of Gen Z consumers state they interact with the implication rarely or don't interact at all.

This behaviour is more pronounced among females, such as 24.44% of Gen Z females and 24.39% of Gen Y females use the implications a few times a year or don't use it at all. In contrast, only 12.50% of Gen Z men and 10.34% of Gen Y men express this behaviour.

The graphical representation demonstrated that there is a difference between Gen Z and Gen Y regarding the actual usage of the voice search assistant. Furthermore, the ordinal variables "Never"-"Very frequently" were converted into a scale from 1-5, in order to be tested statistically. The results are presented below:

Table 11. Statistical analysis t-test results. Source: own computing

t-Test: Two-Sample Assuming Equal Variances

	Variable 1	*Variable 2*
Mean	3.44285714	3.08571429
Variance	1.58364389	0.68819876
Observations	70	70
Pooled Variance	1.13592133	
Hypothesised Mean Difference	0	
df	138	
t Stat	1.98244827	
P(T<=t) one-tail	0.02470754	
t Critical one-tail	1.65597038	
P(T<=t) two-tail	0.04941507	
t Critical two-tail	1.97730354	

According to the Independent t-test, the mean value for Gen Z is 3.442 and for Gen Y=3.085. Furthermore, the p-value<0.05, indicating that H0 is rejected and Ha is accepted. Therefore, there is an overall significant difference between Gen Z and Gen Y.

RQ262: How often do consumers use AI-powered chatbots?

The following figure presents the data findings for the second Research Question:

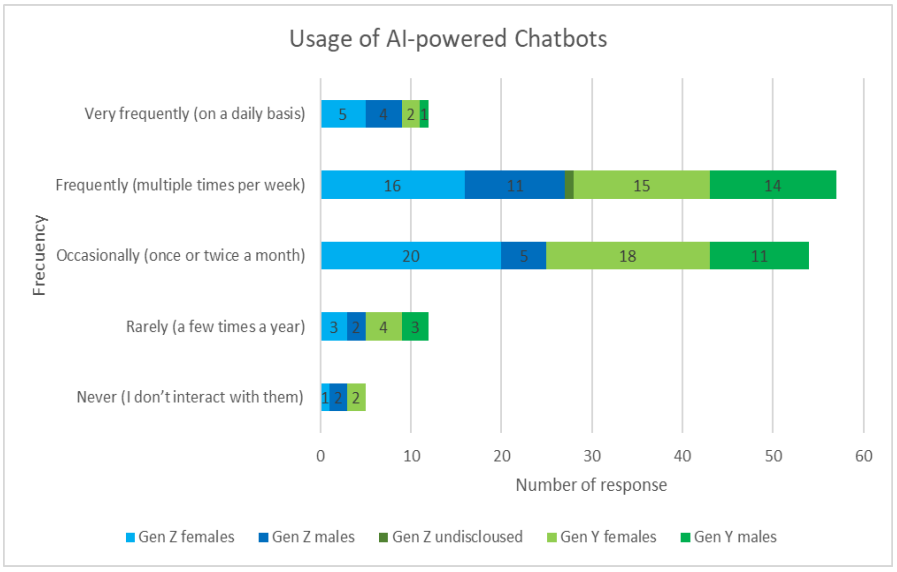


Figure 8. Questionnaire findings. Actual usage of AI-powered chatbots; Source: own computing

The results show that Gen Z interacts with AI-powered chatbots more frequently than Gen Y. Among Gen Z respondents, 52.85% report using chatbots daily or frequently, compared to 45.71% of Gen Y respondents. Gen Y males interact with chatbots more than females, with 51.72% of males using them frequently, compared to 41.46% of females. Similarly, 62.5% of Gen Z males use chatbots often, while only 46.67% of Gen Z females do. Additionally, 54 respondents (25 Gen Z and 29 Gen Y) reported occasional chatbot use, while 12.85% of Gen Y and 11.42% of Gen Z report using them rarely or not at all. Males are more likely to report infrequent use with 20.83% of Gen Z males and 37.93% of Gen Y males using chatbots rarely or never, compared to 13.33% of Gen Z females and 19.51% of Gen Y females.

The graph representation demonstrated that there is a difference between Gen Z and Gen Y regarding the AI-powered chatbot. Furthermore, the ordinal variables "Never"- "Very frequently" were converted into a scale from 1-5, in order to be tested statistically. The results are presented below:

Table 12. Statistical analysis t-test results. Source: own computing
t-Test: Two-Sample Assuming Unequal Variances

		Variable 1	*Variable 2*
Mean		3.5	3.35714286
Variance		0.90714286	0.63871636
Observations		71	70
Hypothesised Difference	Mean	0	
df		136	
t Stat		0.96531312	
P(T<=t) one-tail		0.16805069	
t Critical one-tail		1.65613499	
P(T<=t) two-tail		0.33610138	
t Critical two-tail		1.97756078	

According to the Independent t-test, the mean value for Gen Z is 3.5 and for Gen Y=3.357. Furthermore, the p-value>0.05, indicating that H0 is accepted. Therefore, there is no overall significant difference between Gen Z and Gen Y.

RQ263: How often do consumers interact with personalised product recommendations? The following figure presents the data findings for the third research question:

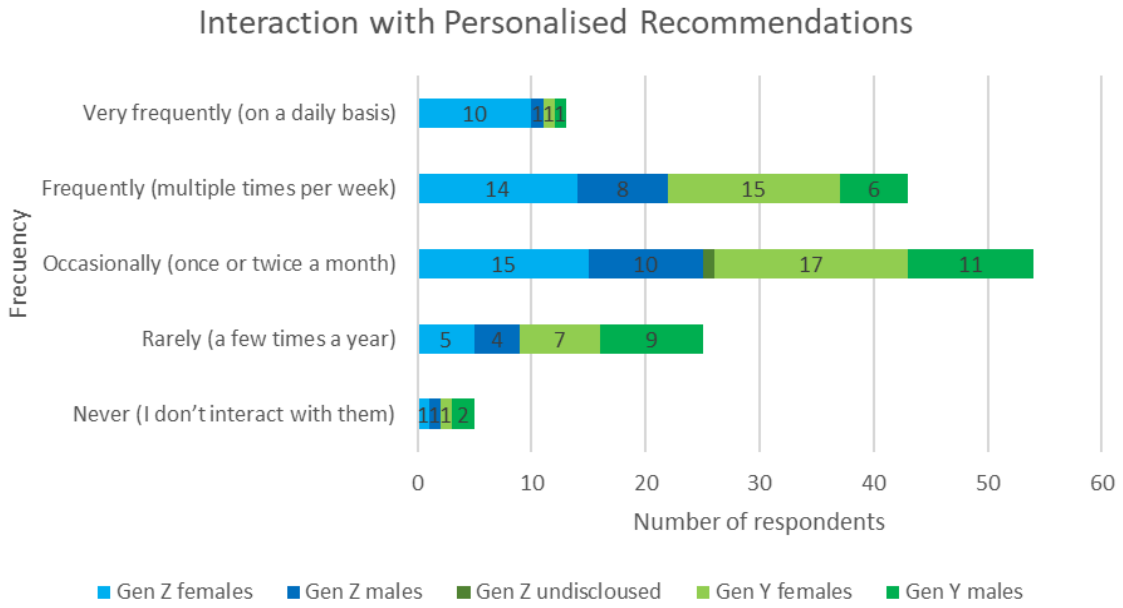


Figure 9. Questionnaire findings. Interaction with Personalised Recommendations; Source: own computing

The results show that Gen Z interacts more with personalised recommendations than Gen Y. Among Gen Z respondents, 47.14% use personalised recommendations frequently or daily, compared to 32.85% of Gen Y. Gen Y females engage with recommendations more than males, with 39.02% of females using them more frequently, compared to 24.14% of males. Gen Z females also use personalised recommendations more than males, with 53.33% of females interacting frequently, compared to 37.5% of males. Additionally, 54 respondents (25 Gen Z and 28 Gen Y) use this feature occasionally, while 27.14% of Gen Y and 15.71% of Gen Z rarely or never use it. The infrequent use is more common among Gen Z males and Gen Y females, with 8.89% of Gen Z females and 14.63% of Gen Y females using it rarely or not at all, compared to 16.67% of Gen Z males and 10.34% of Gen Y males.

Table 13. Statistical analysis t-test results. Source: own computing
t-Test: Two-Sample Assuming Unequal Variances

		Variable 1	*Variable 2*
Mean		3.34285714	3.62857143
Variance		1.21407867	1.36728778
Observations		70	70
Hypothesised Difference	Mean	0	
df		138	
t Stat		-1.4878397	
P(T<=t) one-tail		0.06953732	
t Critical one-tail		1.65597038	
P(T<=t) two-tail		0.13907465	
t Critical two-tail		1.97730354	

The graph representation demonstrated that there is a difference between Gen Z and Gen Y regarding the AI-powered chatbot. Furthermore, the ordinal responses ranging from "Never" to "Very frequently" were converted into a five-point scale for statistical testing. The results are presented in Table 13.

According to the Independent samples t-test, the mean value for Gen Z was 3.342 and for Gen Y=3.628. Furthermore, the p-value was greater than 0.05, indicating that the null hypothesis is retained. Therefore, there is no overall significant difference between Gen Z and Gen Y.

O26: To examine whether there is a significant correlation between the perceived usefulness and actual usage of artificial intelligence implications in digital marketing.

The Pearson correlation coefficient was employed in the statistical analysis, in order to analyse if there is a significant correlation between the perceived usefulness and actual usage of artificial intelligence implications in digital marketing. The results are presented below:

Table 14. Statistical analysis correlation results. Source: own computing

	Perceived Usefulness	*Actual Usage*
Perceived Usefulness	1	
Actual Usage	0.462346558	1

The Pearson Correlation Coefficient falls within the range of 0.3-0.5, indicating a moderate positive relationship between perceived usefulness and actual usage of AI in digital marketing. The findings demonstrate that an increase in the perceived usefulness is associated with a corresponding increase in the actual usage**.**

O27: To examine whether there is a significant correlation between the perceived ease of use and actual usage of artificial intelligence implications in digital marketing.

Pearson Correlation Coefficient was employed in the statistical analysis, in order to analyse if there is a significant correlation between the perceived ease of use and actual usage of artificial intelligence implications in digital marketing. The results are presented below (Table 15):

Table 15. Statistical analysis correlation results. Source: own computing

	Perceived Ease of Use	*Actual Usage*
Perceived Ease of Use	1	
Actual Usage	0.32052132	1

The study aimed to explore differences between Gen Z and Gen Y regarding their cognitive and affective attitudes towards artificial intelligence (AI) in digital marketing. This research confirms that while both Generation Z and Y adopt AI tools in digital marketing, their patterns of interaction differ significantly. The findings show that Gen Z, as "Digital Natives," is more familiar with AI implications and uses them more frequently than Gen Y. In terms of affective attitudes, Gen Z has a more positive view of AI's user experience, while Gen Y is more concerned about data privacy. Gen Z also expresses greater concern about AI's impact on employment. Despite these differences in specific areas, the statistical analysis revealed no overall significant difference between the generations. These differences may result not only from digital exposure or familiarity but also from distinct cognitive processing styles. Gen Z, raised in high-stimulus digital environments, may engage more through peripheral cognitive routes (e.g., intuitive ease, design appeal), while Gen Y appears to rely more on central processing, reflecting deeper concern for data privacy, trust, and effort justification.

These findings suggest future AI marketing tools should be designed with cognitive segmentation in mind.

Investigating whether there is a difference between Gen Z and Gen Y in the perceived usefulness of the implications represented the third objective of the research. The study achieved this objective by analysing the perceived factors that increase consumers' performance. Voice search assistants, AI chatbots, and personalised recommendations were the innovations analysed in determining the differences between generations. The most significant difference is represented by the fact that Gen Z finds personalised recommendations more useful in their purchasing experiences, compared to Gen Y. Furthermore, the statistical analysis demonstrates that there is an overall significant difference in the perceived usefulness of AI in digital marketing between Gen Z and Gen Y.

The objective of the study was to analyse whether there is a significant difference between Gen Z and Gen Y in the perceived ease of use. The findings show that Gen Z finds personalised recommendations easier to use, while Gen Y perceives voice assistance as more accurate. Despite significant differences in some areas, the statistical analysis showed no overall significant difference between generations.

In addition, the study proposed to analyse whether there is a significant difference between Gen Z and Gen Y regarding the intention to use artificial intelligence (AI) implications in digital marketing. The study achieved this objective by analysing what is the level of their intention to employ the innovations and its impact on brand loyalty. Based on the findings, Gen Z is more likely to interact with a company that employs these implications compared to Gen Y. However, the statistical analysis showed that there is no overall significant difference between generations.

The difference in the actual usage of the innovations was analysed in the sixth objective of the research. The objective was attained by investigating how often both generations use the analysed implications. The findings show that Gen Y utilises voice search assistants compared to Gen Z. Furthermore, the interaction with personalised recommendations is more pronounced among Gen Z consumers.

The research analysed the correlation between perceived usefulness and actual usage of artificial intelligence implications, revealing a moderately positive correlation. As perceived usefulness increases, actual usage also rises. Additionally, the correlation between perceived ease of use and actual usage was tested, showing a moderate positive correlation.

In the end, the correlation between perceived ease of use and actual usage of artificial intelligence innovations in digital marketing was tested. The coefficient correlation between perceived usefulness and actual usage was higher, demonstrating that an implication that is perceived as increasing performance will be highly adopted compared to an innovation that requires minimal efforts.

In conclusion, all the objectives of the study were successfully achieved. The findings provide a valuable understanding of generational differences and their effect on the employment of artificial intelligence (AI) implications in digital marketing.

As a direction for future research, we propose an experimental design integrating EEG (electroencephalography) to investigate the neurocognitive responses of Gen Z and Gen Y, during interactions with AI-driven digital marketing tools. Participants from each generation could be exposed to stimuli such as personalised ads, AI chatbots, and voice assistants, while EEG data captures event-related potentials (ERPs), linked to attention and emotional evaluation. By comparing neural markers across age groups and stimuli types, researchers could gain objective insights into engagement depth, cognitive effort, and emotional resonance, offering empirical validation of dual-route processing assumptions from the Elaboration Likelihood Model (ELM). This approach would complement self-report data with real-time neural evidence, deepening our understanding of how different generations cognitively process AI in marketing contexts.

References

Agrawal, D.K. (2022). Determining behavioural differences of Y and Z generational cohorts in online shopping. *International Journal of Retail & Distribution Management*, *50*(7), 880-895. https://doi.org/10.1108/IJRDM-12-2020-0527

Ajzen, I., & Fishbein, M. (2000). Attitudes and the attitude–behavior relation: Reasoned and automatic processes. *European Review of Social Psychology, 11*(1), 1–33. https://doi.org/10.1080/14792779943000116

Alter, A. L., & Oppenheimer, D. M. (2009). Uniting the tribes of fluency to form a metacognitive nation. *Personality and Social Psychology Review, 13*(3), 219–235. https://doi.org/10.1177/1088868309341564

Andrade, I. M. D., & Tumelero, C. (2022). Increasing customer service efficiency through artificial intelligence chatbot. *Revista de Gestão*, *29*(3), 238-251. https://doi.org/10.1108/REGE-07-2021-0120

Arora, N., Ensslen, D., Fiedler, L., Liu, W.W., Robinson, K., Stein, E., & Schüler, G. (2021). The value of getting personalization right—or wrong—is multiplying. *McKinsey & Company.*

Aytekin, P., Virlanuta, F. O., Guven, H., Stanciu, S., & Bolakca, I. (2021). Consumers' perception of risk towards artificial intelligence technologies used in trade: A scale development study. *Amfiteatru Economic*. http://dx.doi.org/10.24818/EA/2021/56/65

Battina, D. S. (2017). A systematic review on how artificial intelligence will change the future of marketing. *International Journal of Research in Engineering and Applied Sciences*, *7*(2). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4002450

Benaich, N., & Hogarth, I. (2023). *State of AI Report 2023*. Guide to AI. Retrieved from https://www.stateof.ai/2023-report-launch

Berkup, S. B. (2014). Working with generations X and Y in generation Z period: Management of different generations in business life. *Mediterranean Journal of Social Sciences*, *5*(19), 218-229. https://doi.org/10.5901/mjss.2014.v5n19p218

Brandtzaeg, P. B., & Følstad, A. (2017). Why people use chatbots. *Internet science. INSCI 2017. Lecture Notes in Computer Science*, *10673. Springer, Cham.* https://doi.org/10.1007/978-3-319-70284-1_30

Bucuy, N. (2023, February 22). *9 AI Chatbot Examples That Help Businesses Thrive.* LiveHelpNow. Retrieved April 3, 2025, from LiveHelpNow website.

Carr, D. F. (2023). ChatGPT tops 25 million daily visits. *SimilarWeb*. https://www.similarweb.com/blog/insights/ai-news/chatgpt-25-million/

Chen, S.-C., Li, S.-H., & Li, C.-Y. (2011). Recent related research in technology acceptance model: A literature review. *Australian Journal of Business and Management Research*, *1*(9), 124-127. http://dx.doi.org/10.52283/NSWRCA.AJBMR.20110109A14

Cooper, D. R., & Schindler, P. S. (2006). *Business research methods*. *McGraw-Hill/Irwin.*

Fokina, M. (2023). The future of chatbots: 80+ chatbot statistics for 2023. *Tidio*. https://www.tidio.com/blog/chatbot-statistics/

Columbus, L. (2019). 10 charts that will change your perspective of AI in marketing. *Forbes. Enterprise Tech*. https://www.forbes.com/enterprise-tech/?sh=d60774d389f3

Customer Data Platform Institute. (2022, April). *CDP Institute Member Survey 2022.* CDP.com. https://www.cdpinstitute.org/resources/cdp-institute-member-survey-2022/

Friston, K. (2010). The free-energy principle: A unified brain theory? *Nature Reviews Neuroscience, 11*(2), 127–138. https://doi.org/10.1038/nrn2787

Fusion, C., & Fusion, C. (2025). *How Gen X, Millennials, and Gen Z approach AI in channel marketing*. Channel Fusion. https://channel-fusion.com/how-different-generations-approach-ai-in-channel-marketing/

Davis, F. D. (1989). Technology acceptance model: TAM. Al-Suqri, MN, Al-Aufi, AS. *Information Seeking Behavior and Technology Adoption*, *205*(219), 5.

Ding, N., Chen, M., & Hu, L. (2025). Examining the impact of big five personality traits on generation Z designers' subscription to paid AI drawing tools using SEM and FsQCA. *Scientific Reports*, *15*(1). https://doi.org/10.1038/s41598-025-02926-8

Donepudi, P. K. (2014). Technology growth in shipping industry: An overview. *American Journal of Trade and Policy*, *1*(3), 137-142. https://doi.org/10.18034/ajtp.v1i3.503

Euromonitor International. (2022). *Voice of the Consumer: Key Insights 2022.* Euromonitor International. Retrieved from https://www.euromonitor.com/article/voice-of-the-consumer-key-insights-2022

Gefen, D., & Keil, M. (1998). The impact of developer responsiveness on perceptions of usefulness and ease of use: An extension of the technology acceptance model. *Acm sigmis database: the database for advances in information systems*, *29*(2), 35-49. http://dx.doi.org/10.1145/298752.298757

Gen Z leads in Gen AI's widespread adoption. (2024). https://www.nysscpa.org/article-content/gen-z-leads-in-gen-ai-s-widespread-adoption-112724?#sthash.A2oeIYB9.dpbs

Gorynski. (2023). Millennials vs. Gen Z: Differences in customer service expectations. *Zendesk.*

Gupta, A., Hathwar, D., & Vijayakumar, A. (2020). Introduction to AI chatbots. *International Journal of Engineering Research & Technology (IJERT)*, *9*(07), 255-258. http://dx.doi.org/10.17577/IJERTV9IS070143

Haleem, A., Javaid, M., & Singh, R. P. (2022). An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, *2*(4). https://doi.org/10.1016/j.tbench.2023.100089

Hassabis, D., Kumaran, D., Summerfield, C., & Botvinick, M. (2017). Neuroscience-inspired artificial intelligence. *Neuron, 95*(2), 245–258. https://doi.org/10.1016/j.neuron.2017.06.011

Hawkins, J. (2019). Chatbot marketing mastery: Learn the secrets of marketing for business with using automated chatbots. *Scribl.*

Influencer Marketing Hub. (2022). The state of eCommerce: Pre- and post- pandemic. *Influencer Marketing Hub.*

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International Publishers.

Kumar, V., & Gupta, S. (2016). Conceptualizing the evolution and future of advertising. *Journal of advertising*, *45*(3), 302-317. http://dx.doi.org/10.1080/00913367.2016.1199335

Lake, B. M., Ullman, T. D., Tenenbaum, J. B., & Gershman, S. J. (2017). Building machines that learn and think like people. *Behavioral and Brain Sciences, 40*, 253. https://doi.org/10.1017/S0140525X16001837

LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. *Nature, 521*(7553), 436–444. https://doi.org/10.1038/nature14539

Lee, C. S., Tan, L. E., & Goh, D. H. (2025). Examining generation Z's use of generative AI from an affordance-based approach. *Information Research an International Electronic Journal*, *30*, 1095–1102. https://doi.org/10.47989/ir30iconf47083

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management*, *40*(3), 191-204. https://doi.org/10.1016/S0378-7206(01)00143-4

McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research, 13*(3), 334–359. https://doi.org/10.1287/isre.13.3.334.81

Miklosik, A., Kuchta, M., Evans, N., & Zak, S. (2019). Towards the adoption of machine learning-based analytical tools in digital marketing. *IEEE Access*, *7*, 85705-85718. https://doi.org/10.1109/ACCESS.2019.2924425

Murgai, A. (2018). Transforming digital marketing with artificial intelligence. *International Journal of Latest Technology in Engineering, Management & Applied Science*, *7*(4), 259-262.

Mustak, M., Salminen, J., Plé, L., & Wirtz, J. (2021). Artificial intelligence in marketing: Topic modeling, scientometric analysis, and research agenda. *Journal of Business Research*, *124*, 389-404. https://doi.org/10.1016/j.jbusres.2020.10.044

Mutoffar, M. M., Kuswayati, S., Anggraeny, F. T., & Sumarni, T. (2023). Exploring the potential of ChatGPT in improving online marketing and promotion of MSMEs. *Jurnal Minfo Polgan, 12*(2), 480–489. https://jurnal.polgan.ac.id/index.php/jmp/article/view/12440

Narvar. (2018). Connecting with shoppers in the age of choice. *Consumer Report 2018*.

Nyagadza, B. (2020). Search engine marketing and social media marketing predictive trends. *Journal of Digital Media & Policy*, *13*(3), 407-425. https://doi.org/10.1386/jdmp_00036_1

Onorato, A. (2022). Report: Consumers open to AI in marketing, but privacy concerns remain. *The Consumer Data Platform Resources*.

Pallathadka, H., Ramirez-Asis, E. H., Loli-Poma, T. P., Kaliyaperumal, K., Ventayen, R. J. M., & Paul, R., & Elder, L. (2006). Critical thinking: The nature of critical and creative thought. *Journal of developmental education*, *30*(2), 34.

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123–205). Academic Press. https://doi.org/10.1016/S0065-2601(08)60214-2

Prensky, M. (2001). Digital natives, Digital immigrants Part 1. *On The Horizon the International Journal of Learning Futures*, *9*(5), 1–6. https://doi.org/10.1108/10748120110424816

PWC. (2018). Prepare for the voice revolution. *Consumer Intelligence Series*.

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation). (2016). *Official Journal of the European Union, L119*, 1–88. https://eur-lex.europa.eu/eli/reg/2016/679/oj

Ribeiro, T., & Reis, J. L. (2020). Artificial intelligence applied to digital marketing. *Trends and Innovations in Information Systems and Technologies. WorldCIST 2020. Advances in Intelligent Systems and Computing*, *1160*. *Springer, Cham.* https://doi.org/10.1007/978-3-030-45691-7_15

Saunders, M., Lewis, P., & Thornhill, A. (2016). Research methods for business students. *Pearson Education.*

Shroff, R. H., Deneen, C. C., & Ng, E. M. W. (2011). Analysis of the technology acceptance model in examining students' behavioural intention to use an e-portfolio system. *Australasian Journal of Educational Technology*, *27*(4), 600-618. https://doi.org/10.14742/ajet.940

Schultz, W. (2015). Neuronal reward and decision signals: From theories to data. *Physiological Reviews, 95*(3), 853–951. https://doi.org/10.1152/physrev.00023.2014

Selig, A. (2023). Generation influence: Reaching Gen Z in the new digital paradigm. *WP Engine.* https://wpengine.com/resources/gen-z-eu-full-report

Slovic, P. (1987). Perception of risk. *Science, 236*(4799), 280–285. https://doi.org/10.1126/science.3563507

Tahoun, N., & Taher, A. (2021). Artificial intelligence as the new realm for online advertising. Advance. https://doi.org/10.31124/advance.15139863.v1

Tucker, K. (2017). A chatbot abstract. Chatbots Life. https://chatbotslife.com/a-chatbot-abstract-1cd002e7a480

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124

Uță, I.-C. (2019). How voice is changing customer behaviour and the way you do marketing. *Brand Minds*.

Vlačić, B., Corbo, L., Costa e Silva, S., & Dabić, M. (2021). The evolving role of artificial intelligence in marketing: A review and research agenda. *Journal of Business Research*, *128*, 187-203. https://doi.org/10.1016/j.jbusres.2021.01.055

Wang, H., Lee, M. K. O., & Wang, C. (1998). Consumer privacy concerns about internet marketing. *Communications of the ACM*, *41*(3), 63-70. http://dx.doi.org/10.1145/272287.272299

Web CEO. (2019). *Your SEO strategy guide*.