

THE INFLUENCE OF AI AND MACHINE LEARNING
ON CONSUMER BEHAVIOR IN DIGITAL MARKETING IN TÜRKİYE

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ABSTRACT

The Influence of AI and Machine Learning on Consumer Behavior in Digital Marketing in Türkiye

This study investigates how Artificial Intelligence (AI) and Machine Learning (ML) applications in digital marketing influences consumer buying behavior in Türkiye. The study investigates the tools provided by AI, such as recommendation systems, sentiment analysis and, predictive analytics and how they restructure the digital marketing domain, especially in the emerging markets. Furthermore, the remarkable gaps and, ethical implications that these technologies come with are also taken into consideration. The research correlates with the information obtained via surveys which are then tested through use of statistical procedures. The study has shed light on the role played by technology, culture, and the consumer in the AI marketing strategies in Türkiye. It suggests there must be a right equilibrium between fostering innovation and introducing ethical empathy and cultural sensitivity which are central to consumers trust, satisfaction, and loyalty. These findings enhance our understanding of how AI and ML can transform traditional Internet marketing strategies to address challenges and target audiences specific to the Turkish market. Although the study has shed light on the role played by technology, culture, and the consumer in the AI marketing strategies in Türkiye, the results can be extended to the international markets that share some common characteristics.

ÖZET

Yapay Zeka ve Makine Öğrenmesinin

Türkiye'de Dijital Pazarlamada Tüketici Davranışı Üzerindeki Etkisi

Bu çalışma, dijital pazarlamada Yapay Zeka (YZ) ve Makine Öğrenimi (ML) uygulamalarının Türkiye'de tüketici satın alma davranışını nasıl etkilediğini araştırmaktadır. Çalışma, öneri sistemleri, duygu analizi, sohbet robotları ve öngörücü analizler gibi yapay zekanın sağladığı araçları ve özellikle gelişmekte olan pazarlarda dijital pazarlama alanını nasıl yeniden yapılandırdıklarını incelemektedir. Ayrıca, bu teknolojilerin beraberinde getirdiği dikkate değer boşluklar ve etik etkiler de dikkate alınmaktadır. Araştırma, daha sonra karmaşık istatistiksel prosedürlerin kullanımıyla test edilen anketler yoluyla elde edilen bilgilerle ilişkilendirilmektedir. Çalışma, Türkiye'deki yapay zeka pazarlama stratejilerinde teknoloji, kültür ve tüketicinin oynadığı role ışık tutmuştur. Tüketici güveni, memnuniyeti ve sadakati için merkezi öneme sahip olan yenilikçiliği teşvik etmek ve etik empati ve kültürel duyarlılığı tanıtmak arasında doğru bir denge olması gerektiğini ileri sürmektedir. Bu sonuçlar, AI ve ML'nin geleneksel internet pazarlama stratejilerini, Türkiye pazarına özgü zorlukları ele almak ve hedef kitlelere ulaşmak için nasıl dönüştürebileceğine dair anlayışımızı geliştiriyor. Çalışma, Türkiye'deki AI pazarlama stratejilerinde teknoloji, kültür ve tüketicinin oynadığı role ışık tutsa da, sonuçlar bazı ortak özellikleri paylaşan uluslararası pazarlara genişletilebilir.

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CHAPTER 1

DIGITAL AND SOCIAL MEDIA MARKETING

Digital marketing as well as social media marketing are critical aspects when it comes to understanding online purchasing behavior of consumers. Over the last ten years, how companies communicate with their consumers has changed drastically due to the advancements in social and digital media marketing. With the use of big data, brands can now reach out to their consumers through tailored strategies across various digital media platforms, which have now become a part of marketing plans (Kannan & Li, 2017). Social media has become one of the most important modern marketing technologies, granting the ability to communicate with consumers and shape their purchasing habits as never before (Kaplan & Haenlein, 2010). Marketing over the internet has remarkably transformed how potential customers behave, thanks to the availability of customized content and the ability to interact with it.

The rapid pace of change has been further fueled by the emergence of AI and ML as revolutionary forces in the marketing landscape. By using AI and ML, businesses can sift through large amounts of data to determine what the consumers will want and create marketing materials that speak directly to the specific consumer. These technologies have found vast use from market research to content generation (Jarek & Mazurek, 2019). The use of AI for marketing by businesses has evolved, providing avenues for the use of AI in rewriting digital technologies (Duan et al., 2019).

In social media marketing, AI and ML technologies play a crucial role. They are used for social media tasks, such as social-media analysis, sentiment detection, and automated content improvement. Campaign advertising relies heavily on machine learning email lists, while AI chatbots and recommendation systems

improve interface usability (Chaffey, 2021). These allowed the industries to get the households' attention in a more resourceful manner but also had significant effects on the household shopping patterns (Mogaji et al., 2020).

In relation to the above, there are many consumer behavior theories, with the most relevant for this study being AIDA model (Lewis, 1898) and consumer decision- making (Kotler & Keller, 2016) which provide useful pointers on an individual's or group response to marketing strategies. But the emergence of digital platforms has also brought up some other aspects which have in one way or the other changed consumer behavior trends. Surely, in the new reality trust, engagement and the 'tailored' approach to the consumer crucially make a difference in the purchase decisions (Belk, 2013).

In this work, attention is directed towards the role of AI and ML technologies with a specific emphasis on consumer purchasing trends. AI and ML based marketing are said to have an enormous impact on the way consumers make decisions since it provides them with suggestions and experiences that are aligned with their preferences. There is an increasing use of virtual assistants or chatbots for AI in order to improve customer satisfaction and retention (Kietzmann et al., 2018). Another significant use is predictive analytics, which enables businesses to enhance their marketing plans in order to maximize conversion rates (Verhoef et al., 2021). Ethical issues associated with AI and ML, such as concerns regarding data privacy, accountability and automated-decision making have become significant issues (Zou & Schiebinger, 2018).

In Türkiye's trend of adopting AI and ML in digital marketing, aspects of a country, culture and region are definitely apparent. Türkiye's digital ecosystem is dominated by the use of social networking and the rise of AI-based marketing

methods (The 2024 Digital Report). These technologies are being embraced by Turkish businesses to interact with consumers and enhance their business success. However, cultural aspects are also important because, as Hofstede (1984) pointed out, they might strengthen or weaken the effectiveness of AI-powered campaigns through the concepts of collectivism and trust. Furthermore, the ethical perceptions of using AI and ML among consumers when marketing, such as transparency and data protection, affect their reactions as well.

This thesis intends to provide insights into key research issues pertaining to the role of AI and ML technologies in the consumer purchasing process in the context of social and digital marketing in Türkiye. In particular, it studies if the use of AI driven personalization fosters consumer trust and participation, which AI/ML tools are used more effectively, and whether the use of predictive analytics in social media marketing affects the conversion rates. Furthermore, it assesses the impact of cultural and regional characteristics of Türkiye on the effectiveness of these technologies and attitudes of consumers towards the social ethics of such technologies. Adopting the survey approach, this study sets to offer evidence on these questions with a view to enhancing understanding of the significant effects that AI and ML technologies have in the world of marketing.

1.1 Evolution of digital and social media marketing over time

In the last 10 years, it would be fair to state that digital marketing panorama experienced a drastic change due to the advancement in technology, consumer behavior changes and development, as well as the influence of social media. Instead of one-way communication utilized in traditional marketing, the digital environment has evolved into interactive two-way dialogue between the company and the

customers that is focused on the customers' needs. (Stephen and Bart, 2021).

Analyzing the major factors of this evolution one may say that Facebook, Instagram and TikTok emerged as the most needed tools of all brands to communicate with potential customers. These new social media have changed not only the mode of communication between brands and consumers but also the fundamental approach to data collection creating fast, efficient targeting and focused messages (Chaffey and Ellis-Chadwick, 2019).

As much as digital marketing has attained milestones, the utilization of artificial intelligence (AI) and machine learning algorithms in the marketing sphere might provide a whole new turn to the digital marketing industry, where companies can assess big data for more accurate and in depth understanding of the consumer (Davenport et al 2020). For the various industries, AI can help in the market segmentation and ad targeting by formulating best models to suit the goal. According to the international journal of business planning, With AI-powered tools, marketers are now able to automate content distribution as well as make use of videos on the internet largely optimizing their advertising” (J. Zhetpisbaeva, G. Kakimzhanov). Marketing automation has facilitated many tools from predictive analytics to behavior analytics to marketing automation guidelines, which include purpose driven social media marketing tools for businesses (Kietzmann et al 2018). In relation to this, building in an automated streamlined marketing management system allows an organization to devise various marketing strategies to expand its consumer base. (Batra & Keller, 2016).

The analysis of big data aids in the process of marketing, which is focused on personalization, through audience segmentation-based demographic, psychographic and behavioral characteristics (Wedel & Kannan, 2016). Thanks to big data analytics,

businesses can create and modify their marketing strategies to the personal level and offer more relevant communications with the consumers. In the current days, marketing is needed to target customization since people are used to having so much information from other places and have very short attention spans. There is evidence that, marketing targeted towards one's profile does increase conversion rates and engagement rates because one is more likely to opt in when the content addresses the specific message that they need (Chaffey & Ellis-Chadwick, 2019).

Also, by looking at the techniques in social media marketing in the last few years, it can be observed that the partnership of brands and social media influencers to market their products have increased exponentially. The phenomenon of such form of social media marketing came about as a result of consumers becoming more skeptical of traditional forms of advertising and being more attracted to people that seemed more genuine and real (Campbell and Farrell, 2020). Influencers act as a bridge between brands and clients with the client base perceiving the advice given as more credible and accurate and vice versa. The change in this direction towards influencer marketing is seen as an opportunity to build relationships with consumers in the digital environment and strengthen trust in them over time (Kozinets et al., 2019). It means that the focus of the digital marketing strategies in the modern age is customer experience through and through and it evolves with the objective that aims this strategy touch points such as websites, mobile applications, and especially social media channels.

Companies are now trying to get new customers by interacting with them through multiple channels and offering them optimal experiences since the expectations of consumers have increased so much (Lemon and Verhoef, 2016). Voice search, chatbots, and virtual reality are becoming a part of marketing

campaigns in order to boost customer engagement and participation (Paschen et al., 2020). These technologies enable customers with quick and tailored services as well as faster response times.

Furthermore, if we put into context the evolution of digital marketing in the last 10 years, it would be correct to argue that it has progressed from being a single or homogeneous mass-marketing base to one that is predominantly focused on a customer- and data/insights- led approach. Since technology is changing every day, marketers cannot afford to wait, they need to stay on top of trends and have ideas, find new markets, and utilize different approaches in order to satisfy the changing needs of the consumers. In addition, where do we reside? Well, needless to say, we exist in a fast-paced digital age, businesses and companies should pay close attention to technology and come up with plans and capitalize on technology for personalized marketing strategies that will have a big impact on their target audience's mobilization.

1.2 The role of social media in modern marketing strategies

Undeniably, with the rise in the use of social media, the dynamic of brand marketing continued to evolve and revolutionize the relationship people have with their brands. This has, as Kaplan & Haenlein, 2010 rightly assert, allowed social media as a tool for marketing to revolutionize the past ways of marketing, interaction, and engagement with customers. Today, businesses are able to transmit their messages to their target audiences rapidly and adequately through social media, including TikTok, Instagram, Facebook and LinkedIn. The emergence of numerous social media platforms allows companies to engage in advertising in a new simple and efficient way based on the customer's instant feedback and interests (Gensler et al, 2013).

However, it is important to underscore that the potential of social media goes even beyond that - it is the most effective and cost-friendly form of personalized marketing which is structurally capable of being executed on a mass scale.

Differing from conventional mass marketing techniques, the use of social media allows for advertising to be more targeted through employing user data to gain insight into what the consumers' preferences, behaviors, and purchasing patterns are (Chaffey and Ellis Chadwick, 2019). This approach to advertising is made even more effective with the development of artificial intelligence and machine learning as now advertisers can send specific information to each client increasing their involvement and the chances of them buying the product (Davenport et al., 2020). For instance, within certain social networking sites (Facebook, Instagram), algorithms can track and interpret users' activities such that ads are placed for people according to their interests, their age, and online presence making the whole marketing process cheaper and more efficient (Tuten and Solomon, 2018).

Furthermore, social networks became a significant instrument in the marketing mix with the emergence of influencer marketing. The faith of the audience in traditional advertising is declining, and the audience goes to social media endorsement and recommendations of real people, not celebrities, but rather influencers (Campbell and Farrell, 2020). Because of the great involvement, they have and the large number of followers, most of brand endorsers are able to emphasize and reinforce the brand messages that the brands want to communicate and give them the kind of exposure that conventional advertisements cannot give them. On the other hand, influencer and social marketing approaches are especially useful in reaching a younger audience like generation Z and generation Y who cares about authenticity and peer recommendations (Kozinets et al., 2019). The studies

indicate that influencer marketing has potential in shaping and influencing consumer purchase decisions, and therefore, is an effective instrument for businesses that seek to enhance their visibility, awareness, and sales (De Veirman et al. 2017).

Social media has altered the dynamics of how brands execute their customer relationship management. Social media channels berth brands with consumers enabling them to receive comments, address issues and gain confidence like never before. Brands get an opportunity to improve the service they are providing by interacting with the consumers in real-time, which is a selling point with regard to retaining the customers. In particular, firms such as Starbucks and Nike have been able to incorporate social media into their operations by engaging their clients in interactive marketing exercises which goes beyond the mere selling of products and helps build community and loyalty to the brand (Felix et al., 2017). Such practices help to understand the importance of consumer-oriented marketing strategies when the company does not limit itself to selling goods but aims to bring additional benefits to the consumer through communication.

Furthermore, brands through their social media handles can quickly and professionally create advertising campaigns that respond to hot jargons, moments in culture and other interests of their customers (Lemon & Verhoef, 2016). Brands are able to engage with their target audience through data analytics tools that allow them to participate in social media phenomena, generate trendy contents and interact with the needed conversations. Such responsiveness is crucial in the fast-changing world of today's landscape where a consumer's taste can shift at a moment's notice. Those companies which are able to exploit opportunities presented by real time marketing are bound to not only boost brand presence but also enhance customer retention by showing that they are credible and able to deliver (Paschen et al., 2020).

Social media is a challenging environment as much as it is an opportunity. One quickly realizes that social media presence does not automatically equate to a captive consumer market. Such consumers are continually bombarded with so much content in a day that they are frequently rendered inattentive, folly and delusional. This is made worse by the increasing uptake of ad blockers and the growing concerns about privacy, making it hard for marketers to connect with their targets through digital advertisements (Stephen, 2016). Thus, brands must come up with new developments by creating strategies that combine the use of authenticity, transparency, and engagement (Kaplan & Haenlein, 2010). Marketing content has therefore attracted wider attention with the objective of making available content that meets the interests of the target audience; content that is revealing, appealing or uplifting (Gensler et al., 2013).

With advances in technology and the advent of social networking, marketing as we know it today has evolved quite a lot. Many consumers and potential consumers are able to establish a contact, personalize it along their needs and potential expectations, and increasing brand loyalty. By using data-driven solutions, AI and working with influencers, the brand is able to conduct targeted marketing for the current generation. But as the digital space gets more crowded, marketers still need to innovate their strategies, focusing on consumer interactions and processors, despite growing concerns over privacy and content excess (Davenport et al., 2020). As social media continues to progress, it is expected that social media will play an even more crucial role in how the future of marketing will look like and therefore, brands will subsequently have to keep looking for ways to cope with how they will target their audience in an ever-changing digital universe.

1.3 Consumer behavior in the digital environment

Looking at how consumers have changed from the stage where they evaluate and make purchases of products, it is evident that the changes have been largely due to the introduction of digital technologies. Stephen (2016) notes consumers have evolved and are now more active due to the fact that there is a digital space that is highly interactive and engaging.... The increasing presence of the internet and technology in today's world has led to greater consumer prospects because all the information they want is easily accessible. With this access, they are able to make better decisions, look for different brands of the same product and even get other people's views about the product (Kannan & Li, 2017). The result has been an evolution from the traditional purchase funnel to a networked purchase process which integrates various stages of consumers' engagement such as seeking information about the product and the brand through websites and social media platforms. These processes enable the consumers to switch the point of purchase between broadband Internet, social media, and mobile applications. (Lemon & Verhoef, 2016).

Consumers today have become more self-controlled, and they expect a shift from one-size-fits-all to tailor made products which is a notable effect of the introduction of digital technology into the market. According to Davenport et al. (2020), consumers now expect brands to provide them with content and offers that suit their interests. Tucker (2014) argues that the spread of big data and machine learning technologies have allowed companies to collect, analyze, and apply consumer data efficiently. For example, Amazon and Netflix have advanced recommendation algorithms, which understand previous interactions with a customer to recommend relevant content or products thus improving customer satisfaction and

retention remarkably (Kumar et al., 2021). As noted in Chaffey & Ellis-Chadwick (2019), this expectation is not only applicable to recommendations of other add-in products; it also comprises the expectation of personalized interactions, i.e. communication, pricing, and service.

In addition, virtual settings changed the way in which consumers judge products and services. The proliferation of online reviews, ratings and other user generated content has had a big impact on how consumers make their decisions (Chevalier & Mayzlin, 2006). Research shows that a majority of consumers are affected by online reviews with about 93% of their responses claiming that they rely on what they find in reviews before buying the product (BrightLocal, 2023). The role of social proof and recommendation from peers is necessary towards building trust especially in online transactions where physical points of contact are lacking (Kozinets et al., 2019). For instance, sites such as TripAdvisor and Yelp have become key resources for businesses and consumers in selecting places to travel to, as well as and places to eat or sleep, which illustrates the importance of user generated content regarding a nation's image (Gensler et al., 2013).

Sites of social networking serve as a backbone for digital consumer markets. Social media allows the audience to communicate with the brand and with each other by sharing their experience. According to Felix et al (2017), social media has turned out to be an effective instrument for brands in terms of building communities, engaging customers, and developing brand champions. With the emergence of influencer marketing, the role of social media has increased significantly, as it is influencers who have the potential to persuade the buying power of those they follow (Campbell & Farrell, 2020). Micro-influencers are believed to have small but very engaged audiences, making them more trustworthy which leads to higher

engagement and trust by consumers (De Veirman et al, 2017). It also sheds light on the present importance of genuineness and touch ability in the context of promotion, especially now that people tend to be less trusting of mass media advertising.

The digitalization of market activities has also boosted an urgent need for the implementation of omni-channel marketing which implies that consumers should have an uninterrupted and integrated experience while interacting with the brand across its offline and online channels (Verhoef et al., 2015). The penetration of smartphones made it possible for consumers to shop at any time of the day and at any location thereby facilitating the growth of mobile commerce (m-commerce). In a sizeable portion of cases, a sizeable percentage of consumers use their mobile phones to perform product searches, conduct price comparisons and even make purchases in a brick-and-mortar store which signifies the importance of mobile optimization in marketing strategies (Lipsman et al., 2012). It also recognizes that any combination of online and offline channels is critical in satisfying the needs of modern consumers who are information-technology oriented and are always looking for speed, connectivity, and ease (Rigby, 2011).

The increasing concern about data privacy is yet another important aspect of the behavior of consumers in digital environments. Since the brands have started using personal data to make their services more personalized, the consumers have also started to concern themselves about his data - how it is obtained, how it is kept, and how it is used (Dinev & Hart, 2006). The adoption of the General Data Protection Regulation (GDPR) in the European Union validates the increasing emphasis on protecting consumer's privacy as well as the trend for brands to be more open about how they handle data (Tene & Polonetsky, 2013). A survey conducted in 2021 indicated that 79 percent of consumers worry about how companies treat their

personal information when sharing self-information (Pew Research Center, 2021). Therefore, companies should consider the use of data-focused marketing strategies and the fact that customers' trust will not permit advertising misconduct.

Also, the advent of AI-oriented chatbots and virtual assistants has changed the dynamics of how the consumers interact and engage with brands on the internet. Through these technologies, enhanced customer experience is achieved, in the form of attention to the concerns raised and the expeditious completion of necessary payments (Paschen et al., 2020). For instance, chatbots employed by H&M and Sephora use AI technologies to assist customers with product selection, better recommendation systems and faster checkout features, thereby improving customer experience and retention (Kietzmann et al., 2018).

To sum up, the internet has impacted consumer trends and behaviors in an unprecedented manner, which in turn creates new sets of challenges as well as opportunities for the brands. With increased access to information and growing competition, present consumers are more informed, fully able, and exceedingly demanding. Brands need to change their business models in conformity with such transformations. Big data, AI and other digital assets offer opportunities for brands to provide tailored interactions that are appealing to the consumers. Furthermore, the rise in customer pegged expectations poses difficulties for brands regarding privacy and issues of trust and authenticity (Dholakia, 2020). With the understanding of the digital environment understanding the nuances of consumer behavior becomes easier for marketers to customize strategies that yield results in a world dominated by digitalization for the consumers.

CHAPTER 2

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN MARKETING

2.1 Introduction to AI and ML technologies

AI (artificial intelligence) and ML (machine learning) have been hailed as game-changing technologies, completely altering how companies' function, improve processes and create new solutions across a myriad of sectors. AI is described as the capability of a machine to imitate intelligent human behavior, particularly through computer systems which include the ability to learn, reason, solve problems, perceive, and understand language (Russell & Norvig, 2020). Within this larger vision of AI, there is a part called Machine Learning which seeks to allow systems to automatically learn to improve their performance based on experience without being specifically programmed (Mitchell, 1997). Machines can learn how to make predictions, find patterns, and gain knowledge by using ML algorithms, which makes use of statistical models that find patterns in data (Goodfellow, Bengio, & Courville, 2016). The factors that led to changes in the three technologies which in this case is computation power, cloud computing, big data, and complex algorithms are the same that contributed to the skyrocketing supply of capabilities in AI and ML (Jordan & Mitchell, 2015).

Deep learning is one of the most revolutionary milestones in the field of AI as it applies artificial neural networks to vast unstructured data. While classical ML algorithms are featuring engineering based, deep learning approaches, especially deep neural networks, do not need feature engineering as they are able to extract the features on their own and learn the patterns in the data (LeCun, Bengio, & Hinton, 2015). Such capability has changed, for example, the possibilities of image and

speech recognition which led to smart cars, facial and speech recognition, and speech-controlled devices, including the famous Siri and Alexa (Krizhevsky, Sutskever, & Hinton, 2012). The ability of deep learning to follow high dimensional data has also played an important role in the advancement of natural language processing (NLP) with systems that comprehend, create, and even translate numerous human languages with ease (Devlin et al., 2019).

Artificial intelligence (AI) and machine learning (ML) have transformed marketing, customer service, and user experience in business and consumer applications. Companies like Amazon, Netflix and Spotify have utilized ML algorithms in their business models in order to provide personalized recommendations that make customers happy and more active users (Kumar et al, 2021). Such recommendation systems apply collaborative filtering and deep learning methods for content customized to the user's tastes based on their prior interactions with other target content (Zhang et al., 2019). Additionally, AI-powered bots, chatbots and virtual assistants are utilized more and more to answer customer questions, automate service procedures, and minimize expenses through immediate and round the clock customer service assistance (Paschen et al., 2020). The application of artificial intelligence in customer relationship management (CRM) applications provides businesses real time understanding of consumer behavior, facilitates marketing effectiveness and reinforces customer retention (Chaffey & Ellis-Chadwick, 2019).

To put it briefly, AI and ML are the key elements of the Fourth Industrial Revolution and the innovations brought by them redefine organizational processes. These technologies are promising in terms of both implementation and better efficiency, customization, and decision-making. Nevertheless, the great spread of the

use of AI poses equally important questions of privacy or the presence of bias, as well as impact ethical principles together with autonomic systems (Russell & Norvig, 2020). The realization of AI promises a lot indeed, but it will also require consolidated action from businesspeople, governments' representatives, and engineers to articulate a role of the AI that is most beneficial and at the same time least harmful, thus making it possible to use AI for the society good in a sustainable way (Floridi et al., 2018).

2.2 Historical perspective on the use of AI in marketing.

Artificial intelligence in marketing has a rich and long history which began from the advent of digital marketing and has constantly evolved alongside the rise of new technology regarding the way the consumers are addressed. With reference to Baum's concepts, the development of artificial intelligence in marketing can be pegged to the 1980s and 1990s when intention "automated" viral marketing was employed primarily to dispense off simple rule-based marketing chores. Back then, expert systems were used to optimize customer relationship management (CRM), customer segmentation, and database marketing (Davenport & Ronanki, 2018). However, these were constrained by the technology of the time both in terms of computers and data, and based on a few parameters to automatically execute, marketing systems of lead estimation, campaign planning, and direct marketing activities (Baker, 2003). Although these first steps seem unsophisticated by modern considerations, they marked the first integrations of data analysis into marketing, already demonstrating that technology can make contacts with customers more productive.

One of the most important changes that influenced the AI marketing era in various industries can be characterized by developments that took place in the late nineties, these were the commercialization of the internet with several e-commerce companies like Amazon (Smith and Linden, 2017). These companies employed mining of data with aid of developing AI algorithms which enabled them to offer customized services – an era where dynamic system application replacing static rule-based recommendation systems that existed before (Smith & Linden, 2017). Analyzing the behavior and history of purchases of its customers, Amazon's recommendation system suggested goods that a specific customer would be inclined to buy, which enhanced the attention from the users and repeated purchases as well (Rust and Huang, 2014). The excellent innovation harnessed the ability of consumer data management with the intention of systematizing the marketing process which reset the bar for personalization and targeting in the context of digitization. One of the first systems that employed collaborative filtering methods which are among the first machine learning (ML) algorithms used in the market environment, demonstrating efficacy of data driven marketing (Chen et al., 2021).

The growth of the internet in the early 2000s resulted in the explosion of online data. It was during this time that modern data mining and customer analytic tools emerged, enabling firms to explore consumer behavior in more detail- Berry & Linoff (2004). The use of AI by marketers gradually increased from purely relying on product recommendation algorithms to AI powered market segmentation, sending bulk and targeted emails as well as using predictive models to improve customer lifecycle management (Chaffey & Ellis-Chadwick, 2019). In this era, Google-like search engines combined targeted advertising with AI and machine learning as a way of finding the relevant ads for the users at the time they were performing the searches

(Lambrecht & Tucker, 2013). The use of AI within Google's AdWords platform to improve advertising spaces as per user patterns and interests became a game changer for businesses in their attempts to market themselves (Jansen et al., 2013).

The early shift brought about by social media during the late 2000s further consolidated AI's involvement in marketing. During this period, marketers were also able to use social media sites such as Facebook and Twitter to get input from consumers in real time thus advertising could be much more focused and customized (Kaplan & Haenlein, 2010). AI-enabled social listening tools empowered brands to not only analyze conversations and sentiments but also interact with their customers such that the connection was even stronger and enhanced customer loyalty (Gensler et al., 2013). During this age, AI algorithms began to buy advertising space and place advertising, while customizing it according to the metrics of engagement as well as ad performance (Tucker, 2014). With the ability of placing ads in automated systems, advertisers were able to achieve their marketing's goal in the most economical way possible (Paschen, Wilson, & Ferreira, 2020).

AI started gaining momentum in the 2010s and moving past its infant stages where it was mostly reliant on traditional data analytics and integrating itself into the world of deep learning, computer vision and natural language processing. Marketing on the other hand, started evolving away from relying solely on analytics but adopted a broader scope through integration with technology that enabled sentiment analysis, speech recognition and image tagging (LeCun, Bengio, & Hinton, 2015). Through AI-enabled analysis of social media traffic, mentions, and at user-generated content more broadly, brands could monitor in real time feedback from their campaigns or even their products (Liu, 2012). It also allowed marketers a more mitigated approach

in regard to consumers which enabled them to be more flexible in their PR moves and engagements (Gensler et al, 2013).

The 2010s will also be remembered for start of the era of widespread chatbots and virtual assistants. Equipped with AI and NLP, chatbots turned out to be necessary tools for automating customer interactions and lowering their times and increasing the satisfaction of customers (Kietzmann et al., 2018). These intelligent bots could answer questions, recommend additional products based on customer preferences, and make purchases which simplified the customer path and cut down the operational costs of the companies (Davenport et al., 2020). The use of these technologies also facilitated the movement towards omni-channel marketing as consumers now want to switch between them without losing the experience (Verhoef et al., 2015).

Over the past several years, advances in AI for marketing purposes have reached new levels. This is thanks to the advance of powerful machine learning models that expend significant amounts of data, predictive analytics, and automation. Real-time data processing will also allow marketers to optimize their marketing strategies and therefore achieve large-scale hyper-personalization (Chen et al., 2021) in the blink of an eye. For example, using AI so that algorithms recognize the most effective moments in time to send marketing emails, the AI can change the content depending on user behavior and or the offer of conversion at the website (Chaffey & Ellis-Chadwick, 2019). Deployment of AI in marketing analytics also leads to the emergence of more advanced attribution models which assist marketers in accurately comprehending the efficiency of different channels thus leading to better budgetary and strategic planning (Rust, 2020).

Yet, there are various ethical and privacy questions that come along as AI continues to dominate marketing sector. With personalization, marketing has raised important discussions regarding data privacy and risks of misusing sensitive information, consumerism practice of acquiring enormous amounts of consumer data (Acquisti, Taylor, & Wagman 2016). Moreover, many AIs are intrinsically “black boxes”, which means that they can make decisions with no insight into how or why they did so, which raises problems of accountability and transparency in the implementation of AI systems, most especially in areas such as targeted advertisements and automated recommendations of content (Doshi-Velez & Kim 2017). With the introduction of more stringent data protection regimes, such as the General Data Protection Regulation (GDPR) in the European Union, marketers must tackle a constantly evolving mix of compliance and ethical issues (Tene & Polonetsky 2013).

To summarize, the history of AI's usage in marketing can be characterized as a prolonged shift from basic systems based on rules through development of more advanced technologies for consumer engagement optimization, experiences personalization and efficient decision-making. That AI would be on a continuum of CRM systems and evolve into sophisticated application designed for marketers was identified as a crucial aspect in adopting an AI toolkit in marketing (Rust & Huang, 2014). If the AI technologies continue to develop, the marketing activities will end up with substantially augmented use of predictive analytics, increased degree of personalization, and more automation, thus creating new opportunities for digital marketing (Brynjolfsson & McAfee, 2017). On the other hand, these technologies raise the ethical question such that it is imperative for businesses to be responsible in

their use of AI such that consumer confidence and privacy are maintained (Floridi et al., 2018).

2.3 Applications of AI in customer segmentation, personalization, and targeted marketing.

Artificial Intelligence has disrupted the field of customer segmentation and targeted marketing by significantly enhancing the way businesses interact with consumers through data-driven approaches. The above-mentioned sectors were earlier practiced with a limited approach by integrating demographic and psychographic data which offered basics understanding of the consumers and their behaviors, AI has managed to overcome this and revolutionized the way we view and understand marketing, it has introduced us to complex algorithms that used to be a dream in the past, big data analysis normalization (Davenport et al., 2020). With the advancement of artificial intelligence, it has replaced these unfurling models by clustering algorithms such as k-means and deep learning that allow for segmentation and an increase of input databases for consumers shopping behavior to be used in real-time (Wedel & Kannan, 2016). This gives leverage to massive corporations and companies to create micro-segments or narrowly defined groups that share similar purchase behavior or interests which would enhance the effectiveness of any kind of marketing aimed towards these groups due to the high level of precision that is now offered.

The integration of data from various sources such as web browsing, purchase history, and even social media activity, is one of the uses of Artificial Intelligence in customer segmentation. This is often termed as the 360-degree view of the customer, which helps the business develop data-driven marketing strategies and find better opportunities (Chaffey & Ellis-Chadwick, 2019). For instance, AI cannot just help

retailers in targeting consumers by their existing purchasing behavior but also enable them to buy customers at different levels, enabling specific marketing and customer relationship programs (Rust, 2020). In contrast, financial companies can focus on credit history and financial behavior patterns, so they can recommend relevant products and controls for potential loss at the same time (Baesens et al., 2016).

Personalization is yet another aspect that has witnessed a radical evolution due to the use of AI. Simply put, personalization is the custom tailoring of messages, product recommendations, and user experience according to the requirements and preferences of each customer. AI empowers businesses to evolve beyond basic personalization that entails simply referring to a customer by their name to more complex and sophisticated forms that enable content to be customized in real-time. Amazon and Netflix are examples of companies pumping AI technology into their personalization engines, which are becoming one of the greatest hallmarks of AI driven personalization. Such engines employ collaborative filtering, content-based filtering, and hybrid techniques to crunch consumer data to suggest what particular shares, products, or even content a user is most likely to engage with next (Smith & Linden, 2017). Thus, regarding user behavior, preferences, and much more, such as time of day or place, these systems provide a customized service that enhances user satisfaction and customer loyalty.

Personalization, powered by artificial intelligence, goes further than recommending items. It includes customizing emails, web sites, and even brick-and-mortar stores. Promotional blends, for example, use AI to customize outbound communications to clients by providing precise timing of delivery with the correct message. AI tools leverage open rates, click rates, and purchasing trends to further optimize these campaigns while increasing the level of engagement on every new

campaign (Chaffey & Ellis-Chadwick, 2019). What was unfathomable in the 80s is something an average ecommerce website does today: AI tools allow websites to alter layouts, featured items, and even language dependent on who is visiting the website. It is typical, for example, to see that e-commerce sites show different homepages for customers who have never visited the site before and those who have a history with the site (Zhang et al., 2019). In brick-and-mortar stores, the convenience of using mobile phones and interactive kiosks enables clients to view targeted advertisements and products tailored to their individual shopping preferences and prior purchases, thus integrating the two different environments (Kietzmann et al., 2018).

Artificial intelligence made a significant leap forward in terms of capabilities, when it comes to pursuing a specific audience group in the targeted marketing context. One of the most powerful areas of application of AI in targeted marketing is programmatic advertising, which automates the process of purchasing and placing digital ads (Lambrecht & Tucker, 2013). AI models leverage user data such as a consumer's web browsing activities, searches, and social media usage to determine the best-fit targets for a particular advertisement. These algorithms also use real-time ad serving technology that takes into consideration user metrics including engagement, conversion and returns on a campaign so that funds can be used effectively for marketing purposes (Paschen, Wilson, & Ferreira, 2020). Advertising in RTB, which is owned by programmatic advertising, fosters an increase in targeting accuracy by enabling advertisers to target a single ad impression for a defined profile aiming to obtain quality customers (Chaffey & Ellis-Chadwick, 2019).

AI also allows for advanced retargeting strategies, where ads are displayed to those who have engaged with a brand but have not purchased anything. Retargeting

campaigns construct advertising strategies through AI based on the hurtful feeling of not Completed purchase behavior such as leaving items in a shopping basket or viewing the webpage so as to connect with them again and complete the transaction (Tucker, 2014). Various platforms like Google Ads and Facebook Ads Manager leverage AI to augment their retargeting efforts by utilizing behavior data to not only deliver relevant ads but at the right time to increase effectiveness (Rust, 2020). Moreover, with AI, marketers can make use predictive analytics to predict customer behaviors and needs which in turn enables them to efficiently use targeting strategies. To illustrate, predictive models could target and trigger campaigns to drive retention for customers who are like to churn or predict the demand for certain products enabling companies to manage their stock levels and marketing efforts (Wedel & Kannan, 2016).

Advanced technology coupled with AI helps in doing hyper-personalization which is an advanced technique of going beyond the traditional customer personalization methods. AI handles large amounts of data in such an efficient manner that hyper-personalization is now possible. For instance, travel agencies use AI based technology to recommend vacation packages that allow the user to use their previously bought tickets or even vacationing during a dry season (Liu, 2012). The same recommendation can be specified for the financial services where hyper personified recommendations can be given based on analysis of the transaction, investment, and expense history (Davenport & Ronanki, 2018).

The growing use of AI in fields such as customer segmentation, personalization, and targeted marketing is rapidly raising various challenges and ethical concerns. The use of large amounts of customer data has raised concerns about privacy violation and potential abuse of personal data (Acquisti, Taylor, &

Wagman, 2016). Customers have become quite resistant to aggressive practices such as pervasive monitoring and targeted advertising, which are sometimes too much and do not sit well with the users (Tene & Polonetsky, 2013). Additionally, quite a few AI targeted marketing models have been cited to possess 'black box' features that are not user friendly, as they deny any reasonable means of insight into how decisions are taken by the model, thereby creating challenges of trust and accountability, especially in marketing of gender, race or wealth-class specific products (Doshi-Velez & Kim, 2017). In order to effectively tackle these problems, businesses will have to implement proper AI such as: data ownership management, full disclosure among parties involved, bias reduction mechanisms among algorithms (Floridi et al., 2018)

To sum up, AI has fundamentally changed the nature of customer segmentation, targeting, and marketing, enhancing the ability of businesses to interact with their customers in a more effective and meaningful manner. AI provides marketers with capabilities to understand the needs of customers, meet those needs, and improve their marketing strategies through advanced analytics, real-time data processing and predictive modelling. On the other hand, for AI to be implemented wisely in marketing, it is important to tread carefully between being innovative and ethical, applying these technologies in a professional way that would create trust and mutual benefits for brands and consumers (Rust, 2020).

CHAPTER 3

AI/ML IN SOCIAL MEDIA MARKETING

3.1 Leveraging AI for social media analytics and sentiment analysis.

Artificial Intelligence (AI) integration into social media sentiment and analytics is one of the advanced methods a company uses to understand the consumer's perception, control a brand's reputation, and improve marketing strategies. That is why social media users compile and create a significant amount of text data, photos, videos, and animations every day that is difficult for businesses to analyze and utilize using basic tools (Kietzmann et al., 2011). This has profoundly changed the ability to analyze such information since machine learning (ML) and natural language processing (NLP) are AI technologies that speed it up and do it better. With this ability, organizations are now able to monitor the conversations around their brands, understand how their customers feel and think about their brands and how they behave, thereby allowing them come up with better and more accurate marketing strategies (Chaffey & Ellis-Chadwick, 2019).

It is evident that AI is on the rise in these technological times as it dominates social media analytics with it being the sole provider of Systems like Sentimental Analysis which focuses on analyzing the tone and information behind the text and determining whether the sentiment is negative neutral or positive and is used to improve the content distributed. Algorithms are then able to utilize NLP techniques, neural networks, and transformers in order to classify the emotions within the text: BERT (Bidirectional Encoder Representations from Transformers) (Devlin et al., 2019). These dashboards can filter out the feedback regarding brands from social media including posts, comments, reviews, and hashtags in a way that is beneficial

for businesses. Marketers could consider using sentiment analysis for early predictions about how successful their marketing strategy will be and to identify any problems worth fixing immediately (López & Kalita, 2017).

Not only texts can be included in the data as the main source for sentiment analysis, AI can also process images and videos that are seen in social media through computer vision and deep learning technologies. Thus, in cases where social media is used like Instagram and Tik Tok where there is posting of visual content, AI could picture the brand's logo, pick out products or emotions captured in photos and videos, giving the marketing perspective of how a customer views a brand (He et al., 2017). This form of analysis allows the integration of words and pictures and hence provides a complete perspective of consumer sentiments as well as the level of engagement. For example, AI tools can determine the extent to which branded hashtags are used alongside images of the product to determine the extent to which the campaigns succeeded in marketing the product and thus the feedback will be useful for increasing the effectiveness of future marketing functions (Gensler et al., 2013).

AI powered social media analytics reaches out to influencer marketing which is a key part of the strategies in the digital era. By processing the data from social media, the AI systems are able to locate suitable influencers whose content fits within the brand's beliefs and audience base, thus guaranteeing the right partners for use in campaigns (Campbell & Farrell, 2020). Moreover, AI tools are able to track the effectiveness of specific influencer strategies by looking at engagement, audience attitudes, and sales volume, thereby justifying the use of resources for gauging the effectiveness of their efforts and developing other future collaborations (Kozinets et al., 2019).

Another application AI has in social media analytics that is noteworthy is its trend forecaster capabilities. Predictive Analytics encourages AI to use already existing and current social media information to accurately anticipate changes in the market placed and focus on new topics on social platforms before they go viral. These insights enable businesses to exploit chances and realign themselves so that they are at the forefront of their competitors' rivalry (Chauhan et al., 2020). For example, during the COVID-19 pandemic, social media analytics based on AI technologies helped brands to understand the changes in consumers' needs and preferences and thus adjust the brand messages and offers (Liu et al., 2021).

AI helps to identify the crisis on social media and alerts management to assist manage reputation risks by constantly monitoring and providing alerts for conditions that pose potential threats to the company. AI has made it possible thanks to sentiment analysis tools which help in monitoring instances of disorder and sentiment backlash towards the firm and therefore help point out the aspects that are most likely to trigger such reactions (Zhou et al., 2020). For example, whenever a company is about to recall its products or during an outage, AI can be used to strategically observe how the consumers and markets are responding and address the issues quickly enough. When employing AIs to prevent and manage potential crisis, businesses are bound to protect their image and the confidence their customers have in them.

To this end, not only does the application of artificial intelligence in social media analysis and sentiment analysis have great power the use of the technology also brings several challenges. For AI models, language, including sarcasm, irony and many other subtleties tends to be inconsistent, and difficult to achieve consistent accuracy in sentiment identification (Cambria et al., 2017). In addition, skewed

analyses can result from biased training data, which can create defective conclusions and decisions (Mehrabi et al., 2021). Therefore, companies cannot ignore the need to develop and implement reliable and impartial AI models, supplemented by continuous training and validation of the model.

To summarize, AI has found application as an effective instrument for social media analysis and evaluating sentiments that allows organizations to garner useful information, identify consumer feelings and enhance marketing tactics on the fly. Through using AI technologies, an organization can improve its capacity to manage brand image, assess the impact of marketing efforts and forecast movements of consumers, making it easier to compete in an increasingly digital economy. Such a general impression of this area of AI application, however, needs to be made with emphasis on the ethical and technical challenges as well as ethical issues on data acquisition and usage (Floridi et al., 2018). In the context of a rapidly developing social environment, it is safe to say that as AI develops further, so will its applicability in the context of social media analysis, thus opening new possibilities for contacting users and attracting their interest.

3.2 Automated content creation and optimization using AI

The landscape of digital content has greatly improved as a result of the incorporation of Artificial Intelligence into content creation and management. Due to AI, personalization, efficiency as well as the scaling of content becomes easier. However, in most cases, human beings were primarily responsible for coming up with content, and as such, there was a restriction on output. AI and technologies such as natural language processing (NLP), machine learning (ML) and deep learning however were able to change this, by automating the creation of relevant text, images as well as

videos and audio content (Liu et al., 2021). Companies such as OpenAI with its GPT systems and automated writing services like Jasper AI are already developing the technology to generate blog posts, social media content, emails, and a range of other items. These programs produce informative and interesting articles, based on a variety of input prompts such as general ideas and any prior articles (Brown et al., 2020). Such a feature not only helps improve the speed of creation of content but also maintains consistency in the message of the content and its relevance to the audience, making it powerful.

The performance data and how the content is performing is always being tracked to enable continuous improvement of the content through AI content optimization. For instance, tools such as MarketMuse and Clearscope can analyze content through AI content audits and propose such improvements to enhance the content for SEO optimization (Chaffey & Ellis-Chadwick, 2019). AI algorithms implemented in these platforms help to study the most successful content pieces within a certain niche, specify relevant and low-competitive keywords and formulate suggestions that would appeal to the target audience. AI can, for instance, evaluate the article's readability, the density of keywords, the tone of the writing, and other features to write articles that fulfill the requirements for higher search engine result outcomes as well as enhancing organic traffic for an increase in ranking and visibility (Clark & Hecht, 2020). Such a strategy makes it possible for a company to be able to compete in a dynamic digital environment by allowing the company to be able to re-align its content strategy based on performance data and KPI's.

AI has also propelled new frontiers in the area of video and visual content creation which goes further to widen the scope of automated content generation. For instance, reproduction of high-quality images and videos as marketing tools or for

product demos and virtual try-ons is achievable via AI (Goodfellow et al, 2014).

Tools like Lumen5 and Canva are powered by AI, and they simplify design making use of templates and provides user-based design options whereas image and video editing tools like Pictory AI utilize ML to shorten long videos into captivating video clips (Marr, 2021). With these technologies in place, there is not only a reduction of time and resources required but also a good chance for the small businesses with low marketing budget to greatly improve their visual content which enhances competition in digital marketing.

Additionally, AI algorithms fine-grain the generated content as they align it to the requirements of each user. For example, using AI tools, it is possible to recommend different products, customize advertising copies and Emails in correspondence to a user's or a group of users' websites browsing, demographics, and history in relation to the platform (Kumar et al, 2021). Further, there are platforms such as Persado and Phrasee, where AI is employed to generate headlines and email subjects to cater to specific users and increase their chances of opening and clicking on an email. Such programs are based on sentiments analyses and predictive modeling in order to know what tone, wording, and messaging would best suit each campaign and audience (Liu, 2012).

However, the advantages presented by the use of AI in automated content and optimization creation do have challenges. To begin with, it does raise a concern on issue of standardization on AI generated content which is opposed to what the human encoders would bring in storytelling as it is devoid of emotions and creativity (Floridi et al, 2018). Other straining factors are the ramifications of using AI generated copies, which raises the question on how original the AI done copy is, and the forgeries that such copies give rise to (Vincent, 2021). As such, while attempting

to foster such strategy in order to understand assist the business in know where the core of the brand lies, they also have to control the amount of AI content in order to control ethical issues raised by the use of AI (Binns, 2018).

In conclusion, the use of AI mediated automatic generation and automatic optimization of content in the digital space is rewriting how businesses operate as it allows them to create unique, personalized, and significant content on mass scale. This is done with the help of AI through greater efficiency, creativity, and engagement from the use of ML, NLP and greater analytics which helps businesses stand out from the competition in the content based digital marketplace. However, in order to achieve success with AI in this context it is necessary to take an approach that is purposeful in the manner innovation is blended with ethics so that the content strategy is innovative, but consumer based (Chaffey & Ellis-Chadwick, 2019).

3.3 The role of machine learning algorithms in social media advertising

The current focus on Machine Learning (ML) is among the capabilities that enhance the branding and advertisement of social media. ML allows investors of different brands to target and reach a desired segment of the market through the social media platforms in a more effective mannered marketing campaign. There are vast amounts of data, including demographic, browse behavior and interaction among others, available on social media users through platforms such as Facebook, Instagram, Twitter and TikTok. While targeting an audience the first application of ML in social media advertising will utilize the most powerful resource which is the amount of data collected by the user, with the aid of algorithms advertising is significantly impacted targeting. This was done through the use of clustering and classification techniques and can achieve this in a more cost-effective and efficient manner or by employing

less resources (Kietzmann et al.). For instance, elsewhere on Facebook Ads Manager, ML analyzes data of advertisement consumers and decides on what advertisements to display to a user. It does this based on the users' interests, profile data or previous engagements with the aim of targeting and engaging specific consumers with the relevant advertisement (Tucker, 2014).

Along with targeting, ML algorithms in programmatic advertising improve the process of RTB. Here RTB is said to utilize ML in the ready automation of ad purchases and placement on social media platforms enabling the clients to make real time bids on each ad impression. ML elements further conduct engagement forecast based on user profiles, contextual data, and historical performance information for the purpose of optimizing investment in bids (Lambrech & Tucker, 2013). It not only diminishes the expenses but also aids in the efficiency. This in turn means that companies will be able to spend their budgets in a better way as well as target high value customers more accurately. For example, campaigns on advertising platforms such as Google Ads and LinkedIn utilize ML techniques in RTB to provide the most appropriate bid for advertisement placement so that the campaign can have the maximum effect given the financial parameters (Rust, 2020).

ML algorithms are also crucial for the advertising industry since ad personalization has become a basic functionality in the social media arena. Thus, every individual advertisement is designed to meet the needs of each individual, as ML algorithms are steeped in predictive analytics. However, techniques like collaborative filtering and NLP enable platforms to build a plethora of advertisements along with recommended videos, raring the chances of user engagement (Smith & Linden, 2017). Take, for example, the case of Spotify and Amazon Music, which use ML algorithms to track their users' listening activity and

automatically advertise certain playlists, events, or goods, practically placing ads within user interfaces (Kumar et al., 2021). Moreover, tools for AI assistance to emotion analysis enable advertisers understand what users want to hear and touch in textual content that is published by the users and determines the mood re-estimate trends (Liu, 2012).

Another worth mentioning usage of ML in advertising on behalf of social media is ad performance optimization. ML algorithms are able to systematically keep track of ad campaigns and their performance by providing feedback on metrics such as click rates, conversion rates, and engagement metrics among others. In order to adapt the placement of various advertisements, their timing and budget, Zhang et al. (2019) mention that various platforms utilize reinforcement learning along with multi-armed bandit algorithms to optimize performance. This allows the advertisement campaigns to update with the information fed to them, allowing the advertisement to complete its purpose more efficiently. For further example, Meta in the Dynamic Ads dynamically utilizes ML to show the most relevant products to the client in order to increase the probability of converting the investment into profit (Chaffey & Ellis-Chadwick, 2019).

In addition, the advertisement strategies would deploy ML algorithms to tackle the issue of ad integrity management and tackling fraud in the advertising space on social media. By recognizing large amounts of data and learning the anomalies, ML algorithms help inform click fraud, as well as other fraudulent activities such as false engagement and bot generated impressions, preventing advertising budgets from being wasted while maintaining authentic campaigns (Bussmann et al., 2020). Google and TikTok are other examples of social media ads platforms who also use advanced ML such as anomaly detection and supervised

learning to remove suspicious and invalid interactions to regulate the ad quality and increase trust among the users (Lambrecht & Tucker, 2013).

The intersection of social media advertising and machine learning offers new directions. Of course, if we are considering the broader implications of privacy legislation it is clear that there are problems, but I think every new technology has challenges as well as opportunities.



CHAPTER 4

CONSUMER BUYING BEHAVIOR IN THE AGE OF DIGITAL MARKETING

4.1 Traditional theories of consumer behavior

The AIDA model plus the consumer decision-making process can be said to be the earliest frameworks that underpin the analysis of how consumers respond to marketing stimuli and make purchasing decisions. These were theorized in the analogue era and assume a sequential and ordered series of thoughts and actions a consumer has to make in order to make a purchase. The AIDA model first elaborated by St Elmo Lewis would later be reintroduced by Simon Strong, and these four are also stages that he mentions during his research: Attention, Interest, Desire, and Action (Strong, 1925). Under this model, A marketer has also to first draw the attention of the consumer, develop the interest in the product, build the desire to own it and lastly persuade the consumer to act such as buying it. Because of the simplicity of AIDA, it has become a classic in advertising planning, especially with the development of advertisements that follow these stages (Barry & Howard, 1990).

A different major idea which is the consumer decision-making process is more fully developed because it captures the cognitive-emotional processes of consumers as they go through the entire journey. This model usually has five key processes namely the recognition of what the problem is, information search, evaluation of alternatives, purchase decision and post purchase evaluation (Blackwell et al., 2006). At the first stage of the process where the problem is known as identification, the consumer also consists of pursuing undertaken need or problem that helps rouse further intelligence action seeking up to both inside and outer departments. In the purchasing process, during consideration of alternatives, they

evaluate prices and quality across different brands and eventually decide to purchase. The last and final one, post purchase, concerns itself with the consumer satisfaction and/or dissatisfaction over the product or service received which serves to determine the purchasing itself and to a larger extent brand loyalty (Solomon et al, 2019).

These classic models stress the importance of knowledge of consumer psychology and behavior in the formulation of effective marketing strategies. For instance, the AIDA model stresses the importance of exposure to advertising, informative communication, and effective appeals, which are still applicable in digital marketing today (Vakratsas & Ambler, 1999). Likewise, the consumer decision-making process gives one an understanding of the framework of information and evaluation as an aspect of choice making and therefore brings out value and accountability in advertising within the decision-making process (Kotler & Keller, 2016). These theories have also impacted the evolution of modern-day marketing concepts such as sales funnel and customer journey that modify classic models to meet the realities of digital and multi-channel environments (Lemon & Verhoef, 2016).

Arguments have been raised against traditional theories for their linear and static attributes which a real-life contemporary consumer may not necessarily exhibit, especially with regards to use of digital and social media advertisement (Court et al., 2009). It is observed that a contemporary consumer's activity is often not a straight line, this is more so the case where points in a process such as the purchase decision where online reviews or social media may cause a re-evaluation of the alternatives initially considered (Hennig-Thurau et al., 2010). Notwithstanding these inaccuracies, traditional theories are still useful as commencing points which

explain certain aspects of consumer behavior and are the gradual starting points for developments of advanced and more flexible models.

To summarize, the AIDA model and the consumer decision-making stages are among the traditional theories of buying behavior that have contributed greatly to the field of marketing in that they have facilitated understanding on the interactions that exist between consumers as they make aware to purchase. These models may have weaknesses in explaining the modern-day complexities of consumer behavior, through their continuous use, marketers get relevant pieces of information in regard to who the consumer is and when a good and relief marketing strategy will be developed (Kotler & Keller, 2016).

4.2 How digital platforms have reshaped consumer buying behavior.

Consumer behaviors and interactions have undergone a formidable metamorphosis with the introduction of the digital medium. E-commerce sites, social media and mobile applications have transformed what would have been a straightforward and chain-like procedure of going to a shop or seeing an advertisement into a complex smooth multi-channel interaction process. (Kotler et al, 2021). They have access to more and more information resources and are able to analyze different features of the products, price variety, peer recommendations and product reviews instantaneously through the digital channels (Lemon & Verhoef, 2016) Thus, this trend has enabled consumers to be more in control of their purchase decision as they no longer have to be depend entirely on the brand-led communication but are now more responsive to user-led communication and feedback (Hennig-Thurau et al., 2010). Alongside this transformation, areas such as product reviews, customized suggestions and flexible

prices are mobilized which are exemplified by Amazon and Alibaba (Chaffey & Ellis-Chadwick, 2019).

In particular, social media sites have proven to be some of the fastest-gaining opinion leaders in relation to the consumers' making decisions. Instagram, Facebook and, TikTok became online stores where people find goods because of targeted advertising, endorsement by influencers, or social exchange (Stephen, 2016). Such AI and machine learning efficacy enables these platforms to present the users with customized material by clothing the ads and recommendations to the preferences and the history of the user (Tucker, 2014). This form of the advertisement not only enhances the number of users but also reduces the amount of time taken to decide since the consumers are placed with appropriate goods without them having to look thoroughly into them (Kumar et al., 2021). They have also added shopping posts and payment systems, which merged the goal of discovering and buying, with buying on demand which is just one click away (Grewal et al., 2020).

In the case of Amazon and AliExpress, the availability of all these digital platforms redefined what has been referred to as the evaluation stage in the consumer journey. Online reviews, ratings, and comparison tools enable consumers to be better informed by giving them an insight into the collective experience of a particular good (Chevalier & Mayzlin, 2006). For example, thanks especially to comments in TripAdvisor and Yelp, consumers can rate and choose services during their trips. Such influences are also noticed in some other businesses like retail and food (Liu, 2012). In addition, thanks to these digital platforms, fueled the development of subscription fashion services and DTC brands that have brought in fresh business models that meet the need for ease of use, personalization, and interaction with brands (Rust, 2020).

To put it another way, digital platforms enabled consumers not only to retain how they interact with brands but also how they value those brands. Consumer-oriented branding strategy has now gone beyond the traditional pricing strategy and also considers user experience, sustainability, and brand credibility as brand attributes to be evaluated, even more, through digital touch points (Lemon & Verhoef, 2016). Consumers started to anticipate cross-channel integrations, so called frictionless interactions where offline and online experiences are embedded, streamlined, and easy to access. Nike and Sephora are some of the retailers that have successfully employed digital channels to integrate physical and virtual experience through combining in-store applications, virtual fittings and customized recommendation systems that reinforce client satisfaction and loyalty (Verhoef et al., 2015).

However, there are challenges too which are the change in consumer purchasing behavior through this digital medium. Too many options and information about a particular product can result in fatigue and thus delay the decision of buying that product (Iyengar & Lepper, 2000). To make things worse, worries about privacy concerning data collecting and directed advertisement have posed ethical questions, which caused consumers to request larger openness concerning how their private details were used and for what purposes (Acquisti et al., 2016). Such issues ought to be handled by companies if expectation of consumer loyalty is to be preserved and if longevity of the digital plans is to be achieved.

To summarize, a key transformation caused by the increasing web trends has been the change in the shift of consumer buying decision and behavior as a result of having more information, better coupling of individual preferences and transactions, and easier buying processes. The change has enabled consumers to dictate how they

want to purchase what they want and made the once linear journey more complex and engaging. But with that said, as more businesses investigate new possibilities in the digital era there are key issues that arise, such as decision fatigue or privacy that needs to be addressed in order maintain consumer trust and loyalty (Kotler et al., 2021).

4.3 Factors influencing consumer trust and engagement online.

There are several aspects that impact a consumer's trust and level of engagement when interacting with a website, such as security, web design, credibility of information, personalization, and social factors. It is understood that consumer attitudes need to be favorable towards a website in terms of its trustworthiness and credibility since a consumer cannot purchase anything without a sense of trust. Design elements and functionality of a Web site have a strong influence on that trust, where easy-to-use design, good appearance and functioning links indicate effectiveness (Gefen et al., 2003). A densely populated or poorly structured website is on the contrary untrustworthy and might push a consumer away. There is also a strengthening of trust through the provision of essential information including item prices, availability of a product, and the media return terms which apply when such conditions exist (Kim et al., 2008).

Also, the legitimacy of content and the source of that content enhances the level of online trust. For consumers to make informed decisions, the consumers need such well-written research, accurate and verifiable information and such consumers would be gained by platforms that provide such content (Cheung et al., 2009). Personalization enables engagement by making user experiences more relevant and catered to them. As an illustration, AI powered assistants that give personalized

suggestions, display personalized ads, and generate dynamic content create a feeling of relevance and worth and hence increase trust and loyalty (Kumar et al., 2021). Nevertheless, the over-application of unsolicited recommendations and intrusive advertising may undermine trust and cause privacy issues (Acquisti et al., 2016).

Also, security and data protection measures are critical for online trust. Customers are more aware these days of the risks that are associated with the provision of personal information hence the need for encryption, secure payment gateways, and compliance with data privacy regulations (Gefen et al., 2003). Such authorities that make efforts to protect users' data using policies with clear guidelines and with certifications such as GDPR compliance boost user confidence (Tene & Polonetsky, 2013). Trust and engagement are further enhanced by social proof such as reviews, ratings, and testimonials. It was found out that even one person's positive reaction towards a brand or product serves as a reinforcement to other people who intend to interact with that brand or buy that product (Chevalier & Mayzlin, 2006). Sites like Amazon, Yelp and Trip Advisor increase consumer involvement through the use of user-generated content to provide a sense of belonging and trust (Hennig-Thurau et al., 2010).

Brand authenticity and ethical practices are also critical modifying elements of trust and engagement. Customers are more likely to have confidence in brands that value ethics and social responsibility. This becomes more important in a period characterized by information disorder and fraudulent advertisement practices where authenticity becomes a competitive advantage of the online platforms (Rust, 2020). For example, firms that communicate via social networks with their consumers, and actively interact with them, or respond to customers' concerns, tend to have stronger trust and engagement metrics in the long run (Stephen, 2016).

Those efforts notwithstanding, issues still exist regarding the building of online trust. Algorithmic bias, misinformation, or data leaks, for instance, may decrease consumer trust and accentuate the necessity for ethical governance as well as technological transparency (Floridi et al., 2018). Furthermore, cultural differences as well as personal characteristics may influence what consumers regard as trustworthy; thus, need for platforms to have strategies that are tailored to such consumers (Hofstede, 2001).

To sum it up, consumer trust and online participation is dependent on several interrelated aspects, such as design quality, information persuasiveness, women but in greater security, and social influence. Companies that are focused on these at the same time as explaining the consumers about ethics and privacy matters will have a greater chance of getting more buyers. In the world where new innovations are constantly coming out, gaining customer trust will continue to be a major mountain to overcome, as well as being the foundation for consistent success on the internet (Gefen et al., 2003; Kumar et al., 2021).

CHAPTER 5

IMPACT OF AI AND ML ON CONSUMER BUYING BEHAVIOR

5.1 Influence of personalized marketing on purchase decisions.

Marketing that is tailor made for a specific individual is fast becoming a great deal of influence on purchase decisions by employing the ability to use data and analytics.

This assertion derives from the fact that marketing existed prior to technology as an academic discipline, where it fought tooth and nail for the consumers' willingness to buy into the product offer. For example, a tailor makes a suit for a client, and does not create one suit for all clients, same concept, apply it to marketing. There has always been a movement from large scale marketing (one size fits all) to individualized marketing (Kumar et al, 2021). This enables better connection with the consumer, improves saliency and builds value perception. Built on collaborative filtering, Amazon, LinkedIn, and Netflix suggest certain products or content based on users' past interactions, which in turn drives a higher rate of conversion (Smith & Linden, 2017).

Custom marketing gained its effectiveness due to the fact that it can deal with the issues of information and choice overload which are considered to be an everyday norm in the contemporary world. By narrowing down the options from what would best fit a consumer's preferences, custom marketing strengthens the likelihood of a purchase being made and makes it easier for the consumer to decide (Iyengar & Lepper, 2000). Furthermore, segmented e-mail marketing with dynamic content has been seen to have much higher open rates and click-through rates than generic emails, thus substituting a negative effect of high-volume e-mailing (Chaffey & Ellis-Chadwick, 2019). Personalization also brings trust and loyalty since

consumers tend to view such brands that focus on their needs as more genuine and customer-oriented (Lemon & Verhoef, 2016).

The empowerment of direct marketing goes beyond just an online presence, as companies implement data analytics in their offline plans as well. Like how brick and mortar stores Deploy AI equipped devices to capture and analyze in-store behavior and also, promote sales through a mobile application or an interactive kiosk, thus providing an integrated omni-channel experience which aids in the buying decision (Verhoef et al, 2015). In the same way, personalization also provides opportunity for dynamic pricing whereby companies offer consumers tailored discounts and incentives to foster even more purchases (Rust, 2020). Thus, targeting an individual or a selected group within the marketing sphere, is quite effective as it assists in securing future sales as well as the present sale.

Nonetheless, though personalizing the content has shown to have some fruit, it rests upon the intercept between providing related content with keeping things private. On the opposite spectrum, too much personalization can cause intended effects to reverse, for Example, Ad's targeting too much over people and being too intrusive or unwanted (Acquisti et al, 2016). In addition to this Data privacy and data misuse have become sensitive topics that make consumers much more aware of the practices adopted by Businesses. This has led businesses to become more compliant and acquire a level of transparency such that they fulfill requirements including the General Data Protection Regulation, or GDPR (Tene & Polonetsky, 2013). It is important to combat these issues to ensure consumers have trust and that the positive effects of personalization in marketing strategies works on purchase decisions.

To sum up, we can observe that marketing that is customized for the individual goes a long way in changing the buying behavior of consumers through

the improvement of the relevance, efficiency, and effectiveness of marketing activities. As such, organizations can use data and advanced analytics to make it easy for consumers to make decisions whilst enhancing trust and loyalty. But the efficiency of personalization is restrained by appropriate data usage and consumer confidentiality which makes people love the business rather than estranging some of them (Kumar et al., 2021).

5.2 The effect of AI-powered recommendations on consumer choices

The impact created by AI-powered recommendations has been felt in consumer decision-making, as tailored and relevant suggestions recommend easier choices and improve the way consumers shop. Taking advantage of AI systems that can be augmented with collaborative filtering, content-based filtering, or hybrid models, Smith and Linden (2017) explain that consumers' characteristics, activities and/or history are used to determine products or services that best fit the interests of the consumers. Such systems of recommendations are common features in app services such as Amazon, Netflix and Spotify as they boost consumer engagement by providing relevant alternatives while limiting the overload of information presented to the consumer (Kumar et al., 2021). As an illustration, Chaffey and Ellis-Chadwick (2019) pointed out that Amazon's recommendation engine contributes 35% of total sales which demonstrates the influence of AI in making decisions and purchasing behavior.

One of the greatest consequences of AI-powered recommendations is that such systems seem capable of tailoring the experience to the specific needs of individual consumers, thereby enhancing their satisfaction. Lemon & Verhoef (2016) explain this by stating that AI has the capability of analyzing vast amounts of

information in real time and can therefore modify recommendations to fit a customer's present context such as the customer's physical location, the time of day, or recent searches. To some extent, this form of context-sensitive personalization drives a customer's sense of importance and efficiency, which stimulates short-term spending as well as promoting long-lasting relationships with the brand. For instance, Netflix is a streaming platform where users are shown TV shows and movies that their users have watched in the past, thus increasing their likelihood of watching the shows again (Gomez-Uribe & Hunt, 2016).

AI will also recommend items likely to make an impulse purchase easier which the consumer might not have actively sought out by sheen incorporating consumers selling strategies. This is managed through techniques such as upselling or cross selling where the consumer is buying one item only to be recommended other related or complementary items at the point of purchase. For example, many e-commerce websites show their customers the items that are "often bought together" or items that "customers who viewed this also viewed" in an attempt to persuade consumers to put more items into their shopping bag (Rust, 2020). The ability to encourage buyers to make purchases out of the plan demonstrates how AI can influence customer behavior.

Additionally, the use of AI-client steering tools in omni-channel techniques transfers influence from only online environments to both online and physical retailing. As an illustration, retailers offer clients an integrated shopping experience by providing in store applications and interactive kiosks that help in recommending products by complementing online information and databases (Verhoef et al., 2015). Such advanced technologies not only offer convenience to consumers but also boost

the chances of purchase conversion by showcasing the required products at the right moments during the customer journey.

Nonetheless, there are also issues concerning data privacy and ethical aspects that are quite contentious especially after the introduction of these AI recommendations. Moreover, concerns around privacy, consent and possible abuses of data that originate from the system's reliance on huge amounts of personal data increased (Acquisti et al., 2016). Furthermore, algorithmic bias may also lead to offering unreasonably or unfairly recommend certain users, especially where existing training data is skewed by inequality or stereotypes (Floridi et al., 2018). These are very progressive in light of the fact that businesses are advised to avoid such risks by instituting fair AI regulations that promote compliance with general data protection regulations (GDPR) and adherence to ethics and accountability (Tene & Polonetsky, 2013).

To summarize, AI-suggested products can be considered effective in influencing the behavior of consumers through improving personalization, making decisions easy, and encouraging unplanned purchases. Such systems such as these utilize complex algorithms and instant analysis of data to develop an individualistic approach which enhances engagement, satisfaction, and loyalty. Nonetheless, in order to maintain their relevance and the trust of the populace, enterprises must address the moral and confidentiality issues caused by the targeting of recommendations, so that AI recommendations can be useful and ethical (Kumar et al., 2021).

5.3 AI-driven chatbots and virtual assistants in enhancing customer experience

AI-powered chatbots and virtual assistants have revolutionized the customer experience, by offering a unique, efficient, and expand another option to provide satisfaction to customers. These technologies utilize natural language process (NLP), machine learning (ML), and other algorithms to communicate with clientele by offering immediate contact, answering questions, and even walking users through various steps (Paschen et al., 2020). Unlike conventional customer service, which is dependent on human representatives and is constrained by timing and productivity, AI Robotics and virtual assistants are available around the clock, providing continual assistance throughout multiple platforms including websites, mobile applications, and social networks (Kietzmann et al., 2018). In addition, by attending to customers' requests in a timely and accurate manner, these systems also contribute significantly to the decrease of waiting periods, increase of user satisfaction, and the consolidation of trust thus great overall experience.

AI-powered chatbots are great as they can create a meaningful communication experience. These systems process a client's records such as his or her surfing patterns, previous purchases, and areas of interest to prepare the answer or recommendations. For example, e-commerce platforms easily integrate chatbots for answering questions about non-ordered products, order status, or possible related items, thus increasing their vertical and horizontal sales (Lemon & Verhoef, 2016). Chatbots equipped with AI algorithms, such as the Chatbot that Sephora or H&M utilized, are able to contextualize the help that is needed by the customer thereby enhancing the customer journey as well as increasing the number of sales (Kumar et al, 2021).

Such systems can be said with confidence to be among the most advanced virtual assistants that millions of users use on a daily basis. However, customization of these virtual assistants has evolved tremendously as these technologies incorporate more and more digital interactive features into a customer's everyday life. Such AI technologies can be used to create convenience and informative user experience by providing functionalities like reminders, smart home, or interactive content to users (Hoy, 2018). Thanks to the ability of all these devices and services to interact with one another, the continuity of the consumer experience across various touchpoints is maintained which ultimately deepens consumers' loyalty and retention towards the brand (Rust, 2020). Finally, a growing number of voice assistants also facilitate search and buy voice and text commerce which reduces browsing while fulfilling a great modern-day trend of ease as well (Guzman, 2019).

AI powered chatbots are yet to take over the customer service industry as an AI autonomous solution. The AI is currently more suited to dealing with basic queries and transferring more complex cases to human agents, especially because of the fact that there are many cases that include various nuances. The operational model in which human agents solve more complex questions, while AI systems deal with the straightforward ones, increases the efficiency of operations, and enables effective customer support to be delivered (Paschen et al 2020). In addition, chatbots that have capabilities for sentiment analysis can interpret the interaction of customers with the chatbot and mark its emotional tone, allowing the chatbot to respond to customers better and more effectively deal with high priority issues (Liu 2012).

According to the research conducted by Acquisti et al. (2016), the AI agents focusing on text need significant shifts in the way they collect data as concerns over privacy remain a major barrier if they wish to be widely accepted. The societal

implications that come because of using AI agents remain a challenge when implementing these AI tools (Tene & Polonetsky, 2013). It would be safe to argue that employing communities on a constant basis to improve the algorithms of the AI agents would prove efficient in most cases. Furthermore, specifically pertaining to governance, ensuring compliance with regulations set out by the authorities, for instance, GDPR would enhance development within the industry.

To summarize, it is quite evident how AI and its focus on chatbot technology is restructuring the customer service experience. If chatbots or AI agents have the most structure and high performance in their dealings this would advance overall performance in the company and allow for a better relationship between the customer and the company. However, to say the beat the issues of handling bias, lack of empathy and ensuring accuracy measures are standard or to be expected are far from reality. All in all, the AI agents are improving the customer interface and with constant improvements we can only expect them to take on a larger role in the future as stated by Kumar et al. (2021).

CHAPTER 6

CHALLENGES AND ETHICAL CONSIDERATIONS

IN USING AI IN MARKETING

6.1 Data privacy concerns with AI-driven marketing.

The increasing use of consumer information for targeting presents a threat to data privacy and has become one of the challenges in the AI oriented marketing. AI technologies require massive datasets, such as browsing, purchase activity, social activity, location, and even biometric information, to adjust marketing and predict consumers (Acquisti et al, 2016). While these opportunities allow the marketers to reach consumers through critically relevant and focused communication, they raise serious challenges from ethical, legal, and functional perspectives concerning data privacy. The data privacy issues are often related to the degree of consent that a consumer must agree to during the process of offering, collecting, storing and using of the consumer's data, which fuels the consumer's distrust and skepticism toward a given business (Tene & Polonetsky, 2013). The issue of AI personalization efficiency against the violation of basic privacy of the user, has replaced the traditional privacy protection issue.

The biggest threat alongside AI-enhanced marketing is the potential for consumer data to be accessed or even abused. The Cambridge Analytica controversy, among others, has shown abuse of privacy and personal details for changing a consumer's choice which stirred a wide range of criticism and loss of trust in social networks (Isaak & Hanna, 2018). Such high-profile cases illustrate the weaknesses of data protection compliance, for instance, insufficient security, poor supervision, and the commercialization of private data via external data brokers. Such actions are not

only a breach of trust towards consumers but have also put the businesses at risk of tarnishing their image and have opened them up to legal suit which indicates a gap in the regulation of the protection of personal data.

Furthermore, the integration of Artificial Intelligence into the marketing field is drawing attention because of the discriminatory nature of algorithms and the potential of further privacy infringements. AI systems trained on biased datasets may, for example, favor some social groups over others in their targeted marketing and recommendations (Floridi et al., 2018). For instance, some research has argued that algorithms allow access to high-quality services while denying other categories of users access to financial products as a means of abuse. The described actions are not only ethically questionable, but also subject the companies to regulators and legal consequences, as discrimination practices cannot be based on fairness and equality.

Certain strategies or approaches were needed for addressing the above-mentioned challenges. This is probably the reason as to why certain regulatory frameworks such as the General Data Protection Regulation or GDPR in the European Union and the California Consumer Privacy Act or CCPA in the United States have been introduced. These laws require companies to secure an individual's informed consent before personal data is collected, provide adequate explanations of the purposes for which the data is collected, and afford consumers the right to access, erase, and withhold any further processing of their data (Tene & Polonetsky, 2013). These regulations impose costs on businesses in terms of data management systems and people, compliance laws and procedures, and others but also represent an avenue for organizations to create confidence with their clientele through ethical use of data (Acquisti et al., 2016).

Notwithstanding these legal developments, the steady progress of AI technologies tends to fall beyond the legal measures – gaps of enforcement and accountability arise. New technologies such as facial recognition systems, voice assistants and biometric authentication pose additional challenges to data privacy issues as these systems are user friendly but shallow in transparency. For example, it has been noted that voice assistants such as Amazon Alexa or Google Assistant process large audios from their users, which poses concerns about how informed users are of such practices and if they are ethically aware of its potential abuse patterns (Crawford et al. 2019). Such issues underline the necessity for companies to not just engage in minimal compliance procedures of the law, but to actively seek to protect the privacy of people.

Some such precautions may include robust encryption of data, anonymization of data, and regular audits aimed at identifying and cutting risks. Adequate hardware and software as well as comprehensive analysis of the impact of AI development on consumer rights will help achieve an ethical orientation in all operations (Binns, 2018). It is also beneficial to aim for privacy as part of organizational policies to narrow the gap between where technology is and where it should be from an ethical standpoint – this gives the opportunity to shift the focus in marketing towards a reliance upon consumers.

Another important issue in the arena of data privacy is that of consumer consent. Many of the AI marketing systems apply the implicit consent models whereby the user consents to the collection of data when he/she accepts the terms and conditions without being particularly aware of the extent of the data to be used. Ironically, the absence of informed consent has resulted in the demands for better communication and easier privacy settings to foster that consumers have the

autonomy to choose what data concerns them and what does not (Acquisti et al., 2016). Companies who seek to inform consumers about their options and offer proper opt-in and opt-out choices stand in a better position to create confidence and establish long lasting relationships with their customers.

To summarize, it is rightly argued that data privacy issues are the major concern in AI-enabled marketing, and that there should be a perfect balance between the personalization of services and the ethical use of the data. It is clear that AI technologies enhance consumer interactions and overall business performance, but they also pose threats to security of data, probability prejudices and lack of transparency. To meet these challenges, an integrated strategy that embraces compliance with regulation, risk assessment and management, as well as responsible development of AI is required. In a world where consumers are becoming more sensitive about their data privacy, it is these businesses that emphasize trust, transparency and responsibility that would be able to solve the complexities that AI has posed in business marketing and remain competitive in the emerging world (Floridi et al., 2018).

6.2 Ethical implications of automated decision-making.

The adoption of automated decision-making systems that utilize artificial intelligence (AI) and machine learning (ML) creates an entirely new set of ethical challenges that affect the classical standards of responsibility, equality, and transparency. By definition, automated decision-making means the use of algorithms to evaluate data, predict outcomes and reach decisions with little or no human input. These systems however are not without problems; they are faced with ethical challenges that deal with issues of bias and discrimination, privacy, and accountability (Floridi et al.,

2018). Of primary concern is the phenomenon called the “black box” of many AI algorithms, especially those based on deep learning, in which human insight into the decision-making process is lost. There is concern that, because of this opacity, errors or biases in automated decisions may be complicated to identify and rectify, or even understand, particularly when high stakes are involved, such as in recruitment, credit rating and criminal investigation (Doshi-Velez & Kim, 2017).

The most pressing ethical dilemma in automated decision-making can be bias and discrimination. Such practices might be entrenched if the algorithm is trained on data which carries prior societal norms and prejudice (O’Neil, 2016). For example, hiring algorithms have been demonstrated to correlate higher with certain groups of people in terms of skill, which discriminates the less represented groups based on previous hiring practices (Barocas & Selbst, 2016). The same applies to the criminal justice problem area in which predictive policing within algorithms has been accused of targeting weaker exact communities more often, thus reinforcing that problem structure (Eubanks, 2018). These consequences also suggest that the developers and the organizations have an ethical obligation to ensure that algorithms are trained on diverse datasets and undergo stringent fairness tests.

A further notable ethical concern that can be mentioned relates to the demise of individual self-determination and privacy. In cases where such decision-making systems are used, there is an increased reliance on data extraction in such a way that it encompasses a huge amount of personal data (Acquisti et al., 2016). This raises issues of the individual’s rights of giving or denouncing consent because the circumstance may not allow them to room to clearly understand how algorithmic decisions and the usage of their data would impact their lives. For instance, in targeted advertising, algorithms can alter how consumers think and act to fulfill the

end goal – which raises the questions of how far technologies designed to persuade can go (Zuboff, 2019). Also, the possibility of abusing private information such as biometric or health information only points to the idea of stringent measures of data protection and tightly controlled practice of ethical matters in the industry.

With algorithmic decision-making comes the concern of the gap of accountability as it escalates to be an ethical concern. All the legal authorities in this regard seem to be ineffective as the major problem is loss of responsibility or ownership for an opportunity and therefore losing autonomy. And annotation becomes the real concern (Binns, 2018) It becomes extremely difficult to determine who to hold for blame or the algorithm itself for incorporating bias. For an organization to practice automated decision-making this can also be a point of weakness for them.

People often overlook the potential that algorithmic decision making has where it can work towards eliminating human errors and biases in decision-making challenges. Algorithm has the power to change the current now systems into ones that can be proactive and in return serve a greater cause of ethical accountability if it is reinforced in its design (Floridi et al., 2018). Everyone understands the need in society for AI systems that work together for the good of everyone, which is where the key aspects of 'AI for Good' come into play as it serves as an ethical framework to build these mentioned systems (Jobin et al., 2019).

To sum up, the ethical aspects of automated decision-making systems cannot be viewed in simple monolithic terms as they involve bias, transparency, privacy, and accountability, all of which are quite intertwined. With the inclusion of such systems into sensitive areas being the trend, it is the responsibility of industry practitioners, policy makers as well as technologists to address these issues and develop ethical

frameworks that guide the integration of AI systems into society. In doing so, we can invest in fairness, accountability and transparency in automated decision-making while getting the good out of it and making sure automated decision tools works as envisaged by Mozilla (2020).

6.3 Transparency and consumer trust in AI-powered campaigns

Transparency emphasizes the importance of the campaign to the consumer, particularly in efforts to allay the fears around the use of data, AI decision-making, and automation of marketing activities. AI based campaigns, which use ML and predictive analytics to tailor offer and content to customers have a huge dependence on consumer data like browsing, transactions and even demographics of consumers (Kumar et al., 2021). These technologies make it possible to formulate marketing strategies that are highly efficient in execution and control but are susceptible to a host of issues, one of which relates to the issue of transparency. Because many consumers are unable to understand how their information is collected, processed, and leveraged, they have a reason to be suspicious and mistrust (Tene & Polonetsky, 2013). It follows that transparency is crucial in closing this gap of trust, so that consumers feel that they know enough about the marketing practice to trust AI marketing campaigns – and, therefore, decide to engage with them.

A central principle, which we shall examine, of the democratic ethics in AI deals with reasonable explanations of how algorithms are used and how different decisions are made. Due to the black box characteristic of a lot of AI systems especially deep ones, consumers tend to be at a loss as to the reasons why they are being shown certain recommendations or adverts (Doshi-Velez & Kim, 2017). To this end, it would only be proper for firms to consider so-called explainable AI XAI

frameworks in which users can understand certain algorithmic operations without heavy technical bombardment. For example, Netflix and Spotify contribute some clarity when they describe their recommendation algorithms, which in turn promotes faith and responsibility among users (Smith and Linden, 2017).

The retention of attention is related to the understanding of data sovereignty. The General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) have also been quite insistent in relation to the necessity of obtaining consent, and giving information (Tene & Polonetsky, 2013). Firms that seek to adhere to such regulations in addition to avoiding legal sanctions also win customers' trust by demonstrating their practicality. Furthermore, increased understanding of how consumer data is protected, may change attitudes of consumers towards AI based marketing practices, research has proven that people are more likely to provide their information if they understand more clearly how their information is being used and protected (Acquisti et al., 2016).

As well as data disclosure, ethical know-how is very important for customer willingness to engage in AI based campaigns. As brands are expected to use AI in a responsible way and refrain from seeking exploitable opportunities or engaging in behavioral manipulation (Zuboff, 2019). A case in point is the need for relevance in targeted advertising but the embarrassment of excessive retargeting and solicitation of health or financial data. Such ethical considerations if communicated well will assist the companies in ensuring consumers' confidence in their practices, which happen to be endorsed by the society and individual rights (Floridi et al., 2018).

Biases in AI systems are now considered important threats to transparency and must be addressed because they might without borders undermine trust. AI powered campaigns enabled by Algorithms entail discrimination when employed to

price in certain groups or exclude elements of the population, fray the confidence of consumers and brand image (Barocas & Selbst, 2016). It is clear that applying AI powered marketing strategies will be practical if such risks are identified, addressed and all the measures communicated to the market (Binns, 2018).

In conclusion, there is a view that campaign targeting or looking forward to gaining success through the electricity of artificial intelligence by consumers should be vulnerable on a tri-dimensional characteristic while making such campaigns which are worries about data, algorithms data and ethics of all practices.

Incorporating, explaining frameworks such as AI and complying to data privacy laws plus a bounds bipartite split of the firm's biases made allows clients to take their relationship with the firm to yet an unexpected height. As the era of AI reaches a new horizon it becomes apparent that taking AI's abilities in marketing to greater heights or use it responsibly resides in implementing the truth comprehensively (Kumar et al., 2021).

CHAPTER 7

REGIONAL CONTEXT:

DIGITAL MARKETING AND CONSUMER BEHAVIOR IN TÜRKİYE

7.1 Overview of the digital landscape in Türkiye.

Türkiye's reliance on the Internet as well as on mobile technologies and entrepreneurship has shaped the trends of the digital economy. With population approximating to 85 million and an 80% rate of Internet penetration, Türkiye is transforming the way people work, communicate, and consume (Statista, 2024). The country is projected to transform into a more interconnected one as mobile technology is becoming an important means considering about 70% of the people use smartphones to connect to the internet (We Are Social, 2023). Furthermore, the development of technology startups combined with other steady investment has placed the case of the country's digital economy as one of the important players of the development in the region and the world as a whole, all of which in the wake of the fourth industrial revolution.

The varying Tiers of e-commerce in the Turkish digital context can be exemplified on focusing on the rapid expansion of its e-commerce industry. Trendyol, Hepsiburada, and Yemeksepeti dominate the market, allowing clients to have a complete online shopping adventure including same day delivery, reliable payment systems and other features such as: personalized (Digital 2023 Türkiye Report) recommendations. Concerning the Turkish population, lockdown measures introduced due to the COVID-19 pandemic also aided e-commerce's penetration as the pandemic changed profoundly how people lived and interacted. Türkiye's economic performance during the last year was impressive, according to the Turkish

E-Commerce Association, the eCommerce industry saw a growth of about 60% in 2022 bringing total annual growth to about \$20 billion USD (TÜSİAD Digital Economy Report, 2023). In this context, the trend marks a change in consumption habits, increased use of internet platforms for the purchase of everyday items, expensive goods and even education and medicine.

The importance of social media platforms in the digital landscape of Türkiye is critical. Social media is now a primary source of communication, entertainment, and commerce with Turkish people being among the most active Instagram users as well as Facebook TikTok and Twitter (We Are Social, 2023). Companies utilize such platforms for advertisement, influencer, and customer engagement campaigns, often using artificial intelligence technologies for more personalized appeal to the multicultural audiences (Stephen, 2016). Social commerce, which is purchasing directly from social media, has also been on the rise with Instagram and Tik Tok enabling ready to wear items shopping. These changes reflect the trends across the globe while at the same time addressing the specific characteristics of the Turkish market that values ease, trust, and engagement.

Concurrently, the growth of the fintech industry has also been prominent, which has also been an impetus for the development of digital payments and financial services. Digital wallets like Papara, Paycell and the increasing utilization of contactless payment systems have changed the way consumers and businesses interact financially. Türkiye's central bank has also launched initiatives aimed at increasing the use of digital payments, thus making the country firmer as far as technology and innovations in the fintech industry is concerned (TÜSİAD Digital Economy Report, 2023). Such progress has greatly improved e-commerce by

increasing consumer satisfaction and affordability and enabling SMEs to engage in the digital economy more effectively.

In spite of these victories, Türkiye's digital outlook continues to pose challenges particularly in data protection, digital literacy and regulatory supervision. As a result of factors such as increased use of AI and advanced analytics in marketing and e-commerce, concerns on data protection have become more amplified. Türkiye has also enacted a Personal Data Protection Law (KVKK) with the aim of tackling such issues, by providing a framework for businesses on how to collect, store and use consumer information. But many companies endure difficulties particularly SMEs regarding compliance with the KVKK regulations owing to the challenges surrounding data handling as well as the expenses associated with sophisticated privacy systems (Yüksel, 2022). Furthermore, major concerns with respect to various impacts of AI, such as issues of algorithmic bias and ethical use of AI, are also prominent in Türkiye, whereby enterprises grapple with various ethical considerations related to the use of AI based systems in marketing, communication, or even decision-making functions (Floridi et al., 2018).

The fact that there is also an urban-rural divide with regard to nature and the digital divide that continues to persist regardless of these efforts is internal inequality that every country has or develops. For instance, whilst in the cities like Istanbul, Ankara and Izmir have proper and complete digital physical infrastructure and digital economy ecosystem, rural areas are more or less non connected.” This underscores the need for improved policy and capitalization measures that would increase the probability that the population of Türkiye would be economically active in the digital economy. For instance, the National Broadband Plan is a government scheme that

targets some of these deficiencies, but coverage gaps persist in all regions and hence not all populations are digitally connected (TÜSİAD Digital Economy Report, 2023).

As it is clearly stated by various researchers, Türkiye stands in a strategically advantageous position geographically and this benefits the digital composition of the country, allowing the country to be seen as the connector for Europe, Asia, and the Middle East. This geographical feature puts Türkiye in a position to enhance cross border ecommerce and draw international players in technology and innovation. With the increasing number of techs start up and incubators, Turkish Startup Ecosystem report portrays how these start-ups and incubators are helping to increase the innovation in the areas of AI, blockchain and fintech. Türkiye's role in regional digital transformation dynamics makes it even more influential on a wide range of global digital economy processes (Digital 2023 Türkiye Report).

Additionally, the age-defying culture of Türkiye's youth is a remarkable contributor to the expansion of advanced technologies. They actively use social media and act as consumers and innovators. A large portion of Türkiye's population consists of millennials and Generation Z who actively use social media and are also socially innovative. This shift in demographics has pushed for tech adoption, such as AI-powered chatbots, virtual assistants, and advanced recommendation systems that are now commonplace in enhancing customer experience across various sectors (Kumar et al., 2021).

To summarize, the information and communication technology growth the country has been characterized by the rapid expansion whereby the population is coming to rely more on digital shows more of digital growth in the country. The growth in e-commerce, social media, and the development of the fintech market in the country earmark it as a progressively emerging power in the region of digital

transformation. Nevertheless, however, there are also a lot of challenges that need to be confronted to attain sustainable and inclusive growth, including but not limited to, data protection and privacy, regulatory and compliance as well as the issues of the digital divide. Harnessing with its geographic location and youthful population and enthusiasm, Türkiye is ready to continue forming her digital future focusing on fair, ethical, and equally balanced innovation (Statista, 2024; Digital 2023 Türkiye Report).

7.2 Adoption of AI technologies by Turkish companies.

In recent years, the trend of using AI technologies by Turkish organizations has been strengthened on the backdrop of the country's expanding digital economy, greater attention to innovations and competition in the changing global economy. Retail, finance, manufacturing, logistics and other Turkish companies are using AI for operational efficiencies, improving customer experience, and growing their business. This includes predictive analytics, targeted advertising, anti-fraud measures and optimization of logistics processes, which represent a tendency of the entire world toward data-oriented business management systems (Kumar et al., 2021). This penetration is additionally fostered by Türkiye's burgeoning entrepreneurial culture, in which technology companies and incubators are instrumental in design and marketing of AI products that are relevant to the region (Digital 2023 Türkiye Report).

As for the retail market, major Turkish companies such as Trendyol and Hepsiburada have deployed AI technologies to improve the customer experience and operational effectiveness of the organization. These platforms employ AI technologies to include the recommendation systems and predictive analysis for

providing a more tailored shopping experience, developing better pricing techniques, and predicting customer habits. There is also widespread use of AI chatbots to offer round the clock services to customers thus minimizing the time taken to respond to queries and increasing the satisfaction of users (We Are Social, 2023). In the same way, for the banking services such as Türkiye İş Bankası and Garanti BBVA use AI for the prevention of fraud, credit scoring, and targeting of clients with suitable financial products. These organizations apply machine learning based algorithms to a large set of transactional data in order to detect instances of fraud as they occur. This not only provides safety but also improves the confidence the clients have on the institutions (TÜSİAD Digital Economy Report, 2023).

In Türkiye, the manufacturing sector is under rapid changes due to the AI new tools embrace enhancing production and product quality while decreasing the expenses. AI and IoT-powered predictive maintenance solutions are enabling Turkish manufacturers to lower losses due to equipment malfunctions while optimizing resources. For instance, Turkish business conglomerates like Koç Holding have started to deploy AI based systems in their factories and fusion the technology in the business (Yüksel,2022). These enhancements are not only increasing overall efficiency at the workplace but making Turkish businesses more competitive in the international arena.

In Türkiye, the logistics and transportation companies have applied AI tools in their processes with the aim of improving their efficiency and accuracy in deliveries. In the case of companies like Getir and Yemeksepeti, such use of technology enables tracking of their delivery and enhance their optimized routes. These technologies allow for flexibility in planning schedules, contribute to fuel efficiency and achieve the right time of deliveries, responding to the increasing

landscape that is characteristic of the ecommerce economy (TÜSİAD Digital Economy Report, 2023).

The situation in Türkiye appears dire when it comes to the employment of AI technologies, though it still harbors some support in companies. A key barrier is the lack of adequate professionals with adequate training and knowledge in data science and AI implementation. The strong presence of professional colleges and universities does not, however, explain the appalling state in which the demand for professionals in AI does not tally with the available human resource and therefore hampers the scalability of AI initiatives (Floridi et al., 2018). The use of AI in firms is also impeded by data privacy concerns and issues related to the application of Türkiye's Personal Data Protection Law (KVKK) (Yüksel, 2022). The high costs associated with the adoption of AI technologies, especially for SMEs, act as further constraint to wider adoption across sectors, demonstrating a push for government support and investment especially in the context of encouraging the digital shift.

The assistance of AI specialists is important not only in the public sector but also in the private sector. These collaborations are seen in Turkish Artificial Intelligence Strategy 2021-2025 which aims to support setting up an environment of AI innovation by increasing investment, improving the digital environment, and enhancing the understanding of AI applications at companies and consumers (TÜSİAD Digital Economy Report, 2023). As well as these initiatives, techno parks and incubators are set up, where companies are offered means and tutorship to create AI powered products suitable for the specific features of the market in Türkiye.

All in all, the developments indicate that there is an increasing shift among Turkish firms towards embracing AI technology mostly as a means of innovation and more competitiveness. Even as the retail, finance, manufacturing, and logistics

sectors begin to change the narrative, issues of regulatory compliance and skills and education frictions should be ironed out for resilience. It is apparent that with the presence of numerous enabling factors including strong public-private partnerships that Investments on education and infrastructure, Türkiye is on the way to be a leading country in AI and AI based digital transformation in the region (Digital 2023 Türkiye Report; Kumar et al., 2021).

7.3 Social media usage trends among Turkish consumers.

Turkish consumers appear to use social media regularly as part of today's lifestyle which follow global trend whereas it has some unique features that are influenced by the cultural and demographic make-up of Türkiye. Türkiye has one of the highest social media participation rates in the world given that approximately 80% of the population has access to the internet and over 70% of the people are using social media (We Are Social, 2023). Turkish cyberspace is characterized by heavy presence of Instagram, TikTok, Facebook and Twitter due to their popularity for communication and entertainment, business, news, and community interaction. In particular, Instagram has more than 50 million users in Türkiye which makes the country one of the largest visual content sharing and influencer marketing markets in the world (Statista, 2024). TikTok has become more popular as well especially among the younger populations indicating the increasing trend of consuming and interacting with short fashion video content (Digital 2023 Türkiye Report).

Türkiye's growing social media presence is no surprise as the country is youthful and technologically literate. With a median age of approximately 33 years, the younger age groups comprising of Millennials and Generation Z are the ones who are most active on social media as they use it for networking, seeking out brands,

trends and even making purchase decisions (We Are Social, 2023). This led to further developments in social commerce with the likes of Instagram and TikTok, allowing users to integrate shopping into their social media experience. Social media has also gained traction as the key marketing channel for social marketing, as Turkish people tend to trust recommendations by influencers and content creators on a lot of things including fashion, beauty, and technology (Stephen, 2016). Content posted by influencers on YouTube and Instagram has a remarkable effect on the will of the consumer, including shopping, and commitment to the brand by posting ordinary things that most people can relate to.

A further important trend is that some people use social media to get the news. Many in Türkiye particularly rely on social media like Twitter and Facebook for news and updates at a time when traditional media is losing the struggle to be trusted and accessed (Statista, 2024). Little wonder then that such dependence on social networks also for news creates a risk of disinformation and unsubstantiated news as well as calls for closer examination of these sites' content moderation mechanisms (Yüksel, 2022).

The increasing availability and demand for video content, in turn, contributed to the change in the patterns of social media use in Türkiye. TikTok, Twitter and YouTube are turning out to be the new normal for Turkish consumers, who now prefer content that is visually stimulating and more interactive. Changes in consumer habits have prompted brands to spend more money on video advertising and brand storytelling as consumers often engage more in video content (Kumar et al., 2021). Live shopping has also found utility, with influencers and brands using it to launch new products, conduct question and answer sessions and live sale events, making

shopping and entertaining less distinguishable from each other (Digital 2023 Türkiye Report).

To summarize, Turkish social media clients are known to use social media channels quite actively, preferring video and photo content also gradually moving to these platforms for shopping and news updates. Most of this trend is propelled by the youth bulge in Türkiye as well as the speed of digitalization and shifting consumer behavior. It should not be overstressed that while social networks provide businesses with a wide range of opportunities to reach consumers, those dealing with privacy, misinformation and inclusivity issues will be important to achieving and maintaining growth and confidence in the Turkish digital space (We Are Social 2023; Digital 2023 Türkiye Report)

7.4 Key studies on consumer behavior in Türkiye related to digital marketing.

Key studies on consumer behavior in Türkiye relation to the digital marketing recognize how technology and culture together influence the purchasing behavior, approach to engagement and brand relations. While simultaneously adapting to rapid digital transformation, the researchers of Türkiye have established some notable trends and behaviors that govern the process of the purchasing decision. These studies examine the effects of social media, e-commerce, customization, and trust on the consumer choice in the context of the Turkish market which more notification in what sets the Turkish economy apart from the rest of the world.

Among the areas that have attracted a considerable amount of research attention, an area which focuses on the impact of social media on the behavior of Turkish consumers is notable. According to Akar and Topçu (2011), Facebook or Instagram can be used as a platform for seeking brands, interacting with peers, and

making purchases. In their study Akar and Topçu noted that because they are surrounded by people from a target social network, consumers in Türkiye tend to social media services for product recommendations, reviews, and validation, which in turn underlines the role of social proof for marketers in the development of their strategies. Another more recent study, Digital 2023 Türkiye Report reigns the supremacy of Instagram in Türkiye because there are more than 50 million active users of the social network in Türkiye thus relevant to influencer marketing and visual storytelling. In Türkiye, influencer marketing especially in areas like fashion, beauty, and technology where trust and relatability are crucial is very essential, (Stephen, 2016) TikTok has also become one of the important hotspots among the youth including Millennials and Gen Z. According to research, short-form video content is among the most entertaining and easy to consume amongst Turkish people, advertising some of the most useful products, and that is why younger people are a key focus for brands on Tiktok (We Are Social, 2023). With the advent of live streaming and shoppable videos, the barrier between entertainment and shopping has been further diminished, enabling users' engagement, and buying power at the same time. This development is held up by research that indicates purchase intent and trust increases with interactive content (Erkan & Evans, 2016).

It has been another point of interest for academics to research the increasing importance of e-commerce across Türkiye. According to a study by Özkan et al. (2019), the Turkish consumers find it easy to shop through platforms like Trendyol, Hepsiburada, and Amazon Türkiye because they offer good prices and various shopping choices. Research has shown that the presence of an AI recommendation system on such platforms has a considerable impact on the consumers since personalized recommendations lead to a greater chance of purchasing and

contentment of the user. The study also included the mechanisms of trust enhancement such as secure payment methods, guarantee of return policies, and good customer care as having a positive influence on the long-term relationship with consumers. The influence of cultural factors on e-commerce behavior forms another area of concern. Özgüven and Mucan (2013) examined how Türkiye's culture of collectivism promotes online buying behavior. Their findings suggest that Turkish consumers tend to give a lot of weight to their peers' recommendation as well as that of their family giving rise to user created content and reviews as critical to e-commerce. Also, the inclination towards group purchasing and community selling points practices demonstrates the role of social factors in influencing consumer purchasing behavior which means marketing strategies must be culturally sensitive.

Personalization stands out as one of the basic elements of marketing in the digital world in Türkiye, and there are results indicating that consumers' engagement and conversion rates improve when content and recommendations are individualized. Özkan et al. (2019) found that consumers are more satisfied in those shopping environments which leverage AI for product suggestions and apply dynamic pricing schemes. Yüksel (2022) studied whether the introduction and implementation of the KVKK legislation enhanced trust of the Turkish consumers in the digital marketing practices. The findings of the study established that Turkish consumers value customized experiences but due to the heightened awareness of the risks of data privacy, they are becoming more reluctant to provide personal details. In order to create trust and ensure long lasting relationships with consumers, data collection processes, and regulatory compliance in regard to privacy were placed as important factors.

Artifacts from studies on Türkiye continue to show that there are generational gaps with respect to digital consumers. Erkan and Evans (2016) noted, for instance, that the social media advertising, gaming, or interactive content strategies are more pronounced with millennials and Gen Z than with older generations. Older generations that include the baby boomer community, on the other hand, appear to be much more reserved, with a tendency to engage moderately by focusing on security and ease of use around digital engagement. These generational insights also point to the need for variation into the target age groups by the implementation of different digital marketing strategies. In addition, regional differences are also important in understanding how the consumers in Türkiye partake in the use of different digital channels. E-commerce and social media usage is intensely high in Turkish cities like Istanbul, Ankara, and Izmir because they have a wide access to internet and other technological resources. On the contrary, in the case of farming communities, barriers to inclusion in today's digital economy often relate to issues of accessibility and information-related gaps. Such regional indications call for appropriate measures and strategies to reduce the inequalities in the digital world and have fairness in the use and provision of digital services (TÜSİAD Digital Economy Report, 2023).

The proliferation of social commerce in USA has also changed the way people buy, integrating social networks and ecommerce features. Social networks such as Instagram and Tik Tok have launched features that allow users to look for goods and engage with them as well as buy them on the app. Research shows that in Türkiye, where consumers like interactive and eye clad content, these features will be useful for creation of impulse buying (Stephen, 2016). The use of peer recommendations, whether in the form of online reviews or support from influencers, is among the traits that characterize the consumers in Türkiye. Research highlights

that trust towards social networks and influencers is a prior factor for the purchasing decision, thus authenticity and transparency are the key to effective social commerce strategies (Akar & Topçu, 2011).

There are numerous studies that emphasize the role of digital marketing as one of the most important factors in the changing of the consumer behavior in Türkiye, however, there are challenges. With the rise of AI personalization marketers voice their control over data privacy, misinformation, and ethics are becoming more prevalent. In order to address this issue and keep consumers trust, researchers underline combating regulation violations and communication malpractice (Yuksel, 2022). Also, the new trends created by fast changing not only the social but also the entire digital spaces require further investigation, for instance how augmented reality, and virtual reality in marketing would change the consumer behavior in Türkiye.

To conclude, core reports regarding the consumer behavior of people living in Türkiye with reference to digital marketing display the constantly changing environment because of social media, eCommerce, customization, and culture. These researches are a good source of information regarding the Turkish consumers' likes, dislikes and expectations, underlining trust, transparency, and culture etiquette in the campaigns. While Türkiye is advancing from a technological perspective, addressing the research gap will be paramount in making sure that not only the challenges posed are dealt with but once that is achieved new areas that can enhance engagement and satisfaction of the consumers (Akar & Topcu, 2011; Yuksel, 2022).

CHAPTER 8

THE AIM AND SCOPE OF THE RESEARCH

Machine Learning (ML) and Artificial Intelligence (AI) has completely changed the mode of consumer behavior in the area of digital and social media marketing; however, similar studies localized to the impact of these technologies in the sphere in Türkiye is lagging behind globalized research emphasizes the use of AI enhanced personalization, predictive technology, and targeted marketing to satisfy and engage consumers. However, the challenges posed by the cultural, economic, and geo-regional context of Türkiye other than the generalization include the ‘collectivist’ behavioral attitude, ‘relationship-centric’ and the disparity of digital reach across regions. Theorists in the existing literature reckon the significance of transparency and ethical duplications in the areas of marketing with specific reference to consumers’ trust but lack insight into the Turkish consumers’ attitudes towards social acceptability of marketing based on AI, such as, data usage, the source of algorithms, and persuasive advertisement. Predictive analytics and sentiment analysis are conceived to be valuable tools for mobilizing the target customer hence increasing the relevance of campaigns editing the target. However, their specific application and impact regarding Turkish consumers have not been adequately studied. The gap that exists between the urban and rural settings in Türkiye also aggravates the situation, that is, even the interfaces do not have the same impact as expected.

This research responds to these important areas of deficiency by offering context-specific evidence regarding the impact of AI and ML on consumers in Türkiye such as the cultural and regional aspects, the consumers’ views towards transparency and ethics, and the consumers’ perspectives on AI application

effectiveness including recommendation systems, chatbots or sentiment analysis. In this way, this study both advances academic knowledge and provides practical suggestions for firms wishing to enhance their marketing operations through AI technologies in the context of Turkish digital economy which is shifting at an unprecedented pace.

8.1 Hypothesis

The below hypotheses are selected for this research and will be tested.

H1: The relevance of personalized recommendations created using ML significantly increases consumer satisfaction and loyalty.

H2: Consumers who perceive AI-driven marketing as transparent and ethical are more likely to engage with the brand.

H3: The impact of AI/ML on consumer buying behavior is moderated by cultural factors unique to Türkiye, such as collectivism and emphasis on trust.

H4: AI-driven sentiment analysis-based marketing campaigns align more closely with actual consumer preferences than generic campaigns.

8.2 Data collection method

Objective of research is determining the effect of AI/ ML technologies in digital marketing to consumer behavior via personalization, trust, and satisfaction distribution. Also, study will be considering some generation, culture and region-specific moderating variables that are unique to Türkiye. This study aims determining the level of trust in AI and ethics in AI-based marketing efforts and investigating the role of sentiment analysis and predictive analytics in consumer preference targeting. This study intends to use primary data collection via survey.

The survey and will be sent to a target group of both genders from age 18-65. Survey aims to be distributed in the different regions in Türkiye.



CHAPTER 9

DATA ANALYSIS, FINDINGS AND DISCUSSION

This section includes the statistical analyses obtained as a result of the research. The universe of the study consists of all consumers in Türkiye, and the sample consists of 123 consumers between the ages of 18-65 who use social media. Data were collected from consumers using social media through a survey. This section first includes findings on the socio-demographic characteristics of consumers using social media; second, descriptive findings on the answers given to questions measuring their knowledge of social media, artificial intelligence, and machine learning; and third, statistical analyses comparing the answers given to some questions posed to consumers in order to test the hypotheses of the research.

9.1 Data analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) 26.0 Statistics Package Program. Categorical variables and answers to questions were calculated as numbers and percentages. Descriptive statistics analyzes of questions asked to measure the effects of social media, artificial intelligence, and machine learning on the consumption behaviors of individuals were expressed as numbers and percentages. Normal distribution, skewness and kurtosis values were calculated for numerical variables and are shown in Table 1. The reference value taken for skewness is between ± 1.960 (Kalaycı, 2005). In this context, it was determined that all questions asked to consumers showed normal distribution. In order to examine the effects of artificial intelligence and machine learning on consumer behavior in digital marketing in Türkiye, some questions asked to

consumers using social media in line with the hypotheses of the study were analyzed with Chi-Square Test and Pearson Correlation Analysis to determine whether there was a significant relationship between each other. Correlation coefficient; 0.00-0.30 was evaluated as low, 0.30-0.70 as medium and 0.70-1.00 as high (Büyüköztürk, 2020). In the entire study, significance levels were carried out by considering the values of 0.05 and 0.01.

Table 1. Skewness and Kurtosis Values of Questions Asked to Consumers

Variables	Skewness		Kurtosis	
	Statistics	Std. Error	Statistics	Std. Error
Question 10	-0,705	0,218	0,495	0,433
Question 11	-0,208	0,218	-0,469	0,433
Question 12	-0,578	0,218	0,315	0,433
Question 17	-0,071	0,218	-0,539	0,433
Question 18	-0,599	0,218	0,400	0,433
Question 20	-0,647	0,218	-0,067	0,433
Question 23	0,622	0,218	0,421	0,433
Question 24	-0,037	0,218	-0,759	0,433

9.2 Socio-demographic characteristics of consumers using social media

The impact of artificial intelligence and machine learning on consumer behavior in digital marketing in Türkiye was examined and 123 individuals who are social media users participated in the study. The socio-demographic characteristics of the 123 consumer individuals between the ages of 18-65 who participated in the study are shown in Table 2.

When the age distributions of the consumers who participated in the study are examined in order; It was determined that 43.1% (f: 53 people) were between the ages of 25-34, 22.0% (f: 27 people) were between the ages of 35-44, 17.1% (f: 21 people) were between the ages of 18-24, 11.4% (f: 14 people) were between the ages

of 45-54 and 6.5% (f: 8 people) were 55 and above. The study was mainly attended by middle-aged consumers (Table 2).

When the gender distributions of the consumers participating in the study were examined in order; it was determined that 52.8% (f: 65 people) were female, 46.3% (f: 57 people) were male and 0.8% (f: 1 person) did not want to state their gender. It was observed that female consumers participated more in the study (Table 2).

Table 2. Socio-Demographic Characteristics of Social Media User Consumers

Variables	Category	Frequency (f)	Percentage (%)
Age	18-24	21	17,1
	25-34	53	43,1
	35-44	27	22,0
	45-54	14	11,4
	55 +	8	6,5
Gender	Male	57	46,3
	Female	65	52,8
	Prefer not to say	1	0,8
Occupation	Student	18	14,6
	Employed	92	74,8
	Self Employed	3	2,4
	Unemployed	5	4,1
	Retired	5	4,1
Residance(region)	Marmara	97	78,9
	Central Anatolia	7	5,7
	Mediterranean	3	2,4
	Eastern Anatolia	5	4,1
	Black Sea	3	2,4
	Aegean	8	6,5
Education Level	High School	15	12,2
	Bachelor's Degree	61	49,6
	Master's Degree	35	28,5
	Doctorate	6	4,9
	Other	6	4,9
Total		123	100

When the occupational distributions of the consumers participating in the study were examined in order; 74.8% (f: 92 people) were employees, 14.6% (f: 18 people) were students, 4.1% (f: 5 people) were unemployed, 4.1% (f: 5 people) were retired and 2.4% (f: 3 people) were self-employed. It was observed that the vast majority of the consumers participating in the study were employees (Table 2).

When the geographical distributions of the consumers participating in the study were examined in order; 78.9% (f: 97 people) lived in the Marmara Region, 6.5% (f: 8 people) in the Aegean Region, 5.7% (f: 7 people) in the Central Anatolia Region, 4.1% (f: 5 people) in the Eastern Anatolia Region, 2.4% (f: 3 people) in the Mediterranean Region and 2.4% (f: 3 people) in the Black Sea Region. It was understood that the majority of the consumers participating in the study live in the Marmara Region (Table 2).

When the distribution of the education levels of the consumers participating in the study is examined in order; it was determined that 49.6% (f: 61 people) have a bachelor's degree, 28.5% (f: 35 people) have a master's degree, 12.2% (f: 15 people) have a high school degree, 4.9% (f: 6 people) have a doctorate degree and 4.9% (f: 6 people) have other education levels. It was understood that the majority of the consumers participating in the study have a bachelor's degree (Table 2).

9.3 Descriptive statistics of responses

The impact of artificial intelligence and machine learning on consumer behavior in digital marketing in Türkiye was examined and the question “Question 6: How often do you use digital platforms (e.g. social media, e-commerce sites)?” was asked to 123 consumers who participated in the study and the distribution of the answers is shown in Table 3.

Table 3. Distribution of Consumers' Responses to Question 6

Question 6	Category	Frequency (f)	Percentage (%)
“6- How often do you use digital platforms (e.g. social media, e-commerce sites)?”	Every day	118	95,9
	Once a week	2	1,6
	Once a month	2	1,6
	Rarely	1	0,8
	Total	123	100

The question of “6- How often do you use digital platforms (e.g. social media, e-commerce sites)?” was asked to the consumers participating in the study; 95.9% (n: 118 people) answered every day, 1.6% (n: 2 people) once a week, 1.6% (n: 2 people) once a month and 0.8% (n: 1 person) rarely. It was observed that consumers mainly answered the 6th question as “I use digital platforms every day”.

The 123 consumers who participated in the study were asked the question “Question 7: Which social media platforms do you use most often?” The distribution of the answers given is shown in Table 4. In this question, consumers were able to mark more than one option.

Table 4. Distribution of Consumers' Answers to Question 7

Question 7	Category	Frequency (f)	Percentage (%)
“7- Which social media platforms do you use most often?”	Instagram	100	34,5
	TikTok	10	3,4
	Twitter	58	20,0
	YouTube	87	30,0
	Facebook	17	5,9
	Other	18	6,2
	Total	290	100

The question “7- Which social media platforms do you use most often?” was asked to the consumers participating in the study; 34.5% (n: 100 people) responded Instagram, 30.0% (n: 87 people) YouTube, 20.0% (n: 58 people) Twitter, 6.2% (n: 18 people) other, 5.9% (n: 17 people) Facebook and 3.4% (n: 10 people) TikTok. It is seen that the social media platform that consumers use most frequently is Instagram.

The question “Question 8: How aware are you of AI and ML technologies used in digital marketing?” was asked to 123 consumers participating in the study and the distribution of the answers given is shown in Table 5.

Table 5. Distribution of Consumers’ Answers to Question 8

Question 8	Category	Frequency (f)	Percentage (%)
“8- How aware are you of the AI and ML technologies used in digital marketing?”	Very aware	37	30,1
	Somewhat aware	60	48,8
	Not very aware	18	14,6
	Not aware at all	8	6,5
Total		123	100

The question “8- How aware are you of artificial intelligence and machine learning technologies used in digital marketing?” was asked to the consumers participating in the study; 48.8% (f: 60 people) responded as partially aware, 30.1% (f: 37 people) as very aware, 14.6% (f: 18 people) as not very aware and 6.5% (f: 8 people) as not at all aware. It was observed that consumers were generally partially aware of artificial intelligence and machine learning technologies used in digital marketing.

The question “Question 9: How often do you interact with artificial intelligence-driven tools such as chatbots, recommendation systems or personalized

ads on digital platforms?” was asked to 123 consumers participating in the study and the distribution of the answers given is shown in Table 6.

Table 6. Distribution of Consumers’ Responses to Question 9

Question 9	Category	Frequency (f)	Percentage (%)
“9- How often do you interact with artificial intelligence-focused tools such as chatbots, recommendation systems or personalized ads on digital platforms?”	Frequently	51	41,5
	Occasionally	34	27,6
	Rarely	31	25,2
	Never	7	5,7
	Total	123	100

The question asked to the consumers participating in the study; “9- How often do you interact with AI-driven tools such as chatbots, recommendation systems or personalized ads on digital platforms?” was answered by 41.5% (f: 51 people) frequently, 27.6% (f: 34 people) occasionally, 25.2% (f: 31 people) rarely and 5.7% (f: 7 people) never. It was observed that consumers interact with AI-driven tools on digital platforms the most frequently.

The question “Question 10: Do you believe that AI and ML technologies enhance your overall experience on digital platforms?” was asked to 123 consumers participating in the study and the distribution of the answers given is shown in Table 7.

Table 7. Distribution of Consumers' Responses to Question 10

Question 10	Category	Frequency (f)	Percentage (%)
“10- Do you believe that AI and ML technologies enhance your overall experience on digital platforms”	Strongly Disagree	2	1,6
	Disagree	3	2,4
	Neutral	30	24,4
	Agree	49	39,8
	Strongly Agree	39	31,7
	Total	123	100

The question asked to the consumers participating in the study; “10- Do you believe that artificial intelligence and machine learning technologies improve your overall experience on digital platforms?” was answered by 39.8% (n: 49 people) agree, 31.7% (n: 39 people) strongly agree, 24.4% (n: 30 people) neutral, 2.4% (n: 3 people) disagree and 1.6% (n: 2 people) strongly disagree. It was observed that the majority of consumers believe that artificial intelligence and machine learning technologies improve their overall experience on digital platforms.

The question “Question 11: How much do you trust brands that use AI-driven personalization (e.g. personalized ads, special recommendations)?” was asked to 123 consumers participating in the study and the distribution of the answers is shown in Table 8.

Table 8. Distribution of Consumers' Responses to Question 11

Question 11	Category	Frequency (f)	Percentage (%)
“11- How much do you trust brands that use AI-driven personalization (e.g. personalized ads, special recommendations)?”	Do not trust at all	3	2,4
	Somewhat distrust	23	18,7
	Neutral	42	34,1
	Somewhat trust	45	36,6
	Completely trust	10	8,1
	Total	123	100

The question “Question 11: How much do you trust brands that use AI-driven personalization (e.g. personalized ads, special recommendations)?” was asked to the consumers participating in the study; 36.6% (f: 45 people) somewhat trust, 34.1% (f: 42 people) neutral, 18.7% (f: 23 people) somewhat distrust, 8.1% (f: 10 people) completely trust, and 2.4% (f: 3 people) do not distrust at all. It was observed that the majority of consumers have a medium level of trust in brands that use AI-driven personalization.

The question “Question 12: How likely are you to engage with brands that offer personalized recommendations or experiences?” was asked to 123 consumers participating in the study, and the distribution of the answers given is shown in Table 9.

Table 9. Distribution of Consumers’ Responses to Question 12

Question 12	Category	Frequency (f)	Percentage (%)
“12- How likely are you to engage with brands that offer personalized recommendations or experiences?”	Very unlikely	6	4,9
	Somewhat unlikely	11	8,9
	Neutral	44	35,8
	Somewhat likely	50	40,7
	Very likely	12	9,8
	Total	123	100

The question asked to the consumers participating in the study; “Question 12: How likely are you to interact with brands that offer personalized recommendations or experiences?” was answered by 40.7% (f: 50 people) as very likely, 35.8% (f: 44 people) as neutral, 9.8% (f: 12 people) as very likely, 8.9% (f: 11 people) as unlikely, and 4.9% (f: 6 people) as very unlikely. It was observed that the majority of

consumers stated that the possibility of interacting with brands that offer personalized recommendations or experiences was within the realm of possibility.

The question “Question 13: Which personalized experiences influence your buying behavior the most?” was asked to 123 consumers participating in the study, and the distribution of the answers given is shown in Table 10. Consumers were able to mark more than one option in this question.

Table 10. Distribution of Consumers’ Responses to Question 13

Question 13	Category	Frequency (f)	Percentage (%)
“13- Which personalized experiences affect your purchasing behavior the most?”	Product recommendations	75	34,6
	Personalized ads	43	19,8
	Dynamic pricing offers	70	32,3
	Customized email marketing	15	6,9
	Other	14	6,5
	Total	217	100

The question asked to the consumers participating in the study; “Question 13: Which personalized experiences affect your purchasing behavior the most?” was answered by 34.6% (n: 75 people) as product recommendations, 32.3% (n: 70 people) as dynamic price offers, 19.8% (n: 43 people) as personalized ads, 6.9% (n: 15 people) as personalized e-mail marketing and 6.5% (n: 14 people) as other. It was observed that the purchasing behavior of the consumers was affected the most by personalized product recommendations and dynamic price offers.

The question “Question 14: Which AI (Artificial Intelligence) / ML (Machine Learning) applications have the most positive impact on your purchasing behavior?”

was asked to 123 consumers participating in the study and the distribution of the answers given is shown in Table 11. Consumers were able to mark more than one option in this question.

Table 11. Distribution of Consumers' Answers to Question 14

Question 14	Category	Frequency (f)	Percentage (%)
“14- Which AI (Artificial Intelligence) / ML (Machine Learning) applications have the most positive effect on your purchasing behavior?”	Chatbots for customer support	27	14,9
	Recommendation systems on e-commerce platforms	70	38,7
	Predictive analytics in targeted advertising	48	26,5
	Virtual assistants (e.g. Alexa, Google Assistant)	16	8,8
	Other	20	11,0
	Total	181	100

The question “Question 14: Which AI (Artificial Intelligence) / ML (Machine Learning) applications have the most positive influence on your purchasing behavior?” was asked to the consumers participating in the study; 38.7% (n: 70 people) responded recommendation systems on e-commerce platforms, 26.5% (n: 48 people) predictive analytics in targeted ads, 14.9% (n: 27 people) chatbots for customer support, 11.0% (n: 20 people) other and 8.8% (n: 16 people) virtual assistants (e.g. Alexa, Google Assistant etc.). It was observed that the AL/ML that has the most positive impact on consumers’ purchasing behavior is recommendation systems on e-commerce platforms.

The question “Question 15: How satisfied are you with your interactions with AI-driven tools such as chatbots or virtual assistants?” was asked to 123 consumers participating in the study and the distribution of the answers is shown in Table 12.

Table 12. Distribution of Consumers' Responses to Question 15

Question 15	Category	Frequency (<i>f</i>)	Percentage (%)
“15- How satisfied are you with your interactions with AI-driven tools such as chatbots or virtual assistants?”	Very dissatisfied	3	2,4
	Dissatisfied	12	9,8
	Neutral	39	31,7
	Satisfied	60	48,8
	Very satisfied	9	7,3
Total		123	100

The consumers participating in the study were asked; “Question 15: How satisfied are you with your interactions with AI-driven tools such as chatbots or virtual assistants?” 48.8% (n: 60 people) were satisfied, 31.7% (n: 39 people) were neutral 9.8% (n: 12 people) were dissatisfied, 7.3% (n: 9 people) were very satisfied, and 2.4% (n: 3 people) were very dissatisfied. It can be said that consumers are generally satisfied with their interactions with AI-driven tools such as chatbots and virtual assistants.

The 123 consumers participating in the study were asked the question “Question 16: Have you ever made a purchase based on a recommendation from an AI-driven system (for example, “Customers also bought” suggestions)?” and the distribution of the answers is shown in Table 13.

Table 13. Distribution of Consumers' Responses to Question 16

Question 16	Category	Frequency (f)	Percentage (%)
“16- Have you ever made a purchase based on a suggestion from an AI-driven system (for example, “Customers also bought” suggestions)?”	Yes	80	65,0
	No	43	35,0
	Total	123	100

The question asked to the consumers participating in the study; “Question 16: Have you ever made a purchase based on a recommendation from an AI-driven system (for example, “Customers also bought” suggestions)?” was answered by 65.0% (f: 80 people) as yes, and 35.0% (f: 43 people) as no. It was understood that the majority of the consumers made a purchase based on a suggestion from an AI-driven system.

The question “Question 17: Do you believe that targeted advertisements (powered by predictive analysis) on social media influence your purchasing decisions?” was asked to 123 consumers participating in the study, and the distribution of the answers given is shown in Table 14.

Table 14. Distribution of Consumers' Responses to Question 17

Question 17	Category	Frequency (<i>f</i>)	Percentage (%)
Do you believe that targeted advertisements (powered by predictive analysis) on social media influence your purchasing decisions?"	Never	7	5,7
	Rarely	24	19,5
	Sometimes	45	36,6
	Often	32	26,0
	Always	15	12,2
Total		123	100

The question "Question 17: Do you believe that targeted advertisements (powered by predictive analysis) on social media influence your purchasing decisions?" was asked to the consumers participating in the study; 36.6% (n: 45 people) sometimes, 26.0% (n: 32 people) often, 19.5% (n: 24 people) rarely, 12.2% (n: 15 people) always and 5.7% (n: 7 people) never. It was observed that a significant portion of consumers made purchasing decisions under the influence of targeted advertisements on social media.

The question "Question 18: How effective do you find predictive analytics in tailoring advertisements to your interests?" was asked to 123 consumers participating in the study and the distribution of the answers given is shown in Table 15.

Table 15. Distribution of Consumers' Responses to Question 18

Question 18	Category	Frequency (<i>f</i>)	Percentage (%)
“18- How effective do you find predictive analytics in tailoring advertisements to your interests?”	Very ineffective	3	2,4
	Ineffective	11	8,9
	Neutral	38	30,9
	Effective	58	47,2
	Very effective	13	10,6
Total		123	100

The question “Question 18: How effective do you find predictive analytics in tailoring ads to your interests?” was asked to the consumers participating in the study; 47.2% (*f*: 58 people) responded effective, 30.9% (*f*: 38 people) neutral, 10.6% (*f*: 13 people) very effective, 8.9% (*f*: 11 people) ineffective and 2.4% (*f*: 3 people) very ineffective. It was observed that a significant portion of consumers found predictive analytics (targeted ads on social media) effective in tailoring ads to their interests.

The question “Question 19: Which aspect of targeted ads do you value the most?” was asked to 123 consumers participating in the study and the distribution of the answers given is shown in Table 16. Consumers were able to mark more than one option in this question.

Table 16. Distribution of Consumers' Responses to Question 19

Question 19	Category	Frequency (f)	Percentage (%)
“19- Which aspect of targeted ads do you value the most?”	Relevance to my interests	61	31,0
	Timing of the ad delivery	31	15,7
	Visual and creative appeal	34	17,3
	Discounts and offers included in the ad	62	31,5
	Other	9	4,6
Total		197	100

The question “Question 19: Which aspect of targeted advertising do you value the most?” was asked to consumers participating in the study; 31.5% (n: 62 people) responded discounts and offers in the advertisement, 31.0% (n: 61 people) relevance to my interests, 17.3% (n: 34 people) visual and creative appeal, 15.7% (n: 31 people) timing of advertising, and 4.6% (n: 9 people) other. It was observed that consumers valued the aspects of targeted advertising the most, discounts and offers in the advertisement and relevance to interests.

The question “Question 20: Do you think cultural factors (e.g. family influence, collectivist values) affect how you will respond to AI-driven digital marketing?” was asked to 123 consumers participating in the study, and the distribution of the answers given is shown in Table 17.

Table 17. Distribution of Consumers' Responses to Question 20

Question 20	Category	Frequency (f)	Percentage (%)
“20- Do you think cultural factors (e.g. family influence, collectivist values) affect how you will respond to AI-driven digital marketing?”	Strongly Disagree	5	4,1
	Disagree	14	11,4
	Neutral	28	22,8
	Agree	53	43,1
	Strongly Agree	23	18,7
Total		123	100

The question “Question 20: Do you think cultural factors (e.g. family influence, collectivist values) affect how you response to AI-focused digital marketing?” was asked to the consumers participating in the study; 43.1% (f: 53 people) agreed, 22.8% (f: 28 people) were neutral, 18.7% (f: 23 people) strongly agreed, 11.4% (f: 14 people) disagreed and 4.1% (f: 5 people) strongly disagreed. It was observed that a significant portion of consumers thought that cultural factors affected their response to AI-focused digital marketing.

The question “Question 21: Do you think education level affects how you respond to AI-driven digital marketing?” was asked to 123 consumers participating in the study and the distribution of the answers is shown in Table 18.

Table 18. Distribution of Consumers' Responses to Question 21

Question 21	Category	Frequency (<i>f</i>)	Percentage (%)
“21- Do you think education level affects how you respond to AI-driven digital marketing?”	Strongly Disagree	2	1,6
	Disagree	9	7,3
	Neutral	29	23,6
	Agree	59	48,0
	Strongly Agree	24	19,5
Total		123	100

The consumers participating in the study responded to the question “Do you think education level affects how you respond to AI-driven digital marketing?” with 48.0% (n: 59 people) agreeing, 23.6% (n: 29 people) undecided, 19.5% (n: 24 people) strongly agreeing, 7.3% (n: 9 people) disagreeing, and 1.6% (n: 2 people) strongly disagreeing. It was observed that a significant portion of consumers thought that their level of education affected their response to AI-focused digital marketing.

The 123 consumers participating in the study were asked the question “Question 22: Do you think your occupation degree affects how you respond to AI-driven digital marketing?” and the distribution of the responses is shown in Table 19.

Table 19. Distribution of Consumers' Responses to Question 22

Question 22	Category	Frequency (<i>f</i>)	Percentage (%)
“22- Do you think your occupation degree affects how you respond to AI-driven digital marketing?”	Strongly Disagree	3	2,4
	Disagree	10	8,1
	Neutral	40	32,5
	Agree	54	43,9
	Strongly Agree	16	13,0
Total		123	100

The consumers participating in the study responded to the question “Do you think your occupation degree affects how you respond to AI-driven digital marketing?” with 43.9% (n: 54 people) agreeing, 32.5% (n: 40 people) undecided, 13.0% (n: 16 people) strongly agreeing, 8.1% (n: 10 people) disagreeing, and 2.4% (n: 3 people) strongly disagreeing. It was observed that a significant portion of consumers thought that their professional degree would affect their response to AI-focused digital marketing.

The 123 consumers participating in the study were asked the question “Question 23: How concerned are you about the ethical implications of AI and ML in digital marketing (e.g., data privacy, algorithmic bias)?” The distribution of the responses is shown in Table 20.

Table 20. Distribution of Consumer Responses to Question 23

Question 23	Category	Frequency (<i>f</i>)	Percentage (%)
“23- How concerned are you about the ethical implications of AI and ML in digital marketing (e.g., data privacy, algorithmic bias)?”	Very concerned	26	21,1
	Somewhat concerned	62	50,4
	Neutral	27	22,0
	Not very concerned	7	5,7
	Not concerned at all	1	0,8
Total		123	100

The consumers participating in the study responded to the question; “How concerned are you about the ethical implications of AI and ML in digital marketing (e.g., data privacy, algorithmic bias)?” with 50.4% (*f*: 62 people) being somewhat concerned, 22.0% (*f*: 27 people) undecided, 21.1% (*f*: 26 people) being very concerned, 5.7% (*f*: 7 people) not very concerned, and 0.8% (*f*: 1 person) not at all concerned. It was observed that a significant portion of consumers were somewhat concerned about the ethical implications of artificial intelligence and machine learning in digital marketing.

The 123 consumers participating in the study were asked the question “Question 24: Do you feel informed about how your data is used in AI-driven digital marketing?” and the distribution of the answers is shown in Table 21.

Table 21. Distribution of Consumers' Responses to Question 24

Question 24	Category	Frequency (<i>f</i>)	Percentage (%)
“24- Do you feel informed about how your data is used in AI-driven digital marketing?”	Fully informed	11	8,9
	Somewhat informed	44	35,8
	Not very informed	45	36,6
	Not informed at all	23	18,7
Total		123	100

The consumers participating in the study responded to the question “Question 24: Do you feel informed about how your data is used in AI-driven digital marketing?” with 36.6% (n: 45 people) saying they do not have much information, 35.8% (n: 44 people) saying they have some information, 18.7% (n: 23 people) saying they do not have any information, and 8.9% (n: 11 people) saying they are completely informed. It was observed that a significant portion of consumers have some information or do not have much information about how their data is used in artificial intelligence-focused digital marketing.

The question “Question 25: What concerns you the most about AI-driven marketing?” was asked to 123 consumers participating in the study, and the distribution of the answers given is shown in Table 22. Consumers were able to mark more than one option in this question.

Table 22. Distribution of Consumers' Responses to Question 25

Question 25	Category	Frequency (<i>f</i>)	Percentage (%)
“25- What concerns you the most about AI-driven marketing?”	Data privacy and security	94	50,8
	Manipulative advertising practices	15	8,1
	Lack of transparency	47	25,4
	Algorithmic bias and discrimination	25	13,5
	Other	4	2,2
	Total	185	100

Consumers participating in the study were asked; “Question 25: What concerns you most about AI-based marketing?” 50.8% (n: 94 people) responded data privacy and security, 25.4% (n: 47 people) lack of transparency, 13.5% (n: 25 people) algorithmic bias and discrimination, 8.1% (n: 15 people) manipulative advertising practices, and 2.2% (n: 4 people) other. It was found that the issues that concern consumers most about AI-based marketing are data privacy and security and lack of transparency.

9.4 Comparison of some parameters

In order to examine the influence of artificial intelligence and machine learning on consumer behavior in digital marketing in Türkiye, the accuracy of 4 hypotheses was tested with questions directed to consumers. The first of these hypotheses is;

H1: The relevance of personalized recommendations created using ML significantly increases consumer satisfaction and loyalty. In order to test the accuracy of the H1 hypothesis, the relationship between question 11 and questions 12, 13 and 14 was tested with Chi-Square Analysis and Pearson Correlation Analysis. The

content of these questions targets people's assessment of the importance and correctness of personalized suggestions, their role in the satisfaction and loyalty of consumers, and the actual impact on the purchasing behavior of customers. In the analyses conducted, relationship and difference analyses could not be performed in questions where more than one option was marked, and the differences in the answers given by the groups to the questions were revealed in numbers and percentages with a cross table. In order to test the H1 hypothesis, the question "Question 11: How much do you trust brands that use AI-driven personalization (e.g. personalized ads, special recommendations)?" was asked to consumers, and the participants' answers to question 11 were evaluated with the questions "12- How likely are you to engage with brands that offer personalized recommendations or experiences?, 13- Which personalized experiences influence your buying behavior the most?, and 14- Which AI/ML applications have the most positive impact on your buying behavior? The relationship between the distributions of the answers given to the questions is shown in Tables 23, 24 and 25.

A comparison of the differences between the answers given by consumers to question 11 and question 12 is shown in Table 23.

Table 23. Comparison of Consumers' Answers to Question 11 and Answers to Question 12

11. Question									
Variable	Category	Do not trust at all	Somewhat distrust	Neutral	Somewhat trust	Compl. trust	Total	χ^2	p
12. Question	Very unlikely	1	2	1	2	0	6	62,577	0,000**
		16,7 %	33,3%	16,7%	33,3%	0,0%	100,0 %		
	Somewhat unlikely	0	7	4	0	0	11		
		0,0%	63,6%	36,4%	0,0%	0,0%	100,0 %		
	Neutral	0	9	19	14	2	44		
		0,0%	20,5%	43,2%	31,8%	4,5%	100,0 %		
	Somewhat likely	2	5	16	25	2	50		
		4,0%	10,0%	32,0%	50,0%	4,0%	100,0 %		
	Very likely	0	0	2	4	6	12		
		0,0%	0,0%	16,7%	33,3%	50,0%	100,0 %		
Total		3	23	42	45	10	123		
		2,4%	18,7%	34,1%	36,6%	8,1%	100,0 %		

*p<0.05, **p<0.01, χ^2 : Chi-Square Test (Categorical data)

It was observed that there was a significant difference between the level of trust that consumers using social media have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) and the level of probability of interacting with brands that offer personalized recommendations or experiences (p<0.05). The results showed that while the level of trust that consumers have in brands that use AI-driven personalization (e.g. personalized ads, special

recommendations) increases, the level of probability of interacting with brands that offer personalized recommendations or experiences also increases.

Pearson Correlation Analysis was conducted to determine the level of relationship between the 11th question applied to consumers and the 12th. The analysis results are shown in Table 24.

Table 24. Analysis of the Levels of Relationship Between Consumers' Responses to Question 11 and Their Responses to Questions 12.

Variables	Coefficient	11. Question
11. Question	r	1
	p	
12. Question	r	0,434**
	p	0,000

**p<.01, r: Correlation Coefficient

It was observed that there is a positive, moderate, and significant relationship between the level of trust that consumers using social media have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) and the level of probability of interacting with brands that offer personalized recommendations or experiences (r: 0.434; p<0.05). According to the analysis results, it was understood that while consumers' trust in brands that use AI-driven personalization increases, their probability of interacting with brands that offer personalized recommendations or experiences will also increase. In this context, it was observed that the H1 hypothesis was confirmed in terms of the relationship between question 11 and question 12.

The comparison of the frequency findings of the answers given by consumers to question 11 and questions 13 and 14 is shown in Table 25. Since consumers could

mark more than one option in questions 13 and 14, difference and relationship analysis could not be performed. When the level of trust that consumers have in brands that use artificial intelligence-driven personalization (e.g. personalized ads, special recommendations) and the status of personalized experiences that affect purchasing behavior the most were compared, it was determined that product recommendations, personalized ads, dynamic price offers, personalized e-mail marketing and other situations that affect purchasing behavior increased the level of trust consumers have in brands that use personalization.



Table 25. Comparison of Consumers' Responses to Question 11 with Responses to Questions 13 and 14

Variables	Category	11. Question					Total
		Do not trust at all	S.distrust	Neutral	S. trust	C. trust	
13. Question	Product recom.	2	12	25	29	7	75
		2,7%	16,0%	33,3%	38,7%	9,3%	%100
	Personalized ads	1	5	17	19	1	43
		2,3%	11,6%	39,5%	44,2%	2,3%	%100
	Dynamic pricing offers	2	13	21	30	4	70
		2,9%	18,6%	30,0%	42,9%	5,7%	%100
	Customized email marketing	0	2	6	6	1	15
		0,0%	13,3%	40,0%	40,0%	6,7%	%100
	Other	1	2	5	5	1	14
		7,1%	14,3%	35,7%	35,7%	7,1%	%100
14. Question	Chatbots for customer support	1	3	5	13	5	27
		3,7%	11,1%	18,5%	48,1%	18,5%	%100
	Recommendation systems on e-commerce platforms	1	8	23	35	3	70
		1,4%	11,4%	32,9%	50,0%	4,3%	%100
	Predictive analytics in targeted advertising	1	10	16	18	3	48
		2,1%	20,8%	33,3%	37,5%	6,3%	%100
	Virtual assistants (e.g. Alexa, Google Assistant)	1	4	5	5	1	16
		6,3%	25,0%	31,3%	31,3%	6,3%	%100
	Other	1	6	7	5	1	20
		5,0%	30,0%	35,0%	25,0%	5,0%	%100

When comparing the level of trust consumers have in brands that use AI-driven personalization (e.g. personalized ads, customized recommendations) with which AL/ML applications have the most positive impact on purchasing behavior, it is seen that the highest trust is felt in chatbot applications for customer support. Then, it is understood that recommendation systems are the most trusted AL/ML

applications on e-commerce platforms. It is seen that consumers trust predictive analytics, virtual assistants (e.g. Alexa, Google Assistant) and other AI/ML applications in targeted ads at similar rates.

In order to test the H1 hypothesis, the question “12- How likely are you to interact with brands that offer personalized recommendations or experiences?” was asked to consumers. The relationship between the distributions of the answers given by the participants to question 12 and the answers given to questions 13- Which personalized experiences affect your purchasing behavior the most? and 14- Which AI/ML applications have the most positive effect on your purchasing behavior? is shown in Table 26 by comparing the frequency findings of the answers given to the questions.

Since consumers could mark more than one option in questions 13 and 14, difference and relationship analysis could not be performed. When the probability levels of consumers interacting with brands that offer personalized recommendations or experiences and the status of personalized experiences that affect their purchasing behavior the most were compared, it was determined that product recommendations, personalized advertisements, dynamic price offers and personalized e-mail marketing situations that affect purchasing behavior increased the probability levels of consumers interacting with brands that offer personalized recommendations or experiences.

Table 26. Comparison of Consumers' Responses to Question 12 with Responses to Questions 13 and 14

Variable	Category	12. Question					Total
		Very unlikely	Somewhat unlikely	Neutral	Somewhat likely	Very likely	
13. Question	Product recommendations	2	5	27	30	11	75
		2,7%	6,7%	36,0%	40,0%	14,7%	%100
	Personalized ads	0	3	17	18	5	43
		0,0%	7,0%	39,5%	41,9%	11,6%	%100
	Dynamic pricing offers	0	5	28	33	4	70
		0,0%	7,1%	40,0%	47,1%	5,7%	%100
	Customized email marketing	0	0	5	7	3	15
		0,0%	0,0%	33,3%	46,7%	20,0%	%100
	Other	4	1	5	4	0	14
		28,6%	7,1%	35,7%	28,6%	0,0%	%100
14. Question	Chatbots for customer support	0	0	9	12	6	27
		0,0%	0,0%	33,3%	44,4%	22,2%	%100
	Recommendation systems on e-commerce platforms	0	4	28	31	7	70
		0,0%	5,7%	40,0%	44,3%	10,0%	%100
	Predictive analytics in targeted advertising	1	5	16	23	3	48
		2,1%	10,4%	33,3%	47,9%	6,3%	%100
	Virtual assistants (e.g. Alexa, Google Assistant)	0	1	6	9	0	16
		0,0%	6,3%	37,5%	56,3%	0,0%	%100
	Other	5	3	7	3	2	20
		25,0%	15,0%	35,0%	15,0%	10,0%	%100

When comparing the likelihood levels of consumers interacting with brands that offer personalized recommendations or experiences with which AL/ML applications have the most positive impact on purchasing behavior, it is seen that chatbots for customer support, recommendation systems on e-commerce platforms, predictive analytics in targeted advertising, and virtual assistants (e.g. Alexa, Google

Assistant) reveal similar rates of likelihood of consumers interacting with brands that offer personalized recommendations or experiences.

H2: Consumers who perceive AI-driven marketing as transparent and ethical are more likely to engage with the brand. In order to test the accuracy of the H2 hypothesis, the relationship between question 11 and questions 12, 23, 24 and 25 was tested with Chi-Square Analysis and Pearson Correlation Analysis. In the analyses conducted, relationship and difference analyses could not be performed in questions where more than one option was marked, and the differences in the answers given by the groups to the questions were revealed in numbers and percentages with a cross table.

In order to test the H2 hypothesis, the question “Question 11: How much do you trust brands that use AI-driven personalization (e.g. personalized ads, special recommendations)?” was asked to consumers, and the participants’ answers to question 11 were as follows: “12- How likely are you to interact with brands that offer personalized recommendations or experiences?, 23- How concerned are you about the ethical implications of AI and machine learning in digital marketing (e.g. data privacy, algorithmic bias)?, 24- Are you informed about how your data is used in AI-driven digital marketing? and 25- What worries you most about AI-based marketing?” The relationship between the distributions of the answers given to the questions is shown in Tables 27, 28 and 29.

A comparison of the differences between the answers given by consumers to question 11 and questions 23 and 24 is shown in Table 27. The relationship between the answers given by consumers to questions 11 and 12 is shown in Tables 23 and 24. When this relationship is evaluated within the scope of the H2 hypothesis; as the trust in transparency and compliance with ethical rules of brands using AI-driven

personalization increases, the possibility of consumers to interact with these brands will increase. Thus, the H2 hypothesis is confirmed in terms of questions 11 and 12.

Table 27. Comparison of Consumers' Answers to Question 11 with Their Answers to Questions 23 and 24

Variable	Category	11. Question					Total	χ^2	p
		Do not trust at all	S.distrust	Neutral	S. trust	C. trust			
23. Question	Very concerned	2	4	5	12	3	26	35,148	0,004**
		7,7%	15,4%	19,2%	46,2%	11,5%	100,0%		
	Somewhat concerned	0	14	18	27	3	62		
		0,0%	22,6%	29,0%	43,5%	4,8%	100,0%		
	Neutral	1	3	17	3	3	27		
		3,7%	11,1%	63,0%	11,1%	11,1%	100,0%		
	Not very concerned	0	2	2	3	0	7		
		0,0%	28,6%	28,6%	42,9%	0,0%	100,0%		
	Not concerned at all	0	0	0	0	1	1		
		0,0%	0,0%	0,0%	0,0%	100,0%	100,0%		
Total		3	23	42	45	10	123		
		2,4%	18,7%	34,1%	36,6%	8,1%	100,0%		
24. Question	Fully informed	0	0	1	4	6	11	43,949	0,000**
		0,0%	0,0%	9,1%	36,4%	54,5%	100,0%		
	Somewhat informed	0	8	19	15	2	44		
		0,0%	18,2%	43,2%	34,1%	4,5%	100,0%		
	Not very informed	1	11	15	16	2	45		
		2,2%	24,4%	33,3%	35,6%	4,4%	100,0%		
	Not informed at all	2	4	7	10	0	23		
		8,7%	17,4%	30,4%	43,5%	0,0%	100,0%		
		3	23	42	45	10	123		
		2,4%	18,7%	34,1%	36,6%	8,1%	100,0%		

*p<0.05, **p<0.01, χ^2 : Chi-Square Test (Categorical data)

It was observed that there was a significant correlation between the level of trust that consumers using social media have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) and the level of concern about the ethical consequences of AI and machine learning in digital marketing (e.g. data privacy, algorithmic bias) ($p < 0.05$). The results showed that while the level of trust consumers have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) increases, their level of concern about the ethical consequences of AI and machine learning in digital marketing (e.g. data privacy, algorithmic bias) also increases. There is an inverse relationship between trust in brands and concern about ethical consequences.

It was observed that there was a significant correlation between the level of trust consumers using social media have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) and their knowledge of how data is used in AI-driven digital marketing ($p < 0.05$). The results showed that; it has been observed that while the level of trust consumers have in brands using AI-driven personalization increases, the level of knowledge about how data is used in AI-driven digital marketing will decrease. While the trust in brands increases, the level of knowledge about how data is used will decrease.

Pearson Correlation Analysis was conducted to determine the level of relationship between the 11th question applied to consumers and the 23rd and 24th questions. The analysis results are shown in Table 28.

Table 28. Analysis of the Levels of Relationship Between Consumers' Responses to Question 11 and Their Responses to Questions 23 and 24

Variables	Coefficient	11. Question
11. Question	r	1
	p	
23. Question	r	-0,033
	p	0,714
24. Question	r	-0,277**
	p	0,002

**p<.01, r: Correlation Coefficient

It was observed that there was no significant relationship between the level of trust that social media consumers have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) and their concerns about the ethical implications of AI and machine learning in digital marketing (e.g. data privacy, algorithmic bias) (r: -0.033; $p>0.05$).

It was observed that there was a negative, low-level, and significant relationship between the level of trust that social media consumers have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) and their knowledge of how data is used in AI-driven digital marketing (r: -0.277; $p<0.05$). According to the results of the analysis, while consumers' trust in brands that use AI-driven personalization increases, their knowledge of how data is used in AI-driven digital marketing will decrease.

In this context, it was observed that the H2 hypothesis was confirmed in terms of the relationship between question 11 and question 12 and was falsified in terms of the relationship between question 11 and questions 23 and 24. The

comparison of the frequency findings of the answers given by consumers to questions 11 and 25 is shown in Table 29.

Table 29. Comparison of Consumers' Answers to Question 11 and Question 25

Variable	Category	11. Question					Total
		Do not trust at all	S.distrust	Neutral	S. trust	C. trust	
25. Question	Data privacy and security	2	20	33	34	5	94
		2,1%	21,3%	35,1%	36,2%	5,3%	100%
	Manipulative advertising practices	0	2	3	8	2	15
		0,0%	13,3%	20,0%	53,3%	13,3%	100%
	Lack of transparency	2	11	18	14	2	47
		4,3%	23,4%	38,3%	29,8%	4,3%	100%
	Algorithmic bias and discrimination	2	7	8	8	0	25
		8,0%	28,0%	32,0%	32,0%	0,0%	100%
	Other	1	0	1	1	1	4
		25,0%	0,0%	25,0%	25,0%	25,0%	100%

Since consumers could choose more than one option in question 25, no difference and relationship analysis could be conducted. When comparing the level of trust consumers have in brands that use AI-driven personalization (e.g. personalized ads, special recommendations) with the situations they are most concerned about regarding AI-based marketing, it is seen that consumers who partially trust brands that use personalization, those who are undecided and partially distrust them are concerned about data privacy and security, lack of transparency and algorithmic bias and discrimination. It is observed that consumers who trust brands that use personalization are most concerned about manipulative ads.

In order to test the H2 hypothesis, the question “12- How likely are you to interact with brands that offer personalized recommendations or experiences?” was

asked to consumers. The relationship between the distributions of the participants' answers to question 12 and the questions 23- How concerned are you about the ethical implications of artificial intelligence and machine learning in digital marketing (e.g., data privacy, algorithmic bias)?, 24- Are you informed about how your data is used in artificial intelligence-driven digital marketing? and 25- What concerns you most about artificial intelligence-based marketing?" are shown in Tables 30, 31 and 32.

A comparison of the differences between the answers given by consumers to question 12 and questions 23 and 24 is shown in Table 30. When looking at Table 30; There was no significant correlation between the likelihood of consumers using social media to interact with brands that offer personalized recommendations or experiences and their concerns about the ethical implications of AI and machine learning in digital marketing (e.g., data privacy, algorithmic bias) ($p > 0.05$). Although not statistically significant, it was found that as consumers' likelihood of interacting with brands that offer personalized recommendations or experiences increases, their concerns about the ethical implications of AI and machine learning in digital marketing (e.g., data privacy, algorithmic bias) decrease. There is an inverse relationship between the likelihood of interacting with brands that offer personalized recommendations and experiences and concerns about the ethical implications of AL/ML learning.

Table 30. Comparison of Consumers' Responses to Question 12 with Responses to Questions 23 and 24

Variable	Category	12. Question					Total	χ^2	<i>p</i>
		Very unlikely	Somewhat unlikely	Neutral	Somewhat likely	Very likely			
23. Question	Very concerned	2	2	7	11	4	26	8,834	0,920
		7,7%	7,7%	26,9%	42,3%	15,4%	100,0%		
	Somewhat concerned	2	4	24	27	5	62		
		3,2%	6,5%	38,7%	43,5%	8,1%	100,0%		
	Neutral	2	4	9	9	3	27		
		7,4%	14,8%	33,3%	33,3%	11,1%	100,0%		
	Not very concerned	0	1	4	2	0	7		
		0,0%	14,3%	57,1%	28,6%	0,0%	100,0%		
	Not concerned at all	0	0	0	1	0	1		
		0,0%	0,0%	0,0%	100,0%	0,0%	100,0%		
Total		6	11	44	50	12	123		
		4,9%	8,9%	35,8%	40,7%	9,8%	100,0%		
24. Question	Fully informed	0	0	3	2	6	11	40,597	0,000**
		0,0%	0,0%	27,3%	18,2%	54,5%	100,0%		
	Somewhat informed	1	4	15	23	1	44		
		2,3%	9,1%	34,1%	52,3%	2,3%	100,0%		
	Not very informed	1	4	19	18	3	45		
		2,2%	8,9%	42,2%	40,0%	6,7%	100,0%		
	Not informed at all	4	3	7	7	2	23		
		17,4%	13,0%	30,4%	30,4%	8,7%	100,0%		
	Total	6	11	44	50	12	123		
		4,9%	8,9%	35,8%	40,7%	9,8%	100,0%		

* $p < 0.05$, ** $p < 0.01$, χ^2 : Chi-Square Test (Categorical data)

It was observed that there was a significant correlation between the probability of consumers using social media to interact with brands that offer personalized recommendations or experiences and their knowledge of how data is used in artificial intelligence-driven digital marketing ($p < 0.05$). In the results

obtained; it was observed that while the probability of consumers interacting with brands that offer personalized recommendations or experiences increases, their level of knowledge about how data is used in artificial intelligence-driven digital marketing will decrease. It was observed that while the probability of consumers interacting with brands that offer personalized recommendations and experiences increases, their level of knowledge about how data is used will decrease.

Pearson Correlation Analysis was conducted to determine the level of relationship between the 12th question applied to consumers and the 23rd and 24th questions. The analysis results are shown in Table 31.

Table 31. Examination of the Levels of Relationship Between Consumers' Responses to Question 12 and Their Responses to Questions 23 and 24

Variables	Coefficient	12. Question
12. Question	r	1
	p	
23. Question	r	-0,086
	p	0,346
24. Question	r	-0,282**
	p	0,002

**p<.01, r: Correlation Coefficient

It was observed that there was no significant relationship between the likelihood of consumers using social media to interact with brands that offer personalized recommendations or experiences and the level of concerns about the ethical implications of artificial intelligence and machine learning in digital marketing (e.g., data privacy, algorithmic bias) (r: -0.086; p>0.05).

It was observed that there was a negative, low-level, and significant relationship between the likelihood of consumers using social media to interact with brands that offer personalized recommendations or experiences and their knowledge of how data is used in artificial intelligence-driven digital marketing ($r: -0.282$; $p < 0.05$). According to the analysis results, while the likelihood of consumers interacting with brands that offer personalized recommendations or experiences increases, their knowledge of how data is used in artificial intelligence-driven digital marketing decreases.

In this context, it was observed that the H2 hypothesis was confirmed in terms of the relationship between question 11 and question 12 and falsified in terms of the relationship between question 12 and questions 23 and 24. The comparison of the frequency findings of the answers given by consumers to questions 12 and 25 is shown in Table 32.

Table 32. Comparison of Consumers' Answers to Question 12 and Question 25

Variable	Category	12. Question					Total
		Very unlikely	Somewhat unlikely	Neutral	Somewhat likely	Very likely	
25. Question	Data privacy and security	4	10	37	35	8	94
		4,3%	10,6%	39,4%	37,2%	8,5%	%100
	Manipulative advertising practices	0	0	4	10	1	15
		0,0%	0,0%	26,7%	66,7%	6,7%	%100
	Lack of transparency	3	4	19	14	7	47
		6,4%	8,5%	40,4%	29,8%	14,9%	%100
	Algorithmic bias and discrimination	1	3	10	10	1	25
		4,0%	12,0%	40,0%	40,0%	4,0%	%100
	Other	1	0	1	2	0	4
		25,0%	0,0%	25,0%	50,0%	0,0%	%100

Since consumers could select more than one option in question 25, no difference and relationship analysis could be conducted. When comparing the likelihood of consumers interacting with brands that offer personalized recommendations or experiences with the situations, they are most concerned about regarding AI-based marketing; it is seen that while the likelihood of consumers interacting with brands that offer personalized recommendations and experiences increases, their concerns about data privacy and security, lack of transparency, and algorithmic bias and discrimination also increase.

In order to test the H2 hypothesis, the question 23- How concerned are you about the ethical implications of AI and machine learning in digital marketing (e.g., data privacy, algorithmic bias)? was asked to consumers. The relationship between the distributions of the participants' answers to question 23 and the answers to the questions 24- Are you informed about how your data is used in AI-focused digital

marketing? and 25- What concerns you most about AI-based marketing?” is shown in Tables 30, 31, and 32.

The comparison of the differences between the answers given by consumers to question 23 and question 24 is shown in Table 33.

Table 33. Comparison of the Answers Given by Consumers to Question 23 and Question 24

Variable	Category	23. Question					Total	χ^2	p
		Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned at all			
24. Question	Fully informed	4 36,4%	3 27,3%	3 27,3%	1 9,1%	0 0,0%	11 100,0%	19,609	0,075
	Somewhat informed	3 6,8%	23 52,3%	14 31,8%	3 6,8%	1 2,3%	44 100,0%		
	Not very informed	9 20,0%	27 60,0%	7 15,6%	2 4,4%	0 0,0%	45 100,0%		
	Not informed at all	10 43,5%	9 39,1%	3 13,0%	1 4,3%	0 0,0%	23 100,0%		
	Total	26 21,1%	62 50,4%	27 22,0%	7 5,7%	1 0,8%	123 100,0%		

*p<0.05, **p<0.01, χ^2 : Chi-Square Test (Categorical data)

It was observed that there was no significant correlation between the concerns of consumers using social media about the ethical consequences of artificial intelligence and machine learning in digital marketing and their knowledge about how their data is used in artificial intelligence-focused digital marketing ($p>0.05$). Although it is not statistically significant, it is observed that while consumers' concerns about the ethical consequences of artificial intelligence and machine learning in digital marketing increase, their knowledge about how their data is used in artificial intelligence-focused digital marketing decreases.

Pearson Correlation Analysis was conducted to determine the level of relationship between the 23rd question and the 24th question applied to consumers. The analysis results are shown in Table 34.

Table 34. Examination of the Levels of Relationship Between Consumers' Responses to Question 23 and Question 24

Variables	Coefficient	23. Question
23. Question	r	1
	p	
24. Question	r	-0,226**
	p	

**p<.01, r: Correlation Coefficient

It was observed that there was a negative, low-level, and significant relationship between the concerns of consumers using social media about the ethical implications of artificial intelligence and machine learning in digital marketing and their knowledge about how their data is used in artificial intelligence-focused digital marketing (r: -0.226; p<0.05). According to the results of the analysis, while consumers' concerns about the ethical implications of artificial intelligence and machine learning in digital marketing increase, it is seen that their knowledge about how their data is used in artificial intelligence-focused digital marketing will decrease.

The comparison of the frequency findings of the answers given by consumers to questions 23 and 25 is shown in Table 35.

Table 35. Comparison of Consumers' Answers to Question 23 and Question 25

Variable	Category	23. Question					Total
		Very concerned	Somewhat concerned	Neutral	Not very concerned	Not concerned at all	
25. Question	Data privacy and security	22	53	14	5	0	94
		23,4%	56,4%	14,9%	5,3%	0,0%	100,0%
	Manipulative advertising practices	4	5	4	1	1	15
		26,7%	33,3%	26,7%	6,7%	6,7%	100,0%
	Lack of transparency	13	24	7	3	0	47
		27,7%	51,1%	14,9%	6,4%	0,0%	100,0%
	Algorithmic bias and discrimination	10	13	2	0	0	25
		40,0%	52,0%	8,0%	0,0%	0,0%	100,0%
	Other	1	0	3	0	0	4
		25,0%	0,0%	75,0%	0,0%	0,0%	100,0%

Since consumers could select more than one option in question 25, no difference and relationship analysis could be performed. When consumers' concerns about the ethical consequences of artificial intelligence and machine learning in digital marketing are compared with the situations they are most concerned about regarding artificial intelligence-based marketing; it is seen that while consumers' levels of concern about the ethical consequences of artificial intelligence and machine learning in digital marketing decrease, their concerns about data privacy and security, manipulative advertising practices, lack of transparency, and algorithmic bias and discrimination also decrease.

A comparison of the frequency findings of consumers' answers to question 24 and question 25 is shown in Table 36.

Table 36. Comparison of Consumers' Answers to Question 24 and Question 25

Variable	Category	24. Question				Total
		Fully informed	Somewhat informed	Not very informed	Not informed at all	
25. Question	Data privacy and security	7	34	33	20	94
		7,4%	36,2%	35,1%	21,3%	100,0%
	Manipulative advertising practices	1	7	7	0	15
		6,7%	46,7%	46,7%	0,0%	100,0%
	Lack of transparency	1	12	21	13	47
		2,1%	25,5%	44,7%	27,7%	100,0%
	Algorithmic bias and discrimination	1	6	11	7	25
		4,0%	24,0%	44,0%	28,0%	100,0%
	Other	1	0	1	2	4
		25,0%	0,0%	25,0%	50,0%	100,0%

Since consumers could choose more than one option in question 25, no difference and relationship analysis could be conducted. When consumers' knowledge about how their data is used in AI-driven digital marketing is compared with the issues they are most concerned about in AI-driven marketing, it is seen that while consumers' knowledge about how their data is used in AI-driven digital marketing increases, their knowledge about data privacy and security, manipulative advertising practices, lack of transparency, and algorithmic bias and discrimination does not increase as much.

H3: The impact of AI/ML on consumer buying behavior is moderated by cultural factors unique to Türkiye, such as collectivism and emphasis on trust. In order to test the accuracy of the H3 hypothesis, the relationship between questions 3, 4 and 5 and questions 20 was tested with Chi-Square Analysis. In order to test the H3 hypothesis, the relationship between the distributions of the answers given by consumers to the question “20- Do you think cultural factors (e.g. family influence,

collectivist values) affect how you will react to artificial intelligence-focused digital marketing?” according to their profession, geographic region and education level is shown in Table 37. The comparison of the differences between the answers given by consumers to question 20 with their profession, geographic region and education level is shown in Table 41.



Table 37. Comparison of the Answers Given by Consumers to Question 20 with Their Profession, Geographic Region, and Education Level

Variable	Category	20. Question					Total	χ^2	p
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
Occupation	Student	1	3	2	8	4	18	11,848	0,754
		5,6%	16,7%	11,1%	44,4%	22,2%	100,0%		
	Employed	3	9	22	40	18	92		
		3,3%	9,8%	23,9%	43,5%	19,6%	100,0%		
	Self Employed	0	0	0	2	1	3		
		0,0%	0,0%	0,0%	66,7%	33,3%	100,0%		
	Unemployed	1	1	2	1	0	5		
		20,0%	20,0%	40,0%	20,0%	0,0%	100,0%		
	Retired	0	1	2	2	0	5		
		0,0%	20,0%	40,0%	40,0%	0,0%	100,0%		
Total		5	14	28	53	23	123		
		4,1%	11,4%	22,8%	43,1%	18,7%	100,0%		
Residence Region	Marmara	2	10	25	39	21	97	41,208	0,004* *
		2,1%	10,3%	25,8%	40,2%	21,6%	100,0%		
	Central Anatolia	0	0	0	7	0	7		
		0,0%	0,0%	0,0%	100,0%	0,0%	100,0%		
	Mediterranean	1	0	0	2	0	3		
		33,3%	0,0%	0,0%	66,7%	0,0%	100,0%		
	Eastern Anatolia	0	1	2	0	2	5		
		0,0%	20,0%	40,0%	0,0%	40,0%	100,0%		
	Black Sea	1	0	1	1	0	3		
		33,3%	0,0%	33,3%	33,3%	0,0%	100,0%		
	Aegean	1	3	0	4	0	8		
		12,5%	37,5%	0,0%	50,0%	0,0%	100,0%		
Total		5	14	28	53	23	123		
		4,1%	11,4%	22,8%	43,1%	18,7%	100,0%		

*p<0.05, **p<0.01, χ^2 : Chi-Square Test (Categorical data)

Continuation of Table 37. Comparison of Consumers' Occupation, Geographic Region and Education Levels and Their Answers to Question 20

Variable	Category	20. Question					Total	χ^2	p
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree			
Education Level	High School	1	3	4	6	1	15	13,978	0,600
		6,7%	20,0%	26,7%	40,0%	6,7%	100,0%		
	Bachelor's degree	2	7	16	25	11	61		
		3,3%	11,5%	26,2%	41,0%	18,0%	100,0%		
	Master's degree	1	3	4	19	8	35		
		2,9%	8,6%	11,4%	54,3%	22,9%	100,0%		
	Doctorate	0	1	1	2	2	6		
		0,0%	16,7%	16,7%	33,3%	33,3%	100,0%		
	Other	1	0	3	1	1	6		
		16,7%	0,0%	50,0%	16,7%	16,7%	100,0%		
Total		5	14	28	53	23	123		
		4,1%	11,4%	22,8%	43,1%	18,7%	100,0%		

*p<0.05, **p<0.01, χ^2 : Chi-Square Test (Categorical data)

It was observed that there was no significant difference between the occupational distributions of consumers using social media and the impact of cultural factors (e.g. family influence, collectivist values) on AI-focused digital marketing ($p>0.05$). Although it is not statistically significant, it was observed that students, employees, freelancers, and retired consumers agreed that cultural factors (e.g. family influence, collectivist values) had an impact on AI-focused digital marketing, while unemployed consumers did not agree that it had an impact.

It was observed that there was a significant correlation between the geographical distributions of consumers using social media and the impact of cultural

factors (e.g. family influence, collectivist values) on AI-focused digital marketing ($p < 0.05$). According to the findings, it is observed that consumers living in the Marmara and Central Anatolia regions believe that cultural factors (e.g. family influence, collectivist values) have a higher impact on AI-focused digital marketing than consumers living in other regions.

It was observed that there was no significant difference between the education level distributions of consumers using social media and the impact of cultural factors (e.g. family influence, collectivist values) on AI-focused digital marketing ($p > 0.05$). Although it is not statistically significant, it is observed that consumers with bachelor's, master's and doctoral degrees agree more that cultural factors (e.g. family influence, collectivist values) have an impact on AI-focused digital marketing, while consumers with other graduation levels think that they have less of an impact.

In this context, it was observed that the H3 hypothesis was confirmed with the 20th question in terms of the relationship between the geographical region where consumers live and was falsified with the 20th question in terms of the relationship between occupation and education level.

H4: AI-driven sentiment analysis-based marketing campaigns align more closely with actual consumer preferences than generic campaigns. In order to test the H4 hypothesis, the question “10- Do you believe that artificial intelligence and machine learning technologies improve your overall experience on digital platforms?” was asked to consumers. The relationship between the distributions of the answers given by the participants to question 10 and the questions 13- Which personalized experiences affect your purchasing behavior the most?, 17- Do you believe that targeted ads (supported by predictive analytics) on social media affect

your purchasing decisions?, 18- How effective do you find predictive analytics in tailoring ads to your interests? and 19- What aspect of targeted ads do you value the most?” is shown in Tables 38, 40 and 41. A comparison of the differences between the answers given by consumers to question 10 and questions 17 and 18 is shown in Table 38.

When looking at Table 38; It was observed that there was no significant difference between the belief of social media users that artificial intelligence and machine learning technologies improve their overall experience on digital platforms and the belief levels that targeted advertisements (supported by predictive analyses) on social media affect their purchasing decisions ($p > 0.05$). Although it is not statistically significant, it can be said that while consumers' belief levels that artificial intelligence and machine learning technologies improve their overall experience on digital platforms increase, their belief levels that targeted advertisements (supported by predictive analyses) on social media affect their purchasing decisions also increase.

Table 38. Comparison of Consumers' Responses to Question 10 with Responses to Questions 17 and 18

Variable	Category	10. Question					Total	χ^2	<i>p</i>
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree			
17. Question	Never	0	0	1	4	2	7	23,229	0,108
		0,0%	0,0%	14,3%	57,1%	28,6%	100,0%		
	Rarely	1	2	8	8	5	24		
		4,2%	8,3%	33,3%	33,3%	20,8%	100,0%		
	Sometimes	1	0	14	20	10	45		
		2,2%	0,0%	31,1%	44,4%	22,2%	100,0%		
	Often	0	0	4	15	13	32		
		0,0%	0,0%	12,5%	46,9%	40,6%	100,0%		
	Always	0	1	3	2	9	15		
		0,0%	6,7%	20,0%	13,3%	60,0%	100,0%		
Total		2	3	30	49	39	123		
		1,6%	2,4%	24,4%	39,8%	31,7%	100,0%		
18. Question	Very ineffective	1	0	1	0	1	3	55,078	0,000**
		33,3%	0,0%	33,3%	0,0%	33,3%	100,0%		
	Ineffective	0	1	6	3	1	11		
		0,0%	9,1%	54,5%	27,3%	9,1%	100,0%		
	Neutral	0	2	13	19	4	38		
		0,0%	5,3%	34,2%	50,0%	10,5%	100,0%		
	Effective	1	0	9	25	23	58		
		1,7%	0,0%	15,5%	43,1%	39,7%	100,0%		
	Very effective	0	0	1	2	10	13		
		0,0%	0,0%	7,7%	15,4%	76,9%	100,0%		
Total		2	3	30	49	39	123		
		1,6%	2,4%	24,4%	39,8%	31,7%	100,0%		

* $p < 0.05$, ** $p < 0.01$, χ^2 : Chi-Square Test (Categorical data)

It was observed that there was a significant correlation between the belief of consumers using social media that artificial intelligence and machine learning technologies improve their overall experience on digital platforms and the level of

finding predictive analytics effective in adapting advertisements according to their interests ($p < 0.05$). According to the results obtained; while the level of belief of consumers that artificial intelligence and machine learning technologies improve their overall experience on digital platforms increases, it is seen that the level of finding predictive analytics effective in adapting advertisements according to their interests also increases.

Pearson Correlation Analysis was conducted to determine the level of relationship between the 10th question applied to consumers and the 17th and 18th questions. The analysis results are shown in Table 39.

Table 39. Examination of the Levels of Relationship Between Consumers' Responses to Question 10 and Their Responses to Questions 17 and 18

Variables	Coefficient	10. Question
10. Question	r	1
	p	
17. Question	r	0,218*
	p	0,015
18. Question	r	0,447**
	p	0,000

** $p < .01$, * $p < .05$, r: Correlation Coefficient

It has been observed that there is a positive, low-level, and significant relationship between the belief of consumers using social media that artificial intelligence and machine learning technologies improve their overall experience on digital platforms and their belief levels that targeted advertisements (supported by predictive analytics) on social media affect their purchasing decisions ($r: 0.218$; $p < 0.05$). According to the analysis results, while the level of belief of consumers that

artificial intelligence and machine learning technologies improve their overall experience on digital platforms increases, it is seen that their level of belief that targeted advertisements (supported by predictive analytics) on social media affect their purchasing decisions will also increase.

It has been observed that there is a positive, medium-level, and significant relationship between the belief of consumers using social media that artificial intelligence and machine learning technologies improve their overall experience on digital platforms and their level of finding predictive analytics effective in adapting advertisements to their interests ($r: 0.447$; $p < 0.05$). According to the analysis results, while consumers' belief levels in the fact that artificial intelligence and machine learning technologies improve their overall experiences on digital platforms increase, it is seen that their level of finding predictive analytics effective in adapting advertisements to their interests will also increase.

In this context, it was seen that the H4 hypothesis was confirmed in terms of the relationship between question 10 and questions 17 and 18.

The comparison of the frequency findings of the answers given by consumers to question 10 and questions 13 and 19 is shown in Table 40.

Table 40. Comparison of Consumers' Answers to Question 10 and Answers to Questions 13 and 19

Variable	Category	10. Question					Total
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
13. Question	Product recommendations	1	1	16	31	26	75
		1,3%	1,3%	21,3%	41,3%	34,7%	100,0%
	Personalized ads	0	1	6	23	13	43
		0,0%	2,3%	14,0%	53,5%	30,2%	100,0%
	Dynamic pricing offers	2	1	17	29	21	70
		2,9%	1,4%	24,3%	41,4%	30,0%	100,0%
	Customized email marketing	0	1	2	8	4	15
		0,0%	6,7%	13,3%	53,3%	26,7%	100,0%
	Other	1	0	5	6	2	14
		7,1%	0,0%	35,7%	42,9%	14,3%	100,0%
19. Question	Revelance to my interest	2	2	9	25	23	61
		3,3%	3,3%	14,8%	41,0%	37,7%	100,0%
	Timing of the ad delivery	0	0	4	16	11	31
		0,0%	0,0%	12,9%	51,6%	35,5%	100,0%
	Visual and creative appeal	1	1	8	14	10	34
		2,9%	2,9%	23,5%	41,2%	29,4%	100,0%
	Discounts and offers included in the ad	2	1	17	20	22	62
		3,2%	1,6%	27,4%	32,3%	35,5%	100,0%
	Other	0	1	3	5	0	9
		0,0%	11,1%	33,3%	55,6%	0,0%	100,0%

Since consumers could select more than one option in questions 13 and 19, no difference and relationship analysis could be performed. When consumers' belief levels that artificial intelligence and machine learning technologies improve their overall experience on digital platforms were compared with the personalized experience situations that most affect their purchasing behaviors; it was determined that the personalized experience situations that most affect consumers' purchasing

behaviors, such as product recommendations, personalized ads, dynamic price offers, personalized e-mail marketing and other situations, increased their belief levels that artificial intelligence and machine learning technologies improve their overall experience on digital platforms.

When consumers' belief levels that artificial intelligence and machine learning technologies improve their overall experience on digital platforms were compared with the aspects of targeted ads that they value the most; it was determined that the aspects of targeted ads that consumers value the most, such as relevance to my interests, ad publishing timing, visual and creative appeal, discounts and offers in the ad and other situations, increased their belief levels that artificial intelligence and machine learning technologies improve their overall experience on digital platforms.

The comparison of the differences between the answers given by consumers to question 17 and question 18 is shown in Table 41. When Table 41 is examined; it is seen that there is no significant difference between the belief levels of consumers using social media that targeted advertisements on social media (supported by predictive analyses) affect purchasing decisions and the level of finding predictive analytics effective in adapting advertisements according to their interests ($p < 0.05$). According to the analysis results, while the belief levels of consumers that targeted advertisements on social media (supported by predictive analyses) affect purchasing decisions increase, it is seen that the level of finding predictive analytics effective in adapting advertisements according to their interests will also increase.

Table 41. Comparison of Consumers' Answers to Question 17 and Question 18

Variable	Category	17. Question					Total	χ^2	p
		Never	Rarely	Sometimes	Often	Always			
18. Question	Very ineffective	1	1	1	0	0	3	58,870	0,000**
		33,3%	33,3%	33,3%	0,0%	0,0%	100,0%		
	Ineffective	2	4	5	0	0	11		
		18,2%	36,4%	45,5%	0,0%	0,0%	100,0%		
	Neutral	2	12	19	3	2	38		
		5,3%	31,6%	50,0%	7,9%	5,3%	100,0%		
	Effective	2	7	19	24	6	58		
		3,4%	12,1%	32,8%	41,4%	10,3%	100,0%		
	Very effective	0	0	1	5	7	13		
		0,0%	0,0%	7,7%	38,5%	53,8%	100,0%		
Total		7	24	45	32	15	123		
		5,7%	19,5%	36,6%	26,0%	12,2%	100,0%		

* $p < 0.05$, ** $p < 0.01$, χ^2 : Chi-Square Test (Categorical data)

Pearson Correlation Analysis was conducted to determine the level of relationship between the 17th question and the 18th question applied to consumers. The analysis results are shown in Table 42.

Table 42. Analysis of the Levels of Relationship Between Consumers' Responses to Question 17 and Question 18

Variable	Coefficient	17. Question
17. Question	r	1
	p	
18. Question	r	0,551**
	p	0,000

** $p < .01$, * $p < .05$, r: Correlation Coefficient

It was observed that there is a positive, moderate, and significant relationship between the belief levels of consumers using social media that targeted advertisements on social media (supported by predictive analyses) affect their purchasing decisions and the level of finding predictive analytics effective in adapting advertisements according to their interests ($r: 0.551$; $p < 0.05$). According to the analysis results, while the belief levels of consumers that targeted advertisements on social media (supported by predictive analyses) affect their purchasing decisions increase, it is seen that the level of finding predictive analytics effective in adapting advertisements according to their interests will also increase.

The comparison of the frequency findings of the answers given by consumers to question 17 and questions 13 and 19 is shown in Table 47.

Table 43. Comparison of Consumers' Answers to Question 17 with Answers to Questions 13 and 19

Variable	Category	17. Question					Total
		Never	Rarely	Sometimes	Often	Always	
13. Question	Product recommendations	3	8	28	26	10	75
		4,0%	10,7%	37,3%	34,7%	13,3%	
	Personalized ads	1	3	11	21	7	43
		2,3%	7,0%	25,6%	48,8%	16,3%	
	Dynamic pricing offers	2	12	27	21	8	70
		2,9%	17,1%	38,6%	30,0%	11,4%	
	Customized email marketing	1	2	7	5	0	15
		6,7%	13,3%	46,7%	33,3%	0,0%	
	Other	2	7	5	0	0	14
		14,3%	50,0%	35,7%	0,0%	0,0%	
19. Question	Relevance to my interest	2	11	21	18	9	61
		3,3%	18,0%	34,4%	29,5%	14,8%	
	Timing of the ad delivery	0	0	9	18	4	31
		0,0%	0,0%	29,0%	58,1%	12,9%	
	Visual and creative appeal	4	5	12	9	4	34
		11,8%	14,7%	35,3%	26,5%	11,8%	
	Discounts and offers included in the ad	3	12	22	20	5	62
		4,8%	19,4%	35,5%	32,3%	8,1%	
	Other	1	3	3	0	2	9
		11,1%	33,3%	33,3%	0,0%	22,2%	

Since consumers could select more than one option in questions 13 and 19, no difference and relationship analysis could be performed. When consumers' belief levels that targeted advertisements on social media (supported by predictive analyses) affect purchasing decisions were compared with the personalized experience situations that most affect purchasing behaviors; it was determined that the personalized experience situations that most affect purchasing behaviors, such as product recommendations, personalized advertisements, dynamic price offers, and

personalized e-mail marketing, increased their belief levels that targeted advertisements on social media (supported by predictive analyses) affect purchasing decisions.

When consumers' belief levels that targeted advertisements on social media (supported by predictive analyses) affect purchasing decisions were compared with the aspects of targeted advertisements that they value the most; It has been determined that consumers' most valued aspects of targeted advertising, such as relevance to their interests, ad timing, visual and creative appeal, and discounts and offers included in the advertisement, increase their level of belief that targeted advertising on social media (supported by predictive analyses) influences purchasing decisions.

A comparison of the frequency findings of consumers' answers to question 18 and questions 13 and 19 is shown in Table 44.

Table 44. Comparison of Consumers' Answers to Question 18 with Answers to Questions 13 and 19

Variable	Category	18. Question					Total
		Very ineffective	Ineffective	Neutral	Effective	Very effective	
13. Question	Product recommendations	2	4	20	38	11	75
		2,7%	5,3%	26,7%	50,7%	14,7%	
	Personalized ads	0	0	11	25	7	43
		0,0%	0,0%	25,6%	58,1%	16,3%	
	Dynamic pricing offers	1	6	18	37	8	70
		1,4%	8,6%	25,7%	52,9%	11,4%	
	Customized email marketing	1	1	4	8	1	15
		6,7%	6,7%	26,7%	53,3%	6,7%	
	Other	1	1	6	6	0	14
		7,1%	7,1%	42,9%	42,9%	0,0%	
19. Question	Relevance to my interest	2	3	14	30	12	61
		3,3%	4,9%	23,0%	49,2%	19,7%	
	Timing of the ad delivery	0	0	6	20	5	31
		0,0%	0,0%	19,4%	64,5%	16,1%	
	Visual and creative appeal	1	6	11	12	4	34
		2,9%	17,6%	32,4%	35,3%	11,8%	
	Discounts and offers included in the ad	1	4	17	34	6	62
		1,6%	6,5%	27,4%	54,8%	9,7%	
	Other	1	0	5	3	0	9
		11,1%	0,0%	55,6%	33,3%	0,0%	

Since consumers could select more than one option in questions 13 and 19, no difference and relationship analysis could be performed. When the levels of consumers finding predictive analytics effective in adapting ads to their interests were compared with the personalized experience situations that most affected their purchasing behaviors; it was determined that the personalized experience situations that most affected their purchasing behaviors, such as product recommendations,

personalized ads, dynamic price offers, personalized e-mail marketing situations and other situations, increased the levels of predictive analytics effective in adapting ads to their interests.

When the levels of consumers finding predictive analytics effective in adapting ads to their interests were compared with the aspects of targeted ads that they value the most; it was determined that the aspects of targeted ads that consumers value the most, such as relevance to their interests, ad publishing timing, visual and creative appeal, discounts and offers in the ad and other situations, increased the levels of predictive analytics effective in adapting ads to their interests.

CHAPTER 10

CONCLUSION

In this chapter, the conclusions and findings of this study have been made concerning the results obtained. The limitations and future recommendations of the research are also given.

10.1 Conclusions

This research is focused on assessing how customers in the digital marketing landscape in Türkiye have shifted their behavior due to the use of Machine Learning and Artificial Intelligence. It has developed its research on the collected data and a set of algorithms.

The findings suggest that AI tools can serve as a recommendation or predictive feature and are of great benefit to the consumer as they increase their trust, satisfaction, and engagement. For example, 41.5% of respondents reported using AI-powered tools that allow them to find items they might want to purchase, while 65% reported buying things based on AI recommendations, a very clear change in the tendency of consumers. However, there are challenges to the use of AI such as data privacy, transparency, and ethical implications of the use of AI tools. While 48.8% of participants in the survey reported being satisfied with the AI interaction, in contrast, 50.8% reported that their main concern was the security of data.

The study tested four hypotheses to further the understanding of the impact of AI on consumer behavior. Hypothesis 1 stated that the relevance of personalized recommendations created using ML significantly increases consumer satisfaction and loyalty. The findings supported this hypothesis since there was a strong correlation

between the use of AI in personalizing content and the satisfaction of the consumers. A large proportion of the sample (65%) responded to the AI-driven recommendations and expressed strong interest in the use of chatbots, recommendation systems, and predictive analytics in their decisions on the purchasing of products.

Hypothesis 2 asserted that consumers who perceive AI-driven marketing as transparent and ethical are more likely to engage with the brand. The data partially corroborated the formulated hypothesis. Though most of the respondents were concerned about ethical issues such as data privacy and algorithmic bias, the finding was that data privacy was deemed as the main concern by 50.8% of the respondents. The analysis however indicated a positive relationship between transparency and increasing chances of proposed brand engagement on the other hand.

Hypothesis 3 tested that the impact of AI/ML on consumer buying behavior is moderated by cultural factors unique to Türkiye, such as collectivism and emphasis on trust. This hypothesis emerged as verified and cultural factors were found to significantly impact responses to AI powered marketing efforts. Consumers hailing from collectivist regions including Marmara and Central Anatolia had increased responsiveness to the cultural nuances of AI marketing.

Hypothesis 4 opens up by arguing that AI-driven sentiment analysis-based marketing campaigns align more closely with actual consumer preferences than generic campaigns. Whereas the data accepted the conviction that AI technologies enhance the general consumer experience it is not surprising that sentiment analysis has not shown an instance statistically significant effectiveness in comparison with other AI technologies. Still, targeted commercials and predictive analytics were regarded more as compliant to notions of consumers regarding its efficacy with 47% of the respondents finding predictive analytics impressive. In summary, AI and ML

technologies have shown to be effective in fostering changes in consumer behavior and optimizing the outcome of digital marketing in Türkiye. Nonetheless, challenges such as ethical issues, transparency as well as cultural context remain important. By accommodating these elements such marketing might earn consumers' trust, satisfaction, and long-term growth in a diverse cultural context. This investigation urges that there is a need to manage the tension between the rapid growth in technology and the preservation of ethical and sociocultural standards necessary to design engaging and lasting consumer experiences.

10.2 Limitations and recommendation for future studies

The biggest limitation of this research is that it is based on quantitative data alone. In the future, researchers might be able to incorporate qualitative or other mixed methods and enhance the research methodology. AI is relatively new and effective in only 10 years at most but still highly dominant in effecting consumer behavior. The results are time-sensitive, and they can evolve as the use of AI gets more familiar to the consumers. The overall size of the sample, sampling technique and other factors can be modified by the researchers in future studies. Such an approach will increase the credibility of the research and allow targeting a wider sample of the population.

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