CONSUMER INSIGHTS AGENCY

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INNOVATIVE RESEARCH METHODS IN THE CONSUMER BEHAVIOUR RESEARCH

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TABLE OF CONTENTS:

INTRODUCTION ... **4**

CHAPTER 1
Navigating the dynamic landscape of the marketing research industry: opportunities, challenges and strategic adaptations ... **7**

1.1 Current state of the marketing research industry worldwide ... 7

1.2 Current trends and developments in the marketing research industry in the Slovak republic ... 15

1.3 Trajectory of growth in the marketing research industry ... 23

1.4 Contemporary transformations and innovations in consumer behaviour research methodologies ... 25

CHAPTER 2
Innovative approaches in consumer behaviour research: from neuromarketing to artificial intelligence ... **28**

2. 1 Overview of innovative methods and techniques in consumer behaviour research ... 28

2.1.1 Neuromarketing ... 29

2.1.2 Mobile ethnography ... 33

2.1.3 Social media analysis ... 35

2.1.4 Gamification ... 37

2.1.5 Big data analysis ... 39

2.1.6 Virtual reality ... 40

2.1.7 Artificial intelligence ... 42

2.2 Fundamental digital tools: simplifying and transforming marketing research in the modern era ... 43

CHAPTER 3
Breaking barriers in consumer behaviour research: technologies and methodologies of tomorrow ... **48**

3.1 Investigation into the use of innovative methods in consumer behaviour research by research agencies and research clients ... 48

3.1.1 Selected research findings and key insights ... 50

3.1.2 Setting priorities for overcoming barriers to adopting innovative research methods and techniques ... 57

3.2 Artificial intelligence as a key tool for innovation in consumer behaviour research ... 61

3.3 Synthetic samples: a revolution in marketing research methodology ... 70

CONCLUSION ... **77**

LIST OF REFERENCES ... **79**

INTRODUCTION

The scientific monograph titled ***Innovative research methods in the consumer behaviour research*** provides a comprehensive overview of the current state and future development of research methods and techniques aimed at understanding consumer behaviour. This scientific text seeks to analyse key trends, technological innovations, and methodological approaches that have the potential to redefine the role of marketing research and its application in practice. The monograph is intended for marketing professionals, the academic community, and the wider public interested in emerging trends in marketing research. The aim of the publication is to offer a multidimensional perspective on the issue, combining theoretical knowledge with the study of practice in the context of rapidly changing technological and market conditions.

The publication is divided into three main chapters, each focusing on specific aspects of the topic under investigation. The **first chapter** provides a broad context for the current state of marketing research at both the global and local levels. It explores technological innovations such as artificial intelligence, big data analysis, and their impact on transforming traditional approaches. The chapter emphasises the importance of adapting to the digital revolution, which is changing the way companies approach the analysis of consumer behaviour. Global trends, such as the rise of automated tools, the implementation of machine learning, and the integration of big data, provide companies with a competitive advantage and the ability to predict future market needs. The chapter also maps local aspects with an emphasis on the adaptation of Slovak and Central European enterprises to these trends. It focuses on the growing importance of specific technologies and methods that are changing approaches to marketing strategies and decision-making processes. Special emphasis is placed on new research approaches that involve collaboration among multiple stakeholders. The chapter also identifies key barriers, such as the lack of specialists, high costs of technology integration, and insufficient readiness for change.

The **second chapter** is dedicated to a detailed analysis of modern methodologies, such as neuromarketing, mobile ethnography, social media analysis, gamification, and virtual reality. Neuromarketing provides insights into the functioning of consumers' brains through techniques such as EEG and fMRI, which map emotions and subconscious reactions to advertising stimuli. Mobile ethnography

enables the tracking of consumers' everyday lives through applications, providing authentic data on behaviour in real-time. Social media analysis considers the growing importance of sentiment and its influence on consumer decision-making. This approach utilises advanced algorithms to process posts, comments, and reviews, providing valuable insights into customer needs and values. Gamification, with its ability to transform surveys into playful and interactive activities, brings a higher level of respondent engagement and improves the quality of data obtained. Virtual reality, which allows for simulations and scenario creation, has elevated marketing research to a new level, enabling the testing of products and advertising campaigns in controlled environments. These approaches offer deeper insights into subconscious processes, emotions, and decision-making mechanisms of consumers. The second chapter also highlights the benefits of digital tools and their ability to adapt to the dynamics of the consumer market.

The **third chapter** analyses the future of marketing research through technological innovations such as artificial intelligence and synthetic samples. The chapter provides a detailed view of the application of these methods and their ability to address complex challenges in marketing. Furthermore, the chapter addresses barriers such as high initial costs, a lack of specialised knowledge, and technological readiness. It proposes ways to overcome these barriers, including strategic partnerships, training, and targeted financial support. Emphasis is placed on creating sustainable solutions that enable companies to effectively implement advanced tools and adapt to changing market conditions. Strategic partnerships with technology companies and marketing agencies are key to supporting innovative solutions, allowing companies to better utilise available data and apply modern methods to optimise processes. The chapter also highlights the benefits of synthetic samples, which represent an efficient tool for data collection and analysis, enabling better data accessibility for all types of businesses.

The authors of the monograph conducted extensive and multifaceted research focused on the use of innovative methods in consumer behaviour research among marketing agencies and their clients. This research aimed to explore not only the technical feasibility of new methods but also their effectiveness in various contexts. Details of the research activities undertaken and their results are thoroughly elaborated in the third chapter of the monograph. The research was based on a combination of quantitative and qualitative methods, including experimental studies, in-depth interviews with industry experts, and secondary data analysis. Emphasis was placed on data collection from real-world

environments, including the use of mobile ethnography, where consumers recorded their daily experiences through mobile applications. Neuromarketing techniques such as EEG and fMRI allowed researchers to monitor emotional and cognitive responses to various marketing stimuli. A significant aspect of the research was the analysis of challenges associated with implementing advanced technologies in practice. Identified barriers included financial obstacles, such as high initial costs of advanced technology adoption, as well as organisational challenges, such as a lack of qualified personnel capable of effectively implementing these new methods. These barriers were analysed in the context of the Slovak and Czech markets, with particular attention paid to how companies can overcome these challenges through education, professional training, and international cooperation.

This scientific monograph is an output of the project funded by the Scientific Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic and the Slovak Academy of Sciences – **project No. 1/0505/22 *Implementation of innovative research methods and techniques in the consumer behaviour research in the conditions of the Slovak market of research suppliers and research buyers***. The project was focused on the comprehensive elaboration of the issue of examining consumer shopping behaviour with an emphasis on the use of innovative research methods and techniques to define the impact of individual attributes of the digital environment on the process of collecting data on consumer behaviour.

The authors believe that this scientific monograph will broaden readers' horizons in the field of consumer research and inspire further scientific and professional discussion on this critical topic. Additionally, they hope that the publication will serve as a catalyst for the academic and professional community to collaboratively explore new opportunities for research and practice in marketing strategies. The authors anticipate that the monograph will contribute to the development of innovative initiatives that strengthen the connection between theory and practice. With a particular emphasis on interdisciplinary collaboration and technological innovation, the authors hope this publication will pave the way for new partnerships between academia, the business sector, and other stakeholders. Such initiatives could play a pivotal role in shaping future trends and creating effective solutions in the dynamic and ever-evolving world of marketing.

Authors

CHAPTER 1

NAVIGATING THE DYNAMIC LANDSCAPE OF THE MARKETING RESEARCH INDUSTRY: OPPORTUNITIES, CHALLENGES AND STRATEGIC ADAPTATIONS

The first chapter examines the evolving landscape of marketing research within both global and local contexts. It explores the current state of the industry, highlighting how technological advancements such as artificial intelligence and big data analytics are transforming traditional approaches and enabling more sophisticated solutions. On a global scale, the chapter emphasises the role of research as the foundation for data-driven strategies that allow organisations to navigate complex market dynamics more effectively. Simultaneously, it analyses the unique conditions of the Slovak market, where digitalisation, a growing focus on consumer behaviour, and innovative methodologies are reshaping local marketing research practices.

The chapter also outlines the growth trajectory of the marketing research industry, supported by expansion into emerging markets, technological innovation, and a focus on adaptability. Particular attention is paid to the integration of contemporary methodologies in consumer behaviour research, such as the application of neuroscience, artificial intelligence, and ethnographic approaches, which uncover deeper psychological motivations of consumers. The chapter underscores that the future success of the industry will hinge on its ability to innovate, adapt, and leverage technological advancements effectively in response to shifting global and local challenges.

1. 1 Current state of the marketing research industry worldwide

Marketing research serves as a foundational element of modern business strategy, delivering crucial insights that enable organisations to adeptly navigate increasingly intricate market dynamics. By comprehending customer behaviour, predicting emerging trends, and formulating competitive strategies, marketing research constitutes the backbone of data-informed decision-making processes. In an era marked by accelerated technological progress and shifting consumer behaviours, the marketing research industry has undergone profound adaptations to align with these evolving demands (Dzwigol, 2020). Advanced data analytics,

artificial intelligence, and intricate behavioural research methodologies have redefined traditional approaches, yielding insights that are more precise, actionable, and contextually relevant. Moreover, the globalisation of markets and the proliferation of digital technologies have necessitated a more holistic and adaptive approach to research, empowering organisations to effectively engage with diverse cultural and economic milieus (Kapustina, 2024). This chapter undertakes an in-depth exploration of the contemporary state of the marketing research industry, encompassing pivotal trends, cutting-edge technological advancements, prevailing challenges, and promising opportunities. Through an extensive analysis, this chapter offers an academically rigorous perspective on the evolving nature of marketing research and its indispensable role in shaping the trajectory of global business practices.

Industry overview

The marketing research industry has experienced exponential growth over the past decade, firmly establishing itself as a cornerstone of the global economic framework. In 2023, the industry's global revenue exceeded $80 billion, with a projected compound annual growth rate (CAGR) of 6% anticipated through 2030 (ESOMAR, 2023). This robust expansion underscores the escalating demand for data-driven strategies as organisations increasingly recognise the strategic value of leveraging advanced analytics to gain competitive advantages. North America and Europe continue to dominate the industry, collectively generating over 60% of global revenues (Deloitte, 2023). These regions have cultivated highly sophisticated research ecosystems, characterised by state-of-the-art technological integration, a well-trained workforce, and the requisite infrastructure to support large-scale operations. Emerging markets, particularly within the Asia-Pacific region, represent a critical frontier for the industry. This region has demonstrated growth rates significantly surpassing those of traditional markets, driven by rapid urbanisation, enhanced digital connectivity, and a surge in e-commerce activities (PwC, 2023). Countries such as China and India have emerged as epicentres of marketing research innovation, owing to their expansive consumer bases and diverse market landscapes, which necessitate tailored, context-sensitive approaches. Concurrently, government initiatives aimed at fostering digital transformation further catalyse the industry's development across these markets.

The internationalisation of marketing research highlights the imperative for culturally attuned methodologies. Researchers are increasingly tasked with designing frameworks that consider linguistic variations, socio-economic

disparities, and local consumer practices (Möller, 2022). For instance, strategies tailored to urban consumers in Southeast Asia differ markedly from those addressing rural populations, necessitating nuanced and regionally specific methodologies. As businesses seek to derive value from these burgeoning markets, the pivotal role of marketing research becomes ever more pronounced, reinforcing its status as a critical enabler of global commerce (Pratap, 2021).

GreenBook annually compiles a ranking of the world's most innovative agencies, published in the GreenBook Research Industry Trends Report (GRIT). The 2024 ranking was based on 5542 responses. The authors surveyed professionals in the field of marketing research, asking them to name three companies focused on marketing research that they consider the most innovative. Additionally, respondents were asked to explain why they regard these three companies as the most innovative (Murphy, 2024).

Table 1-1: List of the most innovative companies in marketing research

Rank	Supplier	Total
1	Ipsos	433
2	Kantar	231
3	SKIM	210
4	NIQ	141
5	quantilope	106
6	Qualtrics Edge	104
7	Behaviorally	99
8	Nailbiter	97
9	Rival Group (Rival Technologies and Reach3 Insights)	96
10	Recollective	88
11	Dig Insights	75
12	Shapiro+Raj	64
13	Black Swan Data	59
14	Buzzback*	53
14	Gartner	53
14	McKinsey & Company	53
17	Dynata	51
18	The Logit Group	49
19	Toluna	47
20	Nexxt Intelligence	43
20	Zappi	43
22	Suzy	42
23	IBM*	41
24	Hotspex	40
25	Forrester Research	39
25	Highlight	39

Rank	Supplier	Total
27	EyeSee Research	38
27	Research Strategy Group (RSG)	38
29	YouGov*	32
30	Sago	30
30	Salesforce*	30
32	My-Take	29
32	PureSpectrum	29
34	FactWorks	28
35	Fuel Cycle	26
36	Accenture*	25
37	BCG*	24
38	10k Humans (Formerly Echo MR)	23
38	SurveyMonkey	23
38	Woxi*	23
41	Catalyx*	20
41	Cint	20
43	MMR Research*	19
44	C+R Research	18
45	AYTM*	17
45	Forsta	17
47	Appinio*	16
47	Discuss.io*	16
47	Voxpopme	16
50	Bright Mountain Media	15
50	Chadwick Martin Bailey*	15
50	Circana	15

Source: own elaboration based on Murphy, 2024

According to the study findings (Murphy, 2024), companies that rank highly in the GRIT 50 report reveal an essential insight about innovation: being perceived as innovative is crucial, even for smaller firms with limited budgets compared to industry giants. Examples include SKIM and quantilope, which achieved a remarkable number of mentions, with quantilope outperforming the more established Qualtrics Edge. Other smaller brands, such as Behaviorally, Nailbiter, and Recollective, demonstrate that even with lower revenues and fewer employees, it is possible to secure significant brand awareness through strategic innovation.

The dominance of small and medium-sized enterprises (SMEs) on the GRIT 50 list highlights their ability to deploy effective marketing strategies to enhance brand recognition. Although large corporations like Gartner, McKinsey, and IBM remain part of the ranking, competition from smaller, innovative players underscores the transformation of the market. This dynamic reflects an ongoing convergence between technological innovation, research, and strategic consulting, further reshaping the industry's landscape. In 2024, thirteen new or reintroduced companies appeared in the GRIT 50 ranking, including Accenture, Appinio, and Buzzback. The majority are technologically oriented providers, with some specialising in artificial intelligence (AI) applications. This trend underscores the growing appeal of technology-driven solutions that combine qualitative methodologies with advanced analytical tools, positioning companies such as Nailbiter, Discuss.io, and Voxpopme as key players in the sector (Murphy, 2024). Sample providers like Dynata and YouGov also play a significant role, advancing the market with their focus on innovative technologies and self-service solutions. Looking to the future, it is evident that nearly all technology providers are now offering AI-driven solutions, which may challenge differentiation within the market. Nevertheless, the ability to deliver innovative and personalised services emerges as a critical factor for success in this dynamic environment.

The analysis of GRIT participants' responses regarding their selection of the "most innovative" companies highlights key factors shaping the perception of innovation within the industry. From over 1,800 responses, statements were selected to emphasise the diverse aspects of innovation among the top ten suppliers (Murphy, 2024). The most frequently mentioned themes include the importance of maintaining a diversified portfolio of methods, with artificial intelligence (AI) emerging as a baseline expectation in research and analytics.

Successful companies are evaluated not only on the technologies they provide but also on their ability to effectively meet clients' business needs. Some firms excel in delivering value-added AI-driven solutions, while others stand out for their strong client-centric approach. The common denominator among leading companies is their focus on creating tangible business value—this concept of "pragmatic innovation" involves delivering measurable outcomes and clear improvements over previous solutions (Starostina, 2021). Organisations striving to enhance their value proposition should reassess their strategies and effectively communicate the unique benefits they offer. Success lies in the ability to respond to current market needs while demonstrating proactive innovation across various dimensions, ensuring competitiveness and long-term sustainability in the market.

Emerging trends

The marketing research industry is experiencing a transformative evolution, driven by the adoption of advanced methodologies and emerging technologies that promise to elevate the precision, efficiency, and relevance of research outputs. One of the most impactful developments is the integration of artificial intelligence (AI) and machine learning (ML). These technologies have revolutionised data analysis processes, enabling unprecedented levels of automation and accuracy (Tzempelikos, 2022). AI-powered systems, including natural language processing algorithms, have significantly enhanced sentiment analysis capabilities, allowing organisations to interpret consumer emotions and preferences with unparalleled precision (Abrardi, 2022). Simultaneously, ML models are increasingly utilised to discern complex patterns within large datasets, supporting predictive analytics that inform strategic decision-making over extended time horizons.

The advent of big data has further expanded the scope and scale of marketing research. With access to vast repositories of consumer data, encompassing purchasing behaviours, online interactions, and demographic profiles, organisations are positioned to extract granular insights that were previously unattainable. Sophisticated analytics platforms facilitate the real-time processing of this information, empowering businesses to respond promptly to market fluctuations. These capabilities are especially critical in fast-paced industries where agility is paramount. The integration of big data analytics also fosters a shift from retrospective analyses to anticipatory strategies, wherein organisations leverage predictive models to forecast consumer behaviour and pre-empt market demands.

An additional trend reshaping the industry is the growing emphasis on ethnographic and behavioural research. Moving beyond traditional surveys, these methodologies prioritise the observation of consumers in their natural contexts, yielding richer qualitative insights into their motivations and decision-making processes. Ethnographic research, which involves immersive fieldwork, provides a depth of understanding that complements quantitative analyses, enabling a more comprehensive view of consumer behaviour (Kopanicová, 2024). This approach has gained traction in sectors ranging from retail to healthcare, where understanding nuanced consumer experiences is vital for crafting effective interventions.

Mobile and social media platforms have emerged as indispensable tools in contemporary marketing research. Mobile-enabled surveys and applications facilitate the collection of data from diverse demographic groups, including populations in remote or underrepresented regions (Nielsen, 2023). These platforms offer the dual advantage of immediacy and accessibility, ensuring robust participation across varied cohorts. Meanwhile, social media has become a veritable repository of consumer sentiment. Tools for social listening enable the monitoring of online conversations, providing actionable insights into public perceptions, emerging trends, and brand reputations. As digital engagement continues to expand globally, the importance of these channels within marketing research is poised to grow correspondingly.

Sustainability and ethical considerations are also gaining prominence in marketing research. As consumers increasingly prioritise environmental and social responsibility, organisations are turning to research to gauge perceptions of sustainability initiatives and corporate social responsibility (CSR) programmes. This shift reflects broader societal trends, where businesses are not only expected to deliver economic value but also contribute positively to environmental and social outcomes (Jung, 2023). Marketing research plays a crucial role in this transition by enabling organisations to align their strategies with consumer values while adhering to ethical standards that safeguard public trust.

Challenges facing the industry

Despite its advancements, the marketing research industry faces multifaceted challenges that require strategic responses. A primary concern is data privacy and regulatory compliance. Regulations such as the General Data Protection Regulation (GDPR) in Europe and the California Consumer Privacy Act (CCPA) in the United States impose stringent requirements on data collection, storage, and

utilisation (McKinsey & Company, 2022). While these laws aim to protect individual privacy, they also increase operational complexities and compliance costs for organisations. Navigating these regulatory landscapes while maintaining the integrity of research practices is a formidable task.

Data quality and representativeness present additional challenges. The reliability of research outcomes is often compromised by biases in sampling, low response rates, and inaccuracies in self-reported data (Hussain, 2023). Mitigating these issues necessitates the adoption of innovative methodologies and robust validation processes. For instance, AI-driven bias detection algorithms are emerging as valuable tools for enhancing data reliability and ensuring the representativeness of research findings.

Globalisation adds another layer of complexity to the marketing research landscape. Conducting cross-regional studies requires an acute awareness of cultural, linguistic, and socio-economic differences that can significantly influence consumer responses. Researchers must develop culturally sensitive approaches to data collection and interpretation, ensuring that insights are both accurate and actionable across diverse contexts (Harambasic, 2024). Failure to account for these differences' risks generating flawed conclusions that undermine strategic initiatives.

Technological advancements, while offering numerous benefits, also introduce challenges related to data management and workforce skill development (De la Ballina, 2023). The exponential growth of data necessitates sophisticated tools and techniques for effective analysis, placing additional demands on organisations. Furthermore, researchers must continually enhance their technical proficiencies to keep pace with innovations in AI, ML, and big data analytics. This emphasis on continuous learning underscores the need for industry-wide investment in education and professional development.

Opportunities for growth

Notwithstanding these challenges, the marketing research industry is poised to capitalise on several promising opportunities. The expansion of emerging markets, particularly in regions such as Asia-Pacific, Africa, and Latin America, represents a significant growth area. These markets are characterised by burgeoning middle classes, rapid digital adoption, and increased consumer spending, creating a fertile environment for tailored research initiatives. By

developing locally attuned methodologies, organisations can unlock new opportunities and drive sustainable growth (Jung, 2023).

The convergence of marketing research with marketing technology platforms offers another avenue for innovation. This integration enables the seamless application of research insights to optimise marketing campaigns, enhance personalisation, and improve customer engagement. For example, segmentation data derived from research can be integrated into automated marketing technology systems to deliver targeted messaging that resonates with specific audience segments (Möller, 2022). Sustainability-focused research is becoming increasingly relevant as businesses seek to align with environmental and social imperatives. By investigating consumer attitudes towards green products, renewable energy, and ethical business practices, marketing research can inform strategies that enhance corporate reputations and foster long-term customer loyalty. As global priorities continue to shift towards sustainability, the demand for research in this area is expected to grow.

Finally, hybrid research methodologies that combine qualitative and quantitative approaches are emerging as a powerful tool for addressing complex business questions. By leveraging the complementary strengths of these methodologies, researchers can develop nuanced insights that inform strategic decision-making. For instance, qualitative interviews can uncover the underlying motivations driving consumer choices, while quantitative surveys provide statistical validation of these findings (Alsharif, 2024). The application of advanced technologies, such as AI-enabled analysis, further enhances the efficacy of hybrid methods, positioning them as a cornerstone of future research practices.

The marketing research industry occupies a pivotal position in the global economy, continually evolving to address the challenges and opportunities of an increasingly complex and dynamic landscape. Technological advancements, emerging markets, and sustainability imperatives offer significant avenues for growth, while challenges such as data privacy and cultural diversity underscore the need for innovation and adaptability. By embracing these opportunities and addressing existing hurdles, the industry can continue to deliver critical insights that empower organisations to navigate an ever-changing global marketplace with confidence and agility.

1. 2 Current trends and developments in the marketing research industry in the Slovak republic

Marketing research in Slovakia has undergone significant changes in recent years, driven by advancements in digital technology, shifts in consumer behaviour, and the growing importance of data analytics. These developments reflect global trends while also bearing unique characteristics shaped by the Slovak market's size, structure, and cultural specificities. This subchapter explores the key trends and developments in marketing research in Slovakia, with a focus on areas such as market growth, digital marketing, consumer behaviour analysis, market segmentation, and the adoption of innovative methodologies.

Market growth and economic indicators

The growth of the marketing research market in 2023 was particularly significant, with the sector experiencing a year-on-year increase of 10 to 15%. This positive trend slightly exceeds the inflation rate, demonstrating that demand for marketing services remains stable even in times of economic challenges. The market's expansion reflects the heightened interest of companies in better understanding their customers' needs, with most leveraging these insights to optimise their strategies and investments (Stratégie, 2024). Marketing research is progressively becoming an integral part of corporate planning and decision-making, underscoring its long-term potential.

Inflation in 2023 affected nearly every aspect of the economy, including the marketing research sector. Agencies were compelled to adapt to rising operational costs, which impacted their profitability and overall financial health. Increased expenses for energy, materials, and labour forced agencies to optimise their processes and seek innovative solutions to reduce costs without compromising service quality. These circumstances highlighted the need for more flexible business models and enhanced financial planning.

Customer segmentation plays a pivotal role in marketing research, with increased demand primarily originating from smaller and developing firms. These businesses recognise that a thorough understanding of their target audience can significantly contribute to their growth and market success. Smaller firms, which previously perceived marketing research as a costly luxury, now view it as an essential tool for gaining a competitive edge (Stratégie, 2024). This trend is driving the development of more affordable and flexible research services tailored

to the needs of diverse client segments. Consequently, marketing research is becoming more accessible, and its importance continues to grow.

Table 1-2: Overview of companies and financial data

Company	Revenue 2023 (€)	Projected Revenue 2024 (€)	Segments	Number of Employees (2023)
2muse	1,850,000	1,900,000	Finance, Consumer Goods, Academic, Political, Social, Media, Other	N/A
Go4insight	1,600,000	1,760,000	Finance, Consumer Goods, Academic, Political, Social, Media, Other	16
Market Vision Slovakia	1,000,000	1,100,000	Customer Experience, Mystery Shopping, Audit	50
MNForce	770	870	Data Collection, Market Research in CEE	10
Ipsos	2,800,000	3,080,000	Market Research, Public Opinion, Consultancy	16
Median SK	1,614,806	1,695,546	Market Research, Media Analytics	17
Data Servis – Informace	N/A	N/A	Market Research, Brand Image, Innovative Strategies	30
Focus	N/A	N/A	Political Research, Social Analysis	N/A
NielsenIQ	N/A	N/A	Consumer Behaviour Analytics, Market Insights	N/A
GfK	N/A	N/A	Consumer Panel, Market Trends	N/A
Kantar	N/A	N/A	Brand Tracking, Advertising Effectiveness	N/A
AKO	N/A	N/A	Political Research, Opinion Polls	N/A

Source: own elaboration based on Stratégie, 2024

Market demand and preferences

Price optimisation is one of the most critical areas currently emphasised in marketing research in Slovakia. The growing interest in studies focused on optimising product and service prices is a natural response to economic conditions influenced by inflation and increasing market competition. Companies recognise that correctly setting prices can significantly impact their success and customer retention. Research in this field not only examines price sensitivity but also tests alternative pricing models that allow for more flexible adaptation to changing market conditions.

Understanding customer behaviour and segmentation is fundamental to marketing research. Companies increasingly prioritise in-depth analyses of target groups and the identification of their individual needs. Such research focuses on uncovering the reasons behind impulsive decision-making, which constitutes a substantial portion of consumer behaviour, and identifying factors that influence customer preferences (Stratégie, 2024). Market segmentation is becoming more sophisticated, encompassing not only demographic data but also psychographic profiles and predictions of future behaviour.

Research into so-called “green claims” or sustainability statements has gained significant importance in recent times. The topic of sustainability is increasingly relevant, not only due to the growing interest of customers in environmentally friendly products but also due to strict legislative requirements. New regulations mandate independent verification of sustainability claims to prevent greenwashing. Companies must invest in research to ensure that customers correctly understand environmental statements and that these claims align with the actual properties of products. These studies also provide valuable data that can help improve communication and enhance brand credibility.

Digital transformation in marketing research

The widespread adoption of digital technologies has revolutionized marketing research in Slovakia. Companies increasingly rely on digital platforms for data collection, such as social media analytics, web tracking, and online surveys. Social media platforms like Facebook, Instagram, and LinkedIn have become crucial tools for understanding consumer preferences and engagement patterns. The accessibility of online data sources has enabled Slovak businesses to conduct cost-effective and real-time market research, making it easier to adapt to dynamic market conditions (Kopanicova, 2024). Alongside these tools, innovative software solutions are now incorporating machine learning capabilities to automate data analysis, improving efficiency and scalability for both large corporations and SMEs.

Moreover, the rise of e-commerce has necessitated the use of digital tools to analyse online consumer behaviour. Slovak companies are leveraging tools like Google Analytics, AI-driven customer relationship management (CRM) systems, and e-commerce-specific analytics platforms such as Shopify Analytics to gather insights into customer journeys, conversion rates, and purchasing patterns. Additionally, companies are investing in advanced tools for multichannel tracking, ensuring that offline and online consumer touchpoints are integrated into

a cohesive analytical framework. This digital shift has not only expanded opportunities for small and medium-sized enterprises (SMEs) by making research tools more accessible but has also enabled micro-enterprises to compete in niche markets by leveraging hyper-focused data insights.

Consumer behaviour and personalization

Understanding consumer behaviour remains a cornerstone of marketing research in Slovakia. Recent trends highlight a growing emphasis on personalization, driven by consumers' expectations for tailored experiences. Slovak researchers are using advanced segmentation techniques, such as psychographic and behavioural segmentation, to deliver more targeted marketing strategies. For instance, local retail chains and e-commerce platforms are employing machine learning algorithms to analyze purchasing data and predict future behaviour, thereby enhancing customer retention and loyalty (Stratégie, 2024). These methods are further refined by integrating feedback loops, enabling businesses to adjust their approaches in real time and meet shifting consumer demands.

Additionally, the COVID-19 pandemic significantly influenced consumer behaviour, accelerating the adoption of online shopping and digital services. Marketing researchers in Slovakia have responded by focusing on these shifts, examining factors such as digital trust, delivery preferences, and the impact of remote work on consumption habits. Furthermore, there has been an increased focus on studying generational differences in consumption patterns, particularly how younger Slovak consumers interact with emerging technologies and social media platforms. These insights are critical for businesses seeking to align their offerings with new consumer expectations, including preferences for sustainable and ethically sourced products.

Moreover, the growing importance of emotional marketing has gained traction, with Slovak companies investing in understanding the emotional drivers behind consumer decisions. Techniques such as neuro-marketing and biometric data analysis are being explored to uncover deeper psychological motivations. These approaches complement traditional consumer behaviour studies by providing a holistic understanding of what inspires trust and loyalty in a competitive marketplace.

Sustainability and ethical considerations

Sustainability has emerged as a key focus area in marketing research, reflecting broader societal and environmental concerns. Slovak businesses are increasingly

incorporating sustainability metrics into their marketing strategies, such as assessing the environmental impact of products and services. Researchers are exploring consumer attitudes toward sustainability, examining factors like eco-labels, green packaging, and corporate social responsibility (CSR) initiatives. This interest extends to studying the effectiveness of sustainable marketing campaigns, as companies strive to balance profitability with environmental stewardship. Businesses are also increasingly adopting circular economy principles, focusing on reducing waste and promoting product reuse, which resonates well with environmentally conscious consumers in Slovakia.

Ethical considerations are also gaining prominence, with researchers emphasizing the importance of transparency, inclusivity, and fairness in data collection and analysis. These principles are essential for building consumer trust and ensuring the long-term success of marketing strategies. Additionally, the ethical aspects of sustainability are being examined, with particular focus on how companies communicate their green initiatives to avoid accusations of greenwashing. Studies are delving into consumer scepticism, exploring ways to ensure credibility and authenticity in marketing claims. This has prompted the use of third-party certifications and standardized eco-labels as tools to enhance trust and clarify product attributes. Moreover, the integration of ethical artificial intelligence in data collection processes is increasingly discussed, ensuring that AI tools used in marketing respect consumer privacy and diversity. Together, these advancements highlight the growing synergy between sustainability and ethics in shaping the future of marketing research in Slovakia.

The role of big data and AI in marketing research

The integration of big data analytics and artificial intelligence (AI) is reshaping the landscape of marketing research in Slovakia. Companies are increasingly adopting AI-driven tools to process large datasets and extract actionable insights. These tools enable predictive analytics, sentiment analysis, and customer profiling, providing a deeper understanding of market trends and consumer needs. Advanced big data frameworks, such as Hadoop and Spark, are also being implemented to streamline data handling processes, enabling businesses to analyse unstructured data from various sources with unprecedented speed and efficiency.

For example, sentiment analysis tools are used to analyse social media conversations and customer reviews, offering insights into public perception and brand reputation. Advanced AI models are now being trained to understand

nuanced consumer emotions and detect shifts in sentiment trends over time, which is particularly useful for reputation management and crisis communication. Similarly, AI-powered chatbots and virtual assistants are being utilized to gather customer feedback, creating a seamless interface between businesses and their customers. These technologies are becoming increasingly sophisticated, employing natural language processing (NLP) to simulate human-like interactions and obtain more detailed qualitative insights from respondents. AI is also being used in predictive customer analytics, enabling companies to forecast buying behaviours, identify churn risks, and personalize customer engagement strategies (Abrardi, 2022).

Additionally, businesses are leveraging deep learning algorithms to analyse images and videos shared on social media, gaining insights into visual content trends and consumer preferences. The integration of these AI technologies not only improves the efficiency of data collection but also enhances the accuracy and reliability of research outcomes, equipping Slovak companies with the tools to remain competitive in an ever-evolving marketplace.

Emerging research methodologies

Innovative research methodologies are gaining traction in Slovakia, reflecting the global shift toward more dynamic and participatory approaches. Ethnographic research, mobile ethnography, and gamification are becoming popular for exploring consumer experiences in real-life contexts. Mobile ethnography allows researchers to collect data through smartphone apps, enabling real-time insights into consumer behaviour. These tools have also evolved to include geolocation features, allowing marketers to study consumer movements in physical retail environments and correlate them with purchase decisions, further enriching behavioural insights.

Another notable development is the use of virtual reality (VR) and augmented reality (AR) in marketing research. Slovak companies are experimenting with these technologies to simulate shopping environments and test product designs, providing valuable feedback before market launch. VR enables researchers to create highly controlled environments for studying consumer reactions, while AR applications are being used to overlay virtual elements on real-world settings, offering a seamless way to test product placements and advertising effectiveness. Furthermore, advancements in biometric tracking, such as eye-tracking and facial expression analysis, are being integrated into VR and AR platforms to capture

unconscious consumer responses, adding an entirely new layer of depth to the insights collected.

Additionally, gamification has gained significant attention as a tool to increase participant engagement in research studies. By incorporating game-like elements such as rewards, challenges, and interactive scenarios, Slovak researchers are making surveys and experiments more appealing to participants, thus improving response rates and data quality. These methodologies, when combined, represent a transformative shift in how consumer behaviour is studied, allowing businesses to predict trends and adapt strategies with greater precision and creativity.

The utilisation of artificial intelligence (AI) is currently one of the most prominent trends in marketing research. AI is being applied across various domains, ranging from data search and sorting to summarising large data sets. Its ability to analyse open-ended responses, generate notes, and provide rapid summaries significantly streamlines processes that would otherwise be time intensive (Starostina, 2022). Additionally, AI offers new opportunities for personalisation by enabling the creation of detailed respondent profiles based on their preferences and behaviour. This technology not only enhances efficiency but also provides a deeper insight into customer needs and expectations.

Digitalisation is among the key factors transforming marketing research. The ongoing implementation of new online platforms and automation tools is reshaping how surveys are conducted. These innovations facilitate faster data collection while improving data quality and accuracy. Processes that once required the physical presence of respondents are now conducted online, reducing costs and increasing accessibility for a broader range of companies. This trend promotes the “democratisation” of market research, allowing even small and medium-sized enterprises to harness advanced technologies for obtaining valuable insights.

Changes in research methodologies are a response to evolving market needs and technological advancements. Traditional focus groups are gradually being replaced by remote individual interviews, which enable more efficient data collection and better-quality control. Concurrently, there is growing demand for agile surveys that address specific issues and deliver quick results. These tactical approaches allow companies to respond flexibly to changing market conditions and adjust their strategies based on real-time data. Through these innovations, marketing research is becoming not only more precise but also more effective and relevant to contemporary business needs.

Challenges and opportunities

While marketing research in Slovakia has made significant progress, it also faces challenges such as data privacy concerns, limited budgets, and the need for skilled professionals. The implementation of the General Data Protection Regulation (GDPR) has heightened awareness of data privacy issues, requiring companies to adopt transparent and ethical research practices. However, compliance with these regulations often involves significant resource allocation, which can be particularly burdensome for smaller firms and startups. This has led to an increased demand for consultancy services specializing in GDPR compliance and data security.

At the same time, these challenges present opportunities for innovation. Slovak universities and research institutions are playing a crucial role in training marketing professionals and advancing research methodologies. Collaborative efforts between academia and industry are fostering the development of new tools and frameworks that address local market needs. For instance, partnerships between technology firms and academic institutions have resulted in the creation of proprietary software for analysing regional market trends, giving Slovak companies a competitive edge. Additionally, there is a growing emphasis on fostering interdisciplinary approaches that combine marketing research with insights from sociology, psychology, and data science, further enriching the scope and applicability of research outcomes.

Furthermore, Slovak marketing researchers are increasingly participating in international projects, allowing them to benchmark their methods and findings against global standards. These collaborations not only enhance the credibility of Slovak research but also open avenues for funding and knowledge exchange. The growing ecosystem of innovation hubs and startup accelerators in Slovakia provides additional support for the development and application of cutting-edge marketing tools, making it an exciting time for the field despite the challenges it faces.

The credibility of agencies is becoming one of the most critical priorities in the marketing research sector. Clients today expect more from agencies than just the provision of raw data or basic analyses. Their demands focus on comprehensive solutions that include data interpretation, trend predictions, and recommendations for specific actions based on research findings. This shift reflects a broader transition in marketing, where decisions are increasingly data-driven and less

reliant on intuition. Agencies that can meet these expectations will strengthen their market position and gain client trust.

Economic factors significantly influence the current state of marketing research. Inflation and uncertainties in the global economy exert pressure on companies to analyse their markets more accurately and adapt their strategies to dynamic conditions. Companies understand that regular mapping of market conditions is crucial for maintaining competitiveness and identifying new opportunities. Investments in research are therefore increasing despite economic challenges, as they provide valuable insights for optimising processes and resource allocation.

Innovations are another crucial area shaping the future of marketing research. Digitalisation and new technologies, such as advanced analytical tools and platforms for processing big data, enable more efficient and faster results. There is a growing demand for combining qualitative and quantitative methods that capture the complexity of customer behaviour. Modern technologies also enhance the accuracy and consistency of research, enabling companies to better understand their target groups and respond to their needs. Innovations are not merely technical support but a driving force propelling the entire marketing research sector forward.

Marketing research in Slovakia is evolving rapidly, driven by digital transformation, changing consumer behaviour, and the adoption of advanced technologies. These trends are shaping a dynamic and innovative research landscape, offering valuable opportunities for businesses to connect with their target audiences. By embracing these developments and addressing associated challenges, Slovak companies can enhance their competitiveness and contribute to the growth of the country's marketing industry.

1. 3 Trajectory of growth in the marketing research industry

The trajectory of growth is strengthened by continuous innovation within the sector. Companies are investing heavily in predictive analytics, natural language processing, and generative AI to transform raw data into actionable strategies. This cultural shift towards embracing data as a foundational asset extends beyond isolated departments, embedding data-centric approaches across all organisational levels. In this context, professionals within the industry are required to bridge technical expertise with business acumen, ensuring that insights are seamlessly integrated into strategic decision-making frameworks (Malhotra, 2018). Such integration enables organisations to identify emerging trends more effectively,

optimise operations, and maintain relevance in competitive markets where agility and foresight are critical.

However, the landscape is not without its challenges. The post-pandemic world has brought with it ***heightened volatility in supply chains, shifting consumer behaviour, and the pressures of inflation***. Such a climate demands not only agility but also resilience from businesses. Companies must adopt flexible methodologies and engage in real-time data collection to adapt effectively to market changes (Leiva, 2022). This ability to pivot quickly in response to disruptions will determine an organisation's success in managing risks and capitalising on emerging opportunities. Moreover, businesses must cultivate a culture of innovation, ensuring that teams are equipped to experiment with new tools and methodologies to address unexpected challenges effectively.

Ethical practices and data privacy concerns remain central to the industry's future. With increased regulatory scrutiny and growing public awareness of data rights, businesses face mounting pressure to ensure compliance while maintaining operational efficiency. Developing frameworks that protect data integrity while fostering consumer trust is not merely an ethical imperative but also a strategic advantage (Starostina, 2022). Organisations that prioritise transparency and ethical data use are more likely to build sustainable relationships with their stakeholders. Moreover, implementing ethical standards helps mitigate risks associated with data breaches or misuse, safeguarding organisational reputation in an era where trust is paramount to customer loyalty.

The future of the industry also depends heavily on addressing workforce challenges. As automation and AI redefine traditional roles, the demand for multi-skilled professionals capable of navigating both technical and strategic domains is growing exponentially. ***Continuous training, upskilling initiatives, and cross-disciplinary collaboration*** are essential to equipping professionals with the competencies required to thrive. The evolving nature of insights roles now demands a diverse skill set that combines advanced technical knowledge, strategic foresight, and the ability to communicate findings in a compelling and actionable manner (Dziubaniuk, 2021). Organisations must also focus on cultivating leadership that can adapt to the fast-paced changes, ensuring that decision-making processes remain agile and forward-thinking.

The importance of ***global collaboration and expansion*** into emerging markets is another prominent factor influencing the industry’s growth. Emerging economies offer untapped potential, driven by digital adoption and expanding middle-class

populations. Companies that develop culturally sensitive research methodologies and invest in these markets are well-positioned to benefit from their growth trajectories. Additionally, fostering international partnerships and collaborative initiatives can significantly accelerate innovation and create shared opportunities across the global industry (Hussain, 2023). By leveraging local expertise and insights, organisations can tailor their approaches to resonate more effectively with diverse consumer bases, thus driving sustainable growth.

While the current landscape presents significant growth opportunities, it also requires organisations to be proactive in addressing inherent challenges. By embracing technological advancements, fostering an ethical culture, nurturing talent, and staying adaptable to economic fluctuations, businesses can position themselves for long-term success. The emphasis on collaboration, resilience, and innovation will serve as guiding principles in navigating the complexities of this dynamic industry and achieving sustained impact in the future. Companies that prioritise adaptability and proactive strategies will not only weather uncertainties but also thrive in an environment defined by rapid technological and societal changes.

1. 4 Contemporary transformations and innovations in consumer behaviour research methodologies

The evolving methodologies and approaches within the insights industry showcase a dynamic shift towards integrated, technology-driven, and user-centric processes. The interplay between technological advancements, the demands of stakeholders, and the necessity for efficiency and clarity in research outcomes underpins these changes.

Automation and artificial intelligence (AI) stand as transformative forces, revolutionising how data is processed, analysed, and presented. Organisations are increasingly automating repetitive tasks such as data cleaning and report generation (Hermann, 2022). Predictive analytics, enabled by AI, offers businesses precise tools to forecast trends and consumer behaviours. Natural language processing (NLP) further empowers insights teams by facilitating the analysis of sentiment, open-text responses, and unstructured data (Dzwigol, 2020). These advancements significantly reduce the time required to deliver actionable insights, which is essential in today's fast-paced business environment. Moreover, AI-driven data visualisation allows for the creation of dynamic dashboards and interactive reports, enhancing stakeholder engagement and

understanding. The integration of these tools ensures that insights are not only timely but also effectively communicated to diverse audiences.

The growing complexity of consumer behaviour has given rise to ***multi-method research approaches*** that blend qualitative and quantitative techniques. Such integration ensures a balance between the contextual richness of qualitative insights and the statistical robustness of quantitative data. Qualitative methods, such as in-depth interviews and ethnography, often leverage video and virtual reality technologies to capture the nuanced emotions and motivations of consumers. Quantitative methods, on the other hand, provide large-scale, statistically significant data that offer macro-level insights into trends and behaviours (Hussain, 2023). Hybrid research designs are increasingly adopted to explore nuanced consumer behaviours and preferences, offering a more comprehensive understanding of market dynamics. This approach allows organisations to reconcile the micro-level depth of qualitative research with the macro-level breadth of quantitative analysis, creating a richer tapestry of insights.

There is also a marked emphasis on ***simplicity and accessibility in communicating research findings***. Insights professionals are adopting storytelling techniques that frame data within compelling narratives, making it relatable and actionable for business stakeholders. Data visualisation tools, including infographics, heatmaps, and interactive dashboards, play a critical role in translating complex datasets into intuitive formats (Murphy, 2024). These tools enable stakeholders to grasp critical findings briefly, bridging the gap between technical depth and executive-level decision-making needs. Executive summaries, concise yet impactful, provide an overview of essential findings, ensuring that time-pressed decision-makers can quickly understand the implications of the research without delving into exhaustive details.

The adoption of ***real-time research and agile methodologies*** reflects the need for speed and flexibility in responding to market changes. Continuous tracking studies allow organisations to monitor consumer behaviour and market dynamics in real-time, providing a steady stream of actionable insights (Kapustina, 2024). Agile testing frameworks facilitate rapid iteration of concepts, advertisements, and products, aligning closely with evolving consumer preferences and market demands. Mobile and remote data collection platforms, leveraging smartphones and online tools, further enable the collection of insights in real-world contexts. These agile methodologies foster an environment of continuous improvement, enabling businesses to remain competitive and responsive to market shifts.

Ethics and inclusivity have become central considerations in contemporary research practices. There is a concerted effort to ensure diverse representation in study samples, addressing broader demographic and psychographic segments. Privacy-by-design principles are increasingly integrated into research methodologies, ensuring data protection and compliance with global regulations (Möller, 2022). Collaborative research models that engage participants as active contributors rather than passive subjects are also gaining traction, enhancing the credibility and societal relevance of research findings. These practices reflect a growing awareness of the ethical dimensions of research, ensuring that insights are not only accurate but also socially responsible and inclusive.

Innovations in behavioural science and neuroscience are unlocking ***deeper insights into subconscious consumer motivations and decision-making processes***. Tools such as eye-tracking and facial recognition analyse emotional responses, providing a window into the unspoken reactions of consumers. Implicit association tests uncover underlying biases and preferences that may not be explicitly articulated. Neuroimaging and biometrics offer advanced techniques to measure cognitive engagement and emotional resonance during consumer interactions with products or advertisements (Kapustina, 2024). These methods provide organisations with a profound understanding of the psychological drivers behind consumer behaviour, enabling more targeted and effective strategies. By integrating these advanced techniques, businesses can craft marketing strategies that resonate on both a conscious and subconscious level.

In conclusion, the trends in methodologies and approaches signify a comprehensive redefinition of the research landscape. The integration of AI, automation, behavioural sciences, and ethical frameworks equips insights professionals to deliver research outcomes that are not only timely and actionable but also aligned with the evolving demands of modern businesses and society. These advancements underscore the importance of adaptability and innovation in ensuring that insights remain relevant, impactful, and attuned to the complexities of a dynamic marketplace.

CHAPTER 2

INNOVATIVE APPROACHES IN CONSUMER BEHAVIOUR RESEARCH: FROM NEUROMARKETING TO ARTIFICIAL INTELLIGENCE

This chapter examines the transformative role of contemporary innovations in advancing marketing research, with a focus on the integration of neuroscientific methodologies and digital analytical tools. Techniques such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and eye-tracking provide profound insights into subconscious consumer behaviours and emotional responses, enabling organisations to design highly targeted and effective marketing strategies. Concurrently, digital tools, including social media analytics and big data processing, facilitate real-time tracking of consumer behaviour and enhance the adaptability of marketing initiatives to dynamic market conditions. The convergence of neuroscience and digital technology has redefined the precision and scope of marketing research, offering unprecedented opportunities to deepen consumer understanding and engagement. However, these advancements are accompanied by challenges, notably the high financial costs and technical complexities associated with their implementation. This chapter highlights the critical importance of adopting these sophisticated methodologies to ensure competitive advantage within an increasingly data-driven and consumer-centric marketplace.

2. 1 Overview of innovative methods and techniques in consumer behaviour research

Marketing research is a systematic process of gathering and interpreting information about individuals, products, services, and organisations through the application of statistical and analytical methods and techniques to enhance market understanding and improve decision-making processes (ESOMAR, 2016).

Kotler and Keller (2012, p. 805) define marketing research as "the systematic design, collection, analysis, and reporting of data and findings relevant to a specific marketing situation facing a company." Similarly, Malhotra (2010, p. 39) defines marketing research as "the systematic and objective identification,

collection, analysis, interpretation, and use of data for the purpose of improving decision-making related to the solution of problems and opportunities."

From these definitions, it can be inferred that they consist of two primary components. The first component describes marketing research as a process involving information handling – collection, analysis, and interpretation – while the second highlights the purpose of such information – to provide an overview of the current marketing situation and assist in decision-making.

The American Marketing Association (AMA) places greater emphasis on the purpose of marketing research in its definition. Marketing research connects businesses with their markets and provides information that helps to:

- Better understand the market in which the company operates,
- Identify threats and opportunities related to market activities, and
- Plan, implement, and evaluate marketing actions (AMA, 2004).

The field of marketing continually evolves, adapting primarily to technological advancements in its environment. New technological opportunities and solutions have enabled marketing to incorporate innovations into its research practices, leading to the development of modern research methods for data collection, processing, and analysis (Micu et al., 2011).

2.1.1 Neuromarketing

Neuromarketing represents the application of neuroscientific methods and techniques to analyse and understand human behaviour in response to marketing stimuli. This approach enables the monitoring and measurement of brain activity in specific regions to determine how consumers make decisions, emphasising the link between the decision-making process and the brain areas involved in processing marketing stimuli (Dumitrescu, 2021).

The primary objective of neuromarketing is to understand how different regions of the brain function when consumers are exposed to market stimuli and to assist marketers in identifying correlations between consumer behaviour and their neurophysiological systems. Based on insights and established elements of human brain anatomy, neuromarketing now allows for the modelling of neuronal activities that precisely identify specific patterns of brain behaviour. By employing neuroimaging techniques, researchers can now compare activities in various brain regions to distinguish specific tasks and create models that

systematically describe the dynamics of human decision-making (Iloka & Onyeke, 2020).

Most mental processes experienced by individuals occur at the subconscious level, including consumer decisions regarding what and when to purchase. Neuromarketing has emerged as a novel approach within consumer research, aiming to deepen the understanding of consumer behaviour using methods and insights from neuroscience (Iloka & Onyeke, 2020).

Neuromarketing involves the measurement of physiological and neural signals to gain insights into customer motivations, preferences, and decisions. These insights can inform creative advertising, product development, pricing strategies, and other areas of marketing (Harrel, 2019).

Techniques in neuromarketing research

Neuromarketing techniques heavily rely on neuroimaging methods and technologies that monitor brain activity across various regions. These methods, commonly utilised in medical practice for diverse purposes, distinguish neuromarketing from traditional marketing research. Among the most employed neuroimaging methods in neuromarketing are functional magnetic resonance imaging (fMRI), electroencephalography (EEG), eye-tracking, physiological response measurement, and facial coding. Other techniques include magnetoencephalography (MEG), positron emission tomography (PET), and prefrontal cortex blood flow measurement. Due to the high financial and operational costs associated with these technologies, many businesses outsource such research to specialised external companies.

Functional magnetic resonance imaging (fmri)

Functional magnetic resonance imaging (fMRI) has been used in medicine since the 1970s. This technique is favoured by researchers due to its ability to precisely map brain activity by measuring blood flow within the brain. When specific brain areas are activated, blood flow increases to those regions. Because blood contains iron, this flow can be tracked using a powerful magnet surrounding the subject's head. The method's primary advantages are its accuracy and non-invasive nature. However, its limitations include high costs of equipment and operational expenses, as well as limited accessibility. In neuromarketing, fMRI is used to test new products, campaigns, advertisements, pricing strategies, packaging, and more (Genco, Pohlmann, Steidl, 2013).

Electroencephalography (EEG)

Following fMRI, electroencephalography (EEG) is the second most widely used technique in neuromarketing. Like fMRI, it is a non-invasive method for recording brain activity using electrodes placed on the scalp to measure changes in bioelectric potentials. While the electrical activity of individual neurons is weakened as it passes through the skull, EEG can detect activity in functional brain regions. The output is visualised as amplitudes of brain waves, which correspond to various psychological states. In medicine, EEG is primarily used to examine states of consciousness. In neuromarketing, EEG is used to measure brain activity during exposure to advertisements. Its advantages include portability, relatively low cost, and ease of use, while its drawbacks involve low spatial resolution and variability in electrical conductivity among individuals (Ariely & Berns, 2010).

Eye-tracking

Eye-tracking has been employed since the 1960s in the United States and the 1980s in Europe, with significant advancements in its technology since then. This technique measures the movement of pupils while observing objects, focusing on two key eye movements for neuromarketing: fixations and saccades. Fixations refer to the pupil focusing on a specific point, while saccades are rapid movements that shift visual input from the peripheral to the central field of vision, where sharpness increases. Eye-tracking helps identify the hierarchy of perceptual stimuli, determining which elements are processed earlier or later. By monitoring pupil movements and their speed, researchers can accurately gauge engagement with visual stimuli. Eye-tracking systems include cameras and software for visualising data, such as heatmaps that highlight areas of focus. The main advantages are the objectivity of data, precision of eye cameras, and adaptability to various environments. However, the technique's financial and technical demands are significant. Eye-tracking is often combined with fMRI or EEG and is used to optimise website layouts, product placement on shelves, and more (Zurawicki, 2010).

Physiological response measurement

Physiological responses can be measured using devices like polygraphs, which record bodily activity triggered by the autonomic nervous system. Measuring responses to stimuli can provide insights into emotional effects by monitoring

heart rate, blood pressure, skin conductivity (arousal levels), stress hormones in saliva, and facial muscle contractions (Bercea, 2011).

Facial coding

Facial coding is another neuromarketing technique that tracks and records involuntary microexpressions of the face linked to specific emotional and cognitive states as participants are exposed to stimuli. According to renowned psychologist Paul Ekman, seven universal emotions can be identified through facial microexpressions: surprise, sadness, anger, fear, happiness/joy, disgust, and contempt. Facial coding's primary advantage is its affordability and portability. In neuromarketing, it is particularly useful for testing advertisements as it reveals uncensored emotions (Singh, 2020).

Table 2-1: Modern methods and techniques used

Method	How does the method work?	What does the method identify?	Applications
fMRI	Measures blood flow in the brain associated with increased neural activity	Detailed emotional reactions; Level of engagement; Level of recall	Testing new products, advertisements, pricing, etc.
EEG	Records electrical signals on the scalp generated by neurons within the brain	Level of recall; Level of engagement	Enhancing advertising effectiveness
Eye-tracking	Tracks where subjects direct their gaze	What captured attention; What is confusing; Speed of recognition	Improving website design, packaging, advertisements, etc.
Physiological response measurement	Measures skin conductivity, heart rate, and breathing	Positivity/negativity of responses	Improving advertising content
Facial coding	Identifies facial expressions	Basic emotion recognition: sadness, surprise, fear, etc.	Testing advertisements

Source: based on authors' own research

SAMO Europe is a leading neuromarketing research specialist in Slovakia. This innovative Slovak research company develops technologies and devices to study complex consumer behaviour in both offline and online environments. By leveraging consumer neuroscience in real-world conditions and using authentic

data, SAMO Europe emphasises detailed data processing and interpretation. The company offers comprehensive research solutions across offline and online settings, providing added value to clients through real-time feedback collected directly from practical contexts such as branches, stores, showrooms, and more. This is achieved via mobile and stationary devices, proprietary patented solutions, and a specialised platform, samolab.online, which facilitates the remote collection of biometric data from any location. This approach enables clients to gain insights into customer perceptions and behaviour not only through verbal feedback but also by analysing genuine emotions and visual attention (Stratégie, 2022).

SAMO Europe utilises a variety of advanced techniques, including:

- **Eye tracking, facial reading, pupil dilation measurement, skin conductance, heart rate monitoring, and electroencephalography** (EEG). These methods require the integration of advanced synchronisation and analytical systems.
- **SAMO® Research Vest**, a patented technology designed for comprehensive assessment of consumer behaviour in real-world settings. The vest records data on respondent movements, visual attention, emotions, and environmental factors. Emotions are captured using a minimum of three methods to ensure the highest validity of the data.
- **A specialised platform for UX (user experience) and UI (user interface) testing of web and mobile applications**. This platform enhances online analytics by incorporating measurements of visual and emotional attention.
- **Samolab.online®**, an advanced online survey platform that extends beyond traditional feedback collection. It includes facial biometrics and response time measurement to capture a more nuanced understanding of respondents' reactions (HNonline, 2020).

2.1.2 Mobile ethnography

Mobile ethnography is an innovative market research technique that combines traditional ethnography with research conducted via mobile phones, particularly smartphones. Ethnography involves observing consumers in their natural environments, enabling researchers to collect more accurate and reliable data for understanding consumer behaviour, values, and beliefs. This approach allows researchers to uncover dynamics that might remain hidden through conventional

questioning alone. As a qualitative marketing research method, ethnography relies on observation and interviews to gain insights into consumers' lifestyles and daily behaviours. Researchers may conduct interviews with consumers in settings such as their homes, offices, or retail environments, observing how they interact with and use products in the context of their everyday lives (Bodine, 2021).

Before the advent of smartphones, ethnography required researchers to spend hours in the field with participants. While valuable, this approach was time-consuming, costly, and limited in scope. With the rise of smartphones and their widespread adoption, mobile ethnography emerged as an extension of traditional ethnographic studies. This method allows researchers to monitor the behaviours of dozens or even hundreds of participants simultaneously. Smartphone users can capture photos or videos and share feedback, offering researchers a window into their lives. This enables researchers not only to observe individual experiences but also to analyse data using mobile ethnographic application systems (Patera, 2018).

The proliferation of mobile technologies, particularly smartphones, has created new opportunities for ethnographic research. Using smartphone cameras and apps, researchers can remotely observe participants in virtually any setting (Kopanicova, 2024). Remote observation saves time and travel expenses, allowing researchers to engage with more participants in less time. Smartphones can be applied to various market research scenarios, including:

- **Product testing**. Smartphones enable researchers to observe consumer interactions with new products, from unboxing to setup and everyday use. This process allows researchers to monitor consumer emotions, identify potential issues, and assess whether the product is used as intended. Such feedback ultimately helps companies improve their products.
- **Target customer identification**. Observing consumers in their natural environments allows researchers to uncover behaviours, attitudes, and needs that might not emerge through direct questioning. Consumers often struggle to articulate their desires or requirements when asked directly. Through observation, researchers can better understand how consumers live and gain insights into their needs, helping to identify and define target customers.
- **Diaries and longitudinal studies**. Several mobile apps enable participants to record and upload their thoughts and experiences over extended periods

using videos, photos, audio, screenshots, texts, and emails. This approach captures the entirety of the customer journey.

- **In-store behaviour**. Consumers can interact with researchers via their phones while shopping in stores. Researchers can observe the entire shopping experience in real time, witnessing elements within the store—such as layout, advertisements, and promotions—that influence consumer decision-making (Bodine, 2021).

2.1.3 Social media analysis

Social media analysis involves the collection and evaluation of data from social media platforms to enhance decision-making processes. The popularity of social media analysis has grown significantly as major platforms have enabled businesses to access vast amounts of user data. Numerous tools are available for analysing social media, allowing managers to automate the collection, integration, and analysis of data to better understand customers, manage customer relationships, design new products, and more (Lee, 2018).

Social media platforms are online communities where members seek and share common interests, activities, experiences, and information. These platforms enable consumers to act as both creators and users of content. While there is no definitive classification of social media platforms, they generally include social networks, blogs, wikis, podcasts, video-sharing sites, image-sharing sites, discussion forums, and others (Lutkevic, 2021).

In a marketing context, social networks are viewed as platforms where individuals create profiles and share information, feelings, and experiences with other users. Social networks have introduced three major changes in the marketplace:

1. They have allowed businesses to connect with customers more closely than ever before.
2. They have transformed how companies and customers interact and influence one another, introducing social interaction through communication or passive observation that impacts consumer behaviour.
3. They have enabled companies to use data from social networks to better manage customer relationships and make improved business decisions. Social media data has become a relatively inexpensive, quick, and easily

accessible source of insight into the general population (Li, Larimo, & Leonidou, 2014).

Key Performance Indicators (KPIs) Analysis

Social media analysis involves monitoring key performance indicators (KPIs), which are measurable metrics reflecting the performance of social media efforts and demonstrating return on investment. These include:

- **Reach KPIs**: Measure the number of users exposed to a company's social media presence, either actively or passively. Examples include impressions, follower counts, follower growth rates, and reach.
- **Engagement KPIs**: Assess the quality of interactions with followers, indicating their willingness to engage with the brand. Examples include the number of likes, comments, and the average engagement rate.
- **Conversion KPIs**: Track how many social media interactions convert into desired actions, such as website visits, subscriptions, or purchases. These KPIs reveal the effectiveness of social media strategies in driving practical results. Examples include conversion rates, click-through rates, and bounce rates.
- **Customer Satisfaction KPIs**: Monitor customer opinions about the brand, providing direct feedback to the company. Examples include customer satisfaction scores and testimonials (Olafson, 2021).

Sentiment Analysis

Sentiment analysis is another key component of social media analysis. It involves assessing opinions, moods, attitudes, and emotions expressed by individuals about a particular entity. This analysis helps organisations extract insights from unstructured text originating from online sources such as emails, blogs, social media, forums, and comments. The goal is to identify attributes and components associated with an entity and determine whether the sentiment is negative, positive, or neutral (Rout et al., 2018).

Social media captures the opinions of millions of people, with communication and access to these opinions occurring in real time from across the globe. This represents a revolution in social media analysis, as these platforms become an increasingly vital source of information for businesses. People are more willing than ever to share facts about their lives, knowledge, experiences, and thoughts

through social media. By actively engaging through opinions and feedback, individuals compel businesses to collect more information about their reputations and products. This information is used to make strategic decisions to improve business operations.

Social media sentiment analysis entails collecting and examining information from posts shared by people about a company. This allows businesses to better understand their customers, enhance customer service, and detect crises in their early stages. Sentiment analysis is also crucial for online reputation management (Jayasanka et al., 2013).

2.1.4 Gamification

Gamification can be defined as "the use of game elements and game design in non-game environments and contexts." It is becoming an increasingly popular way to enhance respondent engagement. Research suggests that gamification improves intrinsic motivation, increases engagement, and provides a better user experience. These advantages are highly desirable for researchers, as they help gather more responses of higher quality (Harms, 2014).

In the context of marketing research, gamification involves applying game mechanics to online surveys. This concept can be implemented at two levels:

1. **Hard Gamification**: Survey questions are embedded within an actual game, and participants may not even realise they are part of a survey.
2. **Soft Gamification**: Traditional surveys or questionnaires incorporate game elements (Adamou, 2011).

A seminal study on this topic is "The Game Experiments" by Puleston and Sleep (2011), which involved over 30 research experiments and more than 5,000 participants over a year. The study concluded that applying soft gamification and more creative questioning techniques could improve the quality and quantity of responses while increasing participant engagement (Bailey, Pritchard, & Kernohan, 2015).

Game Elements in Gamification

In studies by Hamari et al. (2014) and Thiel (2016), the authors systematically reviewed gamification and analysed game elements used in electronic environments. They categorised game elements as follows:

1. **Rules**: Define how respondents interact with the research environment and answer questions, e.g., time limits for responses.
2. **Challenge**: Goals defined within the survey.
3. **Story**: Used to stimulate respondents' imagination, involving scenarios, imaginary worlds, and narratives that encourage exploration.
4. **Personalisation**: Visual items linked to a respondent's avatar, which can be customised using rewards. This is particularly effective in interactive environments.
5. **Reward**: Stimuli provided to respondents for completing challenges, including intrinsic rewards (emotional incentives) and extrinsic rewards (visual elements or achievements like badges).
6. **Competition**: Based on rules encouraging respondents to compete with each other, such as timed challenges.
7. **Points**: Earned by participants as they complete challenges or progress, often linked to competition.
8. **Status**: Displays progress, such as levels or achievements, to participants.
9. **Feedback**: Provided through notifications or additional messages offering updates or motivational content.
10. **Expression**: Space for participants to express creativity, e.g., through drawing, photography, or text creation (Oliveira & Paula, 2021).

The success of gamification relies on effectively integrating game elements and tools into non-game environments. Online surveys are particularly well-suited to gamification, offering respondents a more enjoyable experience. This approach benefits companies by leaving a positive impression on respondents and increasing survey completion rates. Engaging participants through gamification also encourages them to provide more accurate data, as the added challenge motivates them to take the survey seriously. Benefits of gamified surveys are:

1. **Increased Engagement**: Traditional online surveys may feel repetitive and tiresome, leading participants to rush through them. Gamification encourages sustained interest and deeper involvement.
2. **Deeper Reflection**: Gamified surveys prompt respondents to spend more time on each question, fostering thoughtful responses. For instance, ranking

five items from most to least important requires more deliberation than a simple yes/no answer.

3. **Entertainment**: Gamification makes the survey experience enjoyable, motivating participants to remain focused until completion (Cruz, 2019).

2.1.5 Big data analysis

With the development of information and communication technologies, the volume of data generated by computational systems continues to grow. The term "big data" refers to complex, large-scale data that increases at high velocity. These data sets include structured, unstructured, and semi-structured data, necessitating cost-effective and innovative methods for processing and analysis (Thabet & Soomro, 2015).

The current enthusiasm for big data is driven by the ability to collect more granular data at the micro-level and integrate it with other data sources. Big data analysis has now advanced to process detailed data more quickly and uncover complex relationships. In essence, it represents a change in scale rather than type—such as adding more rows and columns to an existing database rather than creating an entirely new data source (Kopalle & Lehmann, 2021).

Big data is typically characterised by three dimensions, commonly referred to as the "3V concept." IBM later expanded this framework to include a fourth dimension, which is now recognised as the "4V concept" in some literature:

1. **Volume**: The defining feature of big data is its sheer size. The volume of big data can range from terabytes to petabytes and even zettabytes.
2. **Velocity**: This dimension represents the speed at which data is generated. Big data involves high-velocity data streams that result in massive data packages within short timeframes. It also underscores the need for rapid processing and analysis to prevent data from becoming obsolete.
3. **Variety**: Big data encompasses structured, unstructured, and semi-structured formats:
    - Structured data: Organised and stored in a well-defined data model.
    - Unstructured data: Lacking a predefined data model or structure.

- Semi-structured data: A combination of structured and unstructured formats, where the data model is defined, but the content remains unstructured.

4. **Veracity**: Refers to the unreliability and uncertainty of data sources. Uncertainty arises from data incompleteness, inaccuracies, latency, and inconsistency (Lee, 2017).

Big data in marketing

The rise of big data analysis in marketing is closely linked to businesses' access to transaction records, customer personal data, and increased computing power for data analysis. Big data enables companies to optimise or personalise their offerings for customers. This is one of the key reasons many companies introduce loyalty programmes. These programmes not only reward "loyal" behaviour but also serve as a means to collect detailed data at the individual level. As businesses leverage loyalty programmes, they generate more data, which enhances the effectiveness of these programmes, driving their expansion and generating even more data in a self-reinforcing cycle (Huang, Ling, & Wange, 2021).

2.1.6 Virtual reality

Virtual Reality (VR) refers to a digitally created experience in which a three-dimensional environment is simulated to resemble the real world. This technology offers users an immersive experience through VR devices such as headsets or goggles, gloves, and bodysuits. VR has revolutionised the gaming and entertainment industries by allowing users to immerse themselves in highly virtual environments. Additionally, VR is increasingly used in instructional training for mechanics, engineers, pilots, defence personnel, and field workers, as well as in marketing research.

In consumer and marketing research, VR is a well-established technology. It has been developed over several decades and has been widely adopted by major companies for over a decade. More than ten years ago, companies like Kimberly-Clark and Walmart built their own studios specifically for conducting marketing research using VR. Since then, many other companies with extensive experience in marketing research have leveraged this technology (Grand View Research, 2021). Applications of VR in Marketing Research:

1. Testing multiple environments or formats without the need to invest time and resources in moving researchers and respondents between physical locations.
2. Creating virtual stores to gather valuable insights on improving shopping experiences and aisle navigation. When combined with eye-tracking, VR can measure the effectiveness of various in-store elements.
3. Developing virtual prototypes or product mock-ups during the early stages of product design.
4. Controlling variables such as time, task type, weather, and the presence of other individuals.
5. Conducting virtual focus groups (Stephenson, 2018).

VR provides substantial data on how respondents interact with stimuli presented to them. While VR can be a powerful tool for market research experts, it does not replace them. The data obtained through VR must still be interpreted, which requires human expertise. Additionally, VR-based research can be complemented with traditional methods. For instance, a follow-up interview might be conducted to discuss insights arising from the respondent's interaction with the VR environment.

In 2018, a VR laboratory called Virtuplex was established in Prague, Czech Republic, offering VR solutions within a 600-square-metre space. Virtuplex enables businesses to design new commercial or office spaces, create product prototypes, develop presentations, and more. The process begins with the client preparing content, such as the design of the environment they wish to test, and sending it to Virtuplex. Experts at Virtuplex adapt and optimise the design for their systems. Virtuplex collaborates with Ipsos, which offers its clients the opportunity to test designs directly at the Virtuplex facility. For example, businesses can evaluate how visitors might feel in their branch or conduct focus groups on various topics without requiring participants to meet in a single location. Martin Petrovický, co-founder of Virtuplex, states: "Virtuplex is entirely unique in the European context in terms of its size and equipment. Professional VR goggles with 5K resolution, completely wireless freedom of movement thanks to backpack PCs, and a motion tracking system allow users to experience virtual reality in life-size and without any limitations. Using VR for product development or branch design accelerates the entire design,

testing, and decision-making process while eliminating potential errors" (Ipsos, 2019).

2.1.7 Artificial intelligence

Artificial Intelligence (AI) is a field that combines computer science with extensive datasets to enable problem-solving. It encompasses machine learning and deep learning, which are often discussed in conjunction with AI. These disciplines rely on AI algorithms designed to create expert systems that make predictions or classifications based on input data (IBM Cloud Education, 2020).

AI plays an increasingly important role in marketing research. It is crucial, however, to distinguish between automation and artificial intelligence. While automation generally involves rule-based systems that enable machines to perform tasks without human intervention (e.g., generating visual outputs such as graphs from data), AI equips machines with the ability to learn, adapt, and make decisions autonomously. The distinction can sometimes appear blurred where highly sophisticated automation software is used, but the key differentiator—and the source of value for market research—is AI's capacity to learn and apply that learning. The potential of AI in marketing research lies in its ability to facilitate better, faster, and often more cost-effective research. While it may not be beneficial in every step of the process, AI can enhance data quality, reduce project timelines, and improve overall efficiency incrementally (IJMR, 2018).

AI fundamentally alters the dynamics that define traditional market research. By addressing costs, time, distribution, and application, AI significantly transforms the discipline. Leveraging algorithms and machine learning accelerates market research processes, reduces costs, and shortens project timelines from weeks or months to hours or days. This shift enables market research to extend beyond major decisions to inform everyday business choices.

Another critical transformation is the ability to incorporate real-time data from diverse sources into market research projects. Real-time data from sales, texts, social media, behavioural insights, and passive data sources can now be integrated, shifting market research from a retrospective analytical function to a forward-looking discipline (Kaul, 2020).

An example of AI application in marketing research is NeedScope, an AI-based software program by Kantar. This qualitative and quantitative segmentation approach identifies functional, social, and emotional drivers of consumer

behaviour within a market. At its core, NeedScope provides a framework for understanding why people make specific decisions, thereby revealing opportunities for brands and companies to better meet customer needs.

Each need state consists of a combination of emotional, social, and functional needs, with emotions forming the foundation. Decision-making is not a rational process but is predominantly driven by how people feel. Large companies often use NeedScope for portfolio management, brand strategy, creative execution, or gaining deeper insights into consumer behaviour (De Graaf, 2019).

Ján Hudák (Stratégie, 2022) from Kantar Group describes the functionality of NeedScope as follows: "The standardized solution and global database of thousands of measurements allow for predictions about how advertising will shape a brand. It operates similarly to how Google categorizes and recognizes images by shapes into people, animals, objects, etc. In this case, AI evaluates the impact of a visual on the brand without requiring respondents to view the visual or advertisement. The entire process is completed within minutes."

2. 2 Fundamental digital tools: simplifying and transforming marketing research in the modern era

In the contemporary digital era, marketing research is experiencing profound advancements, catalysed by the rapid evolution of technologies and analytical tools. These innovations furnish marketers with granular insights into consumer behaviour, market dynamics, and competitive landscapes, thereby facilitating the strategic planning and execution of marketing initiatives. This subchapter critically examines the role of key digital tools in marketing research, with particular emphasis on the application of artificial intelligence, notably ChatGPT, as a transformative instrument within this domain.

Google Trends

Google Trends is one of the most popular tools for analysing keywords and seasonal trends, which marketers can utilise to better understand the preferences of their target audience. This tool allows the monitoring of changes in interest regarding specific topics and products over time and space. Marketers can identify periods of peak interest in certain keywords, thereby enhancing the efficiency of campaign planning. For example, travel agencies can use Google Trends to uncover the most popular destinations during various seasons, enabling them to better target advertisements and optimise resources (Varian, 2023).

Moreover, the tool provides valuable insights into how interest in products or services fluctuates based on current events or cultural trends. For instance, during the COVID-19 pandemic, analyses conducted with Google Trends revealed a surge in interest in household and fitness products. Such data can be crucial when formulating marketing strategies, allowing companies to remain relevant and prepared to address evolving customer needs (Cebrin, 2023).

PPC Advertising

Pay-Per-Click (PPC) advertising is among the most effective tools in digital marketing, with platforms such as Google Ads playing a pivotal role in reaching target audiences. Keyword analysis in PPC advertising assists marketers in estimating competition and the potential success of campaigns. For instance, tools like Google Ads Keyword Planner allow marketers to identify not only popular keywords but also those with lower competition, resulting in optimised budgets.

Additionally, PPC advertising provides precise metrics on the impact of individual campaigns on consumer behaviour. Marketers can monitor conversion rates, cost-per-click (CPC), and overall return on investment (ROI). These metrics enable businesses to adjust campaigns in real-time to achieve maximum efficiency. Furthermore, PPC advertising benefits businesses of all sizes, from small enterprises to large corporations, by offering access to a broad spectrum of potential customers.

AnswerThePublic

AnswerThePublic is a tool that offers marketers insights into consumer questions and queries. Its primary advantage lies in its ability to generate specific content ideas based on real search phrases and questions posed by individuals online. This tool is ideal for businesses seeking to better understand their audience's needs and tailor their products or services accordingly (Biemans, 2023).

For example, when creating blogs, articles, or videos, AnswerThePublic can help identify topics that resonate with customers. If a company sells eco-friendly products, the tool might reveal that customers frequently search for tips on reducing plastic waste. Based on this data, marketers can adapt their content to directly address customer needs and interests. This approach not only increases engagement with the brand but also fosters trust and long-term customer relationships.

SimilarWeb

SimilarWeb is an invaluable tool for analysing the competitive landscape. It enables marketers to track traffic on competitors' websites, identify the sources of this traffic, and analyse their market shares. The tool provides detailed insights into the strategies employed by competitors to attract customers, allowing businesses to adapt their campaigns for greater effectiveness.

In addition, SimilarWeb can identify emerging trends in customer behaviour, such as increased interest in specific products or services. For example, if a company observes that a competitor receives significant traffic through social media, this may indicate the need to intensify its own efforts on these platforms. The ability to monitor and adapt to the competitive environment is crucial for maintaining competitiveness in a dynamic market.

Google Analytics

Google Analytics is a fundamental tool for analysing website performance and user behaviour. It allows marketers to closely monitor metrics such as traffic volume, traffic sources, bounce rate, and average time spent on the website. These data points help businesses better understand how customers interact with their content and identify areas in need of improvement.

For example, if Google Analytics reveals that a large percentage of visitors leave the website after viewing the homepage, this could suggest that the page is neither sufficiently engaging nor informative. Marketers can use this information to optimise the website’s content and design, thereby increasing user engagement. Additionally, the tool enables real-time monitoring of campaign performance, which is critical for dynamically adjusting marketing strategies (Toukola, 2023).

Google Alerts

Google Alerts is a tool that enables the tracking of mentions of specific brands, keywords, or topics online in real-time. Marketers can set up alerts for particular phrases to receive information on where and how their brand or keywords are being mentioned online. This tool is particularly useful for monitoring competitors, brand reputation, and broader discussions on industry-specific topics.

Google Alerts delivers notifications via email, summarising new mentions of specified keywords on websites, articles, or blogs. Such data is vital for monitoring brand awareness. For instance, if a marketer discovers that the brand

is increasingly mentioned in a positive context, it may indicate a growing reputation. Conversely, negative mentions may signal a need to address issues with a product or customer experience.

The tool can also be used to track competitor activity. Marketers can set alerts for mentions of competing firms to monitor their campaigns or product launches. This information can assist in developing more targeted and differentiated strategies. For example, if a competitor launches a campaign for a new product, marketers can use this information to intensify their marketing efforts (Biemans, 2023).

In addition to its marketing applications, Google Alerts is widely utilised for reputation management. Companies can respond promptly to negative mentions to mitigate potential damage to their image. This tool is an indispensable resource for marketers aiming to stay informed and respond to a rapidly changing environment.

ChatGPT

ChatGPT represents a revolutionary tool for personalised marketing research. Its capabilities in generating ideas, simulating customer conversations, and analysing sentiment in reviews make it a versatile assistant for marketers. This tool can rapidly address questions concerning trends, keywords, or current events, thereby saving time and resources (Safdar, 2024).

Moreover, ChatGPT enables marketers to simulate target audience responses to specific questions or campaigns, enhancing understanding of their expectations and preferences. For instance, if a company is planning a new product campaign, ChatGPT can simulate customer reactions, providing valuable insights for refining the strategy (Tafesse, 2024). This tool also generates comprehensive reports and analyses, which can be shared with teams or clients:

- **Content and strategy generation**. ChatGPT is particularly useful for generating ideas for content and marketing strategies. It can quickly provide inspiration for topics that resonate with customers and suggest relevant keywords, popular hashtags, or current trends. Marketers can leverage this potential in planning social media campaigns or creating content that precisely targets their audience.
- **Data and keyword analysis**. ChatGPT is a valuable resource for analysing large volumes of data, including search trends, keywords, and competitive

strategies. It identifies seasonal patterns and regional variations in search queries, enabling marketers to optimise their campaigns.

- **Sentiment analysis**. ChatGPT processes extensive textual data, such as customer reviews, social media comments, or survey feedback, to determine whether customer responses are predominantly positive, negative, or neutral.
- **Trend monitoring and report generation**. ChatGPT aggregates and processes information on current trends across industries, offering marketers a competitive advantage. For example, it can summarise the latest market developments and propose actionable strategies to enhance sales.
- **Simulating conversations and surveys**. ChatGPT simulates customer interactions or models responses to various questions, aiding in the preparation of surveys, campaign testing, or customer support enhancement.

By combining analytics, creativity, and strategy, ChatGPT empowers marketers to better understand customer needs, monitor trends, and respond effectively to market dynamics.

CHAPTER 3

BREAKING BARRIERS IN CONSUMER BEHAVIOUR RESEARCH: TECHNOLOGIES AND METHODOLOGIES OF TOMORROW

This chapter examines key trends and innovations in marketing research, focusing on the adoption of modern research methods, artificial intelligence, and synthetic samples. It highlights how these tools are transforming the understanding of consumer behaviour, enhancing the accuracy of analyses, and enabling more efficient marketing strategies. Innovative approaches, such as neuromarketing, mobile ethnography, and social media analysis, are explored from the perspectives of their adoption by agencies and clients, emphasising their benefits and challenges, including financial costs and technological readiness.

Particular attention is given to artificial intelligence, which facilitates real-time processing of large datasets and advances in personalisation and predictive capabilities. Synthetic samples are introduced as a revolutionary approach that simplifies data acquisition and reduces costs, while also facing challenges related to accuracy and acceptance. This chapter provides a comprehensive overview of the future of marketing research, underlining the importance of education, investment, and strategic partnerships to fully realise the potential of these innovations.

3. 1 Investigation into the use of innovative methods in consumer behaviour research by research agencies and research clients

The subchapter outlines the framework and methodology of the research focusing on innovative methods and techniques in marketing research within Slovakia and the Czech Republic. The primary aim of the research was to comprehensively assess the role and integration of modern approaches, such as neuromarketing, mobile ethnography, and social media analysis, within the current marketing landscape. Specifically, the study sought to explore how these advanced methods address the evolving needs of marketing agencies and their clients while examining the systemic and operational challenges involved in their adoption.

The research targeted marketing agencies and their clients, emphasizing a dual perspective: the supply side, represented by agencies implementing these

methodologies, and the demand side, represented by clients seeking data-driven solutions. Through this lens, the study aimed to identify the gaps between technological capabilities and market readiness. The research was also structured to provide actionable insights into the capacity of these methods to enhance strategic decision-making, increase consumer understanding, and deliver measurable outcomes in competitive markets.

Moreover, the research aimed to establish a benchmark for evaluating the penetration of these techniques across various sectors, ranging from retail and services to high-tech industries. By employing a mixed-method approach combining quantitative and qualitative analyses, the study provided a nuanced understanding of the technological, financial, and educational dimensions shaping the adoption of innovative marketing methods. This focus ensured that the findings offer a balanced view of the potential and limitations inherent to these emerging practices, setting a foundation for further exploration and practical application.

The sample comprised 75 marketing and research agencies and 150 of their clients, carefully selected to ensure diverse representation across various industries, including retail, services, technology, and manufacturing. The marketing agencies ranged in size from small boutique firms focusing on niche markets to large, full-service agencies offering a comprehensive suite of marketing solutions. Each agency brought unique perspectives and expertise, covering traditional services like print and television advertising, as well as cutting-edge digital strategies such as programmatic advertising and data-driven campaigns.

The 150 clients, acting as key decision-makers within their respective organizations, included a mix of small business owners, mid-level managers, and senior executives from both private and public sectors. This diverse group provided a representative overview of the market demand for innovative marketing methods. Clients were specifically chosen based on their involvement in marketing strategy development and implementation, ensuring that their insights reflected practical and strategic considerations.

To enhance the study’s robustness, the sample also accounted for regional distribution, including urban centres with high marketing activity and rural areas where traditional methods are more prevalent. This approach allowed the research to capture the nuances of adoption patterns across different geographic and economic contexts. Additionally, efforts were made to include sectors at various

stages of digital transformation, providing a comprehensive picture of how readiness and willingness to adopt innovative methods vary across industries.

The questionnaire comprised 50 meticulously designed questions, distributed across several thematic sections. These included the extent and nature of usage of innovative methods such as neuromarketing, mobile ethnography, and social media analytics. Other sections explored barriers to adoption, focusing on financial constraints, knowledge gaps, and technological challenges, alongside assessments of effectiveness and perceived value. Special emphasis was placed on capturing both quantitative data, such as usage rates and cost implications, and qualitative feedback, including respondent experiences and expectations.

The semi-structured interviews involved detailed discussions with agency directors and client managers, providing a richer narrative on the human and organizational dynamics of adopting modern techniques. Interview questions were tailored to uncover deeper insights into the motivations driving agencies to adopt these methods, as well as the hesitations and reservations expressed by clients. The flexible nature of these interviews allowed respondents to elaborate on their unique experiences, shedding light on cultural and market-specific factors influencing decision-making processes.

This rigorous methodological framework ensured a multidimensional understanding of the research topic, balancing statistical robustness with narrative depth. By aligning the questionnaire and interview data with secondary data analysis, the survey achieved a well-rounded exploration of the adoption landscape for innovative marketing methods in Slovakia and the Czech Republic.

3.1.1 Selected research findings and key insights

Quantitative findings revealed that more than 62% of agencies had tested innovative marketing methods at least once, showcasing a widespread curiosity and a foundational willingness to explore modern approaches. However, only 18% had successfully transitioned from sporadic experimentation to consistent integration within their operational frameworks, illustrating the multifaceted challenges tied to full-scale adoption. This discrepancy underscored a systemic gap in resources, expertise, and infrastructural support that impedes the practical application of these methods.

Survey focused on specific modern methods and techniques, investigating which of them are used by our respondents. According to our survey, the most used

method is smartphone-based surveys, chosen by 75% of respondents. Given the widespread use of smartphones among people, this result is understandable. The second most common method is social media analysis, with a share of 69%. Just like smartphones, social media has become an integral part of people's lives, as well as businesses. A consistent share of 56% was achieved by methods such as big data analysis, eye-tracking, and neuromarketing techniques. Eye-tracking has been on the market for several years, yet it can still be considered a modern method because it has undergone various innovations and improvements over time, allowing for more precise and higher-quality data collection. Methods based on artificial intelligence, micro-surveys, and qualitative research via smartphones achieved a 50% share. Research agencies and independent developers are working on programs based on artificial intelligence to streamline and automate their processes, thereby delivering higher-quality results for their clients. We anticipate that AI-based methods will grow further in the coming years. Methods like text analysis, gamification, mobile ethnography, and others achieved a share of less than 50%. Among the "other" category, respondents mentioned mobile eye-tracking, flash tests, and insight generation, for example.

Table 3-1: Modern methods and techniques used

Method/Technique	Number of Responses	Share in %
Survey using smartphones	24	75%
Social media analysis	22	69%
Big data analysis	18	56%
Eye-tracking	18	56%
Neuromarketing techniques	18	56%
Artificial intelligence	16	50%
Micro-surveys	16	50%
Qualitative research via smartphones	16	50%
Text analysis	10	31%
Gamification	10	31%
Mobile ethnography	8	25%
Facial coding	8	25%
Chatbots	8	25%
Causal analysis	6	19%
Virtual/Augmented reality	6	19%
Other	4	13%

Source: based on authors' own research

Among the surveyed agencies, smaller boutique firms displayed remarkable adaptability and creativity, often leveraging their nimbleness to trial and tailor advanced marketing techniques for highly specialized niche markets. These agencies demonstrated an ability to implement methods like gamification or mobile ethnography swiftly, offering clients unique value propositions. On the other hand, larger agencies, despite having broader operational capabilities, frequently struggled with institutional inertia, hierarchical decision-making processes, and the complexity of aligning innovative tools with their established workflows. This often resulted in delayed adoption timelines or selective implementation of only a subset of innovative techniques.

Additionally, the survey highlighted variances in the motivations driving adoption. Smaller firms viewed innovation as a competitive differentiator, while larger agencies often approached it as a supplementary enhancement to their extensive portfolios. This divergence not only influenced the pace of adoption but also shaped the strategic priorities within these organizations. External factors, such as market demands and client expectations, further dictated the extent to which agencies prioritized innovative methods. Clients' willingness to embrace these new approaches often determined whether agencies could justify the necessary investments, creating a complex interplay between agency capabilities and client readiness.

On the client side, scepticism was notably pronounced, with approximately 48% of respondents admitting a lack of sufficient understanding of these techniques to evaluate their effectiveness objectively. This knowledge gap was particularly evident in sectors with limited exposure to data-driven approaches, such as traditional retail, local services, and smaller regional enterprises. These industries often relied on conventional marketing strategies and viewed innovative methods as overly complex or unsuitable for their scale and operations.

In contrast, clients operating within technology-oriented and digitally advanced industries demonstrated a moderately higher degree of awareness and interest in innovative methods. However, even among these clients, concerns persisted about the practical applicability and return on investment of such methods. Many expressed uncertainties about how these techniques could be integrated into existing workflows without substantial disruptions or additional costs.

A significant finding was the disparity in client readiness based on organizational size and structure. Smaller companies often lacked the internal expertise and financial resources to fully explore these methods, leading to a reliance on

agencies for strategic guidance. Larger organizations, while better equipped financially, frequently faced challenges related to aligning these methods with their broader corporate objectives and obtaining buy-in from multiple stakeholders.

Furthermore, geographical and cultural factors played a role in shaping client perceptions. Urban clients, especially those in metropolitan hubs, exhibited a greater willingness to experiment with innovative methods, citing competitive pressures and market dynamism as motivators. In contrast, clients from rural or less economically active regions were more cautious, emphasizing the need for clear, demonstrable benefits before committing to adoption. These dynamics underline the importance of targeted educational efforts to address the specific concerns and informational needs of diverse client groups.

Neuromarketing

Neuromarketing was identified as the most polarising technique among marketing agencies and their clients. Quantitative data indicated that approximately 29% of agencies had experimented with research methods such as EEG (electroencephalography) and fMRI (functional magnetic resonance imaging), primarily to test emotional responses to advertisements, product designs, or pricing strategies. Nevertheless, only 12% of agencies regularly incorporated these methods into their projects, indicating relatively low penetration compared to traditional research techniques.

The main barriers cited by respondents included high financial costs associated with acquiring and maintaining equipment, as well as training staff to use these technologies. Agencies also highlighted a lack of professionals with practical neuromarketing experience, undermining client confidence in the reliability of the data obtained. Interviews revealed that clients often perceived these methods as complex and abstract, favouring simpler, quicker solutions.

On the other hand, agencies implementing neuromarketing reported positive outcomes. These methods improved the performance of marketing campaigns, particularly in areas such as enhancing customer emotional engagement and achieving more precise ad targeting. Successful projects included optimising visual elements of packaging, developing advertisements with stronger emotional appeal, and testing pricing strategy effectiveness.

Furthermore, some agencies indicated that applying neuromarketing allowed them to identify subconscious customer preferences that would not have been

apparent through traditional methods, such as surveys or focus groups. These findings suggest the potential of neuromarketing as a valuable tool for gaining competitive advantage in dynamic markets.

Mobile Ethnography

Mobile ethnography has gained popularity among marketing agencies, primarily for its ability to provide authentic, unfiltered data directly from consumers' environments. This approach offers detailed insights into daily habits, decision-making processes, and interactions with products and services. In the survey, over 65% of agencies reported that mobile ethnography significantly contributed to a better understanding of purchasing preferences and behavioural patterns, positively influencing marketing strategy development.

Agencies utilising this approach experienced marked improvements in targeting accuracy and product optimisation. Data collection through mobile ethnography was conducted predominantly via smartphone applications, enabling respondents to share photos, videos, voice recordings, and diaries documenting their consumer habits. This method also allows for real-time behaviour monitoring, uncovering dynamic changes in product or service selection.

Despite these benefits, several challenges emerged. The main obstacles included logistical issues in data collection, particularly organising respondents who reliably and consistently provide relevant information. Technically, synchronising and processing large volumes of multimedia data posed difficulties, necessitating specialised analytical tools and platforms. These limitations often require substantial financial investments, which may deter smaller agencies or projects with limited budgets.

Despite these difficulties, mobile ethnography demonstrated its potential to significantly improve the quality of collected data and offer a unique perspective on consumer behaviour unattainable through other methods.

Social Media Analysis

Social media analysis was identified as the most widely implemented technique in marketing activities, with up to 80% of surveyed agencies employing it. This success is attributed to the high availability of social media monitoring tools and their relatively low costs. Agencies reported that sentiment analysis and brand monitoring were the most common applications, enabling effective brand reputation management, trend identification, and targeting key consumer groups.

Many agencies emphasised that social media analysis tools enabled them to identify rapidly changing market trends, contributing significantly to the optimisation of marketing strategies. However, they frequently encountered a need for more sophisticated solutions for more precise interpretation of the data, particularly in sentiment analysis. While existing tools provide basic metrics, the lack of deeper contextual analyses limits their full potential. Moreover, handling large data volumes effectively required artificial intelligence and advanced machine-learning algorithms.

Agencies also highlighted the high difficulty of data interpretation for their clients. Many clients lacked the necessary technical skills to utilise the information for strategic decisions effectively. Consequently, agencies often organised training sessions or provided consultancy services to maximise the utility of findings obtained from social media analysis. Such activities proved crucial for improving agency-client relationships, particularly in data-driven strategic decision-making. Thus, social media analysis has become an indispensable tool for modern marketing approaches.

Gamification

Although less prevalent in marketing practice, gamification has shown significant potential to enhance data quality and respondents' overall experience. Approximately 35% of agencies confirmed that introducing game elements into surveys increased respondent engagement, motivating them to provide more honest and detailed answers.

Specific examples of gamification implementation included surveys structured as interactive games, incorporating competitive elements or offering small rewards for completing tasks. These approaches helped reduce the monotony of traditional questionnaires and encouraged higher levels of participation. Respondents were more engaged when questions were presented playfully, prompting active thought about their answers.

In addition to improving engagement, gamification also yielded more accurate data. Game elements allowed for observing respondents' natural behaviours, minimising biases stemming from fatigue or disinterest. For instance, interactive simulations enabled respondents to express their preferences in realistic scenarios, offering deeper insights into their decision-making processes.

However, gamification faces several challenges. The main issues include the complexity of designing and developing gamified surveys, requiring expertise in

game psychology and user experience (UX) design. Additionally, implementing game mechanics can be financially demanding, potentially deterring smaller agencies. Not all respondents respond positively to playful approaches, particularly in professional or academic contexts, where traditional methods may be preferred.

Nonetheless, gamification has the potential to significantly enrich marketing research. When implemented correctly, it can increase engagement, improve response quality, and provide deeper insights into consumer behaviour. This approach allows agencies to differentiate their services and tailor them to the needs of a modern, digitally oriented population.

Barriers

The primary obstacles to the implementation of modern methods stem from several interrelated factors, collectively creating an environment less conducive to the adoption of new technologies in local markets. Financial constraints emerged as the most critical factor, as implementing innovative methods often requires significant initial investments. These costs include not only technological equipment and software but also the training of personnel to use them effectively.

Table 3-2: Barriers to implementing modern research methods and techniques

Barriers	Number of Responses	Share in %
Lack of interest from clients	16	50%
High cost	14	44%
Knowledge complexity	12	38%
Time-consuming	8	25%
Inefficiency	8	25%
Clients' conservatism	4	13%
Legislation	2	6%

Source: based on authors' own research

The lack of staff training constitutes the second key aspect. Agencies and firms reported that employees often lack the necessary technical skills and knowledge of the latest trends in marketing and analytics. This deficiency increases the risk of improper utilisation of modern tools, which may lead to inaccurate results and a loss of trust among clients. Consequently, many agencies consider regular training sessions and workshops essential to ensure employees maintain up-to-date expertise.

Client concerns, the third critical factor, primarily arise from insufficient awareness of the benefits of modern methods. Clients often perceive these technologies as complex and abstract, which fosters scepticism about their effectiveness. Additionally, some firms highlighted that their internal processes are not yet ready to integrate modern practices, causing delays in investment decisions.

These three factors collectively create a challenging environment where agencies and firms must exert significant effort to overcome existing obstacles. Proposed solutions include financial support through grants or partnerships with specialised technology companies, raising client awareness through information campaigns, and establishing sustainable educational programmes.

3.1.2 Setting priorities for overcoming barriers to adopting innovative research methods and techniques

The study findings highlight that while interest in innovative methods is growing, the progression from theoretical enthusiasm to widespread practical adoption remains significantly constrained. This limitation stems from a multifaceted interplay of systemic, financial, technological, and educational challenges that collectively hinder the seamless integration of advanced techniques into the marketing ecosystem. Before delving into specific dimensions, it is essential to acknowledge the broader context of this issue: the evolving expectations of a digital-first consumer base, the rapid pace of technological advancements, and the pressing need for industries to remain competitive in a globalized economy. Understanding these overarching dynamics provides a foundation for identifying effective strategies to bridge the gap between innovation potential and practical implementation. To effectively bridge this gap, a robust and multidimensional strategy centred on education, targeted financial investment, comprehensive technological support, and the cultivation of strategic partnerships is imperative.

Education

The first priority is education. Agencies and clients require a deeper understanding of the benefits of modern methods, which could substantially contribute to their acceptance and integration into marketing strategies. The educational process should be comprehensive, encompassing not only basic theoretical knowledge but also practical skills. Organising workshops and seminars offers an opportunity for intensive engagement with practitioners who can demonstrate real-world applications of technologies such as neuromarketing,

mobile ethnography, and social media analysis. These activities should aim to overcome prejudices and scepticism toward these methods.

Practical demonstrations, such as simulations of neuromarketing tests or the analysis of real data from social media, could help participants understand the tangible benefits of these techniques. Training should also include hands-on sessions on specialised software and tools, such as sentiment analysis platforms or data visualisation systems. Discussions with leading experts, including researchers and successful entrepreneurs, could provide valuable insights into the potential of modern methods and their effective implementation.

Moreover, it is important to focus on building long-term awareness and trust in the effectiveness of modern techniques. This includes the development of educational programmes tailored to different levels of expertise, ranging from introductory training for beginners to advanced courses for experienced professionals. A critical aspect is the regular updating of these programmes to reflect the latest trends and innovations in marketing research. This approach could not only overcome existing barriers but also foster long-term growth and innovation in the marketing sector.

Targeted financial investment

Financial constraints represent the second critical aspect, significantly influencing the pace and extent of modern methods' implementation in the marketing sector. Realising these methods requires substantial upfront investments, including the purchase of technological equipment, software licences, adaptation of existing processes, and staff training. This financial burden often deters small and medium-sized enterprises that lack sufficient resources to cover these costs.

One potential solution is the expansion of government support through subsidies or grant programmes specifically aimed at promoting innovative solutions in marketing. Such initiatives could include targeted grants for agencies adopting technologies like neuromarketing or big data analytics. In addition to government assistance, it is necessary to involve financial institutions and create specialised funds to support innovative projects. These funds could offer flexible loans and subsidies to firms opting for advanced techniques.

Another crucial step is fostering collaboration between the public and private sectors. Partnerships with technology companies could secure additional funding sources, such as joint projects where technology firms invest in equipment and

provide expert support. This model would reduce financial pressure on marketing agencies and facilitate access to modern tools for smaller entities.

Furthermore, developing long-term financial programmes that consider the specific needs of the marketing sector is essential. For example, programmes offering tax incentives for firms investing in innovative technologies could encourage more entities to adopt modern methods. Financial support could also cover costs associated with employee training, improving their ability to work effectively with new tools and approaches.

These measures could significantly reduce financial barriers, motivate a greater number of entities to adopt modern methods, and support the overall transformation of the marketing sector in Slovakia and the Czech Republic.

Comprehensive technological support

Comprehensive technological support through such alliances might include access to cutting-edge software solutions, continuous system updates, and dedicated training modules tailored to agency-specific needs. Technology companies could provide agencies with step-by-step onboarding processes, ensuring seamless integration of tools like AI-driven marketing platforms, real-time customer analytics dashboards, and advanced machine learning algorithms. Additionally, this support can extend to troubleshooting services, ensuring that any technical challenges are addressed promptly to minimize disruptions.

The creation of innovation labs—spaces dedicated to experimenting with and refining advanced methods—could serve as a practical testing ground for new ideas, accelerating their market readiness. These labs could be equipped with the latest technologies, including eye-tracking devices, virtual reality setups for immersive marketing simulations, and neuromarketing tools for understanding consumer behaviour at a deeper level. Access to such resources would significantly lower the barriers for agencies seeking to pilot innovative techniques without bearing the full costs of acquisition and maintenance.

Access to cutting-edge technologies, such as artificial intelligence and machine learning, through these partnerships would further enhance the precision and impact of marketing campaigns. AI-powered tools could automate routine marketing tasks, analyze complex datasets for actionable insights, and enable real-time optimization of campaigns, ensuring maximum effectiveness. Comprehensive technological support ensures that agencies are not only equipped with the tools but also have the knowledge and infrastructure to use them

efficiently, setting the stage for transformative advancements in marketing practices.

Strategic partnerships

Strategic partnerships between agencies and technology companies could play a pivotal role in accelerating the implementation of modern techniques, as these collaborations combine expertise, technological innovation, and market knowledge into unique solutions. Such partnerships could involve the joint development of technological solutions, including the creation of software and platforms tailored to the needs of local markets and marketing strategies.

Moreover, technology firms could offer know-how and technical support for the adoption of modern methods, such as big data analytics, advanced customer segmentation, or the application of artificial intelligence (AI) in campaigns. This approach could help agencies address the lack of expertise or tools hindering their adoption of modern technologies.

Collaborating with technology companies could also provide agencies with access to innovative tools, such as machine learning, predictive analytics, or real-time content personalisation. These technologies have the potential to significantly enhance the precision and efficiency of marketing strategies, leading to higher client satisfaction and improved campaign reach.

One important form of such partnerships could be the establishment of incubators and innovation labs, where new technologies and processes are tested directly within agencies and their clients' environments. Such joint projects would enable a more flexible approach to testing and refining new techniques before broader deployment. Overall, these partnerships represent a significant opportunity to strengthen the competitive advantage of marketing agencies in local markets and adapt to global trends. The combination of expertise, innovative technologies, and local knowledge can create effective solutions that help firms better meet customer needs and leverage the potential of modern marketing.

The overall findings of the survey underscore the need to rethink strategies in marketing research. If educational, financial, and strategic barriers can be effectively addressed, agencies in Slovakia and the Czech Republic will be able to compete with global trends and fully exploit the potential of modern technologies.

3. 2 Artificial intelligence as a key tool for innovation in consumer behaviour research

The rapid evolution of artificial intelligence (AI) is reshaping numerous fields, with its transformative influence particularly prominent in marketing research and the study of consumer behaviour. AI comprises an array of advanced technologies, including machine learning, natural language processing, and predictive analytics, which collectively empower systems to analyse extensive datasets, discern patterns, and make data-driven decisions. These capabilities are redefining how marketers understand, predict, and influence consumer behaviour within an increasingly data-centric economy (Abrardi, 2022). As consumer preferences and behaviours grow in complexity, the integration of AI into marketing research offers unparalleled opportunities for deeper insights, operational efficiency, and strategic flexibility.

Traditionally, marketing research has relied on methods such as surveys, focus groups, and observational studies to uncover consumer preferences and motivations. While these methodologies have significantly contributed to the development of marketing theory and practice, they often face constraints related to scalability, speed, and the capacity to process unstructured or dynamic data. The advent of AI addresses these limitations by providing tools capable of analysing large-scale datasets in real time, uncovering latent patterns, and adapting to shifting consumer dynamics. For instance, machine learning algorithms can detect trends and forecast future consumer preferences based on historical data, while NLP facilitates the extraction of actionable insights regarding sentiment and intent from textual data, including social media posts and online reviews.

The study of consumer behaviour, a foundational pillar of marketing research, explores how individuals make decisions regarding the acquisition, utilization, and disposal of goods and services. This area encompasses psychological, social, and cultural dimensions, rendering it multifaceted and inherently dynamic. AI technologies significantly enhance the understanding of consumer behaviour by enabling granular analyses at both individual and collective levels (Hermann, 2022). AI-powered behavioural segmentation transcends traditional demographic-based approaches, focusing instead on actual consumer actions and preferences. Predictive modelling further supports this understanding by anticipating consumer needs, thereby guiding targeted marketing strategies and improving customer engagement. Personalization—a cornerstone of modern

marketing is amplified by AI-driven systems that tailor interactions based on individual consumer data, fostering customer loyalty and satisfaction (Hermann, 2024).

AI also introduces a paradigm shift in the collection and analysis of consumer behaviour data. Conventional data collection methods, which often rely on self-reported measures, are susceptible to biases and inaccuracies. In contrast, AI tools such as computer vision and IoT sensors enable unobtrusive observation and data acquisition, offering more reliable and comprehensive insights. For example, eye-tracking technologies can evaluate consumer engagement with visual advertisements, while AI-enabled chatbots collect real-time feedback during customer interactions. These advancements allow researchers to probe not only *what* consumers do but also *why* they do it, bridging the gap between observable behaviours and their underlying motivations (Zhang, 2023; Li, 2024; Petrescu, 2024).

Despite its vast potential, the integration of AI into consumer behaviour research presents several challenges. Ethical concerns, including issues of data privacy and algorithmic bias, demand robust governance and transparency. Moreover, the efficacy of AI-driven insights hinges on the availability of high-quality, representative data and the ability of organizations to interpret these insights effectively. Nevertheless, the transformative potential of AI in enhancing the precision and depth of consumer behaviour research is indisputable, opening new avenues for scholarly exploration and practical application.

This subchapter seeks to systematically examine the role of AI in advancing the field of consumer behaviour research, addressing three primary objectives: (1) to identify key applications of AI in marketing research and consumer behaviour analysis, (2) to assess the effectiveness of AI in understanding and predicting consumer behaviour, and (3) to propose actionable recommendations for the ethical and strategic integration of AI into marketing practices. By synthesizing existing literature and identifying future research directions, this study aims to contribute to the ongoing discourse on the interplay between AI, marketing research, and consumer behaviour, providing a robust foundation for both theoretical advancement and practical innovation.

Research methodology

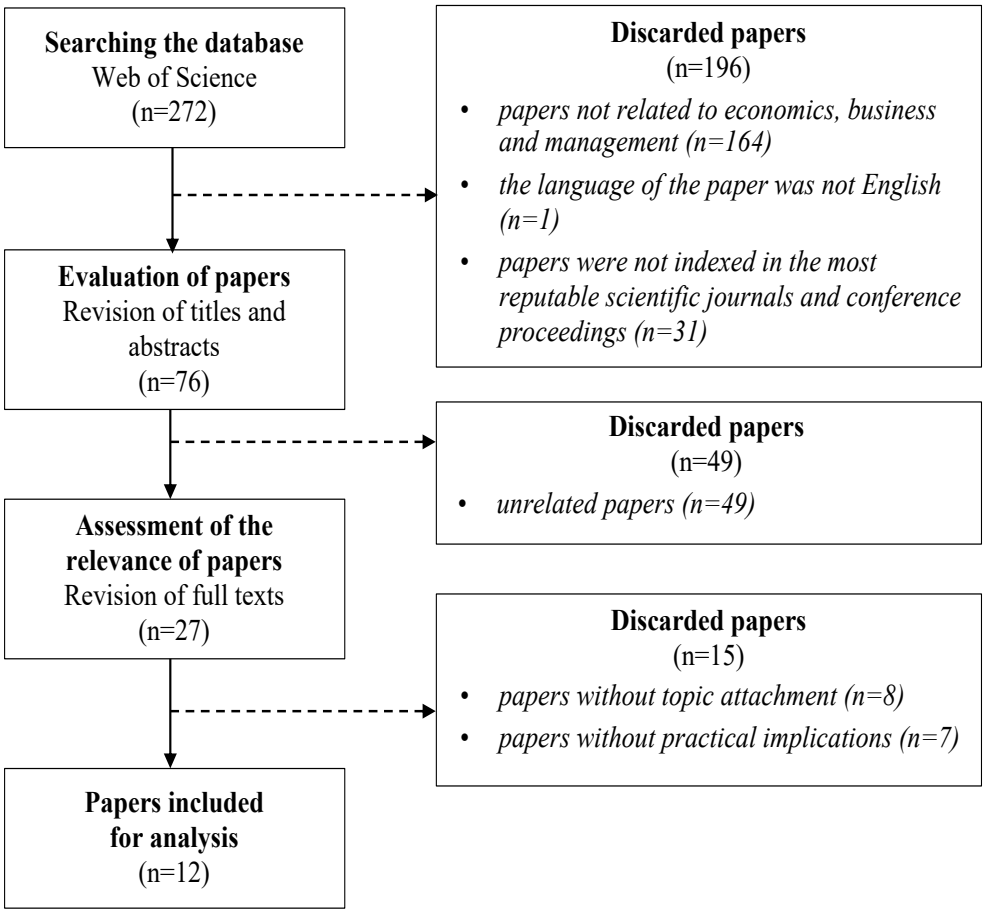
The application of artificial intelligence (AI) in consumer behaviour research has emerged as a prominent area of interest, attracting significant attention within both professional and academic domains. Recent scholarly efforts have extensively

examined this subject, resulting in a growing body of literature that reflects diverse perspectives and objectives tailored to specific audiences. Beyond individual research articles, comprehensive monographs have contributed to the rigorous analysis of factors influencing consumer behaviour. Notable contributions to this field include the works (Masengu, 2024) and (Roetzer, 2022), which offer in-depth and scholarly examinations of these phenomena. To achieve a systematic and thorough understanding of the academic discourse on AI and consumer behaviour, this study employs the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. This approach ensures a structured and replicable review of the academic literature addressing the integration of AI into consumer behaviour research. The analysis specifically targeted peer-reviewed scientific journal articles and conference proceedings indexed in the Web of Science database, chosen for its extensive coverage and emphasis on high-quality research outputs. The review focused on publications from 2014 to 2024, reflecting contemporary advancements in the field. Relevant keywords were strategically selected to encompass the thematic scope of the inquiry.

The initial search yielded 272 records, exclusively comprising peer-reviewed articles and conference proceedings. To enhance the dataset's relevance, records were refined to include only those classified under the fields of economics, business, and management. Additional exclusion criteria were applied to remove non-English publications and articles not indexed in highly reputable journals or conference proceedings. After applying these refinements, the final dataset consisted of 76 articles deemed highly relevant for further in-depth analysis. This curated collection of literature facilitates a comprehensive exploration of AI’s transformative impact on consumer behaviour research, providing a robust foundation for understanding academic engagement with this rapidly evolving subject area.

A comprehensive manual review of the titles and abstracts of all articles retrieved through the initial search was conducted to exclude studies that did not align with the research objectives. This process resulted in the retention of 49 articles from peer-reviewed journals and conference proceedings for further analysis. For cases where the relevance and eligibility of an article could not be clearly determined from its title or abstract, a full-text screening was performed. This additional evaluation led to the exclusion of 15 studies, culminating in a final selection of 12 articles for inclusion in the systematic review.

Figure 3-1: Selection process of the scientific papers included in the PRISMA analysis



Source: based on authors' own research

An analysis of the temporal distribution of publications and citation trends revealed consistent academic interest in the topic of AI and consumer behaviour research throughout the study period. The sustained engagement underscores the topic's significance in the academic discourse on consumer behaviour. A detailed examination of the selected articles highlighted notable variations in the scholarly treatment of AI applications in consumer behaviour research, influenced by the geographic and cultural contexts of the authors' countries of origin. These findings suggest that the interpretation and emphasis placed on AI's role in consumer behaviour research are shaped by regional academic traditions and socio-economic factors, offering valuable insights into the global landscape of this field.

The final analytical selection comprised 12 studies, addressing various dimensions of implementing AI in the consumer behaviour research. An analysis of the scientific journals in which the identified studies were published reveals that *Journal of Business Research* and *Journal of Consumer Behaviour* contributed the largest number of articles, with four publications included in the

review. A detailed summary of the distribution of publications across various journals, along with the frequency of articles, is presented in the *Table 3-3*.

The scientific impact of the papers can be assessed through the citation frequency they receive within the scholarly community. The selected papers collectively accumulated 193 citations from 2014 to 2024, yielding an average of 16 citations per paper. Three papers achieved over 30 citations, as detailed in *Table 2*. Particularly notable is the study (Chintalapati, 2022), published in the *International Journal of Market Research*, which stands as the most frequently cited work in this selection, with a total of 53 citations. After studying the content, it is evident that the citations mainly refer to the area on which the article focuses. The paper assumed that the digital transformation driven by the increasing adoption of artificial intelligence (AI) is fundamentally reshaping enterprise processes, with marketing emerging as one of the most affected domains. This paper investigates the application of AI in marketing, categorizing it into five core functional themes (integrated digital marketing, content marketing, experiential marketing, marketing operations, and market research) and 19 sub-functional themes. Through a systematic literature review, the study evaluates 57 relevant publications, identifies 170 specific use cases of AI in marketing, and ranks them based on their scope, impact, relevance, and contributions. The research discusses both practical and academic implications, proposing a future research agenda to explore the ongoing transformation of marketing practices driven by AI adoption. The findings offer a comprehensive overview of AI utilization in marketing across various sectors and research contexts (Chintalapati, 2022).

Table 3-3: Number of papers in scientific journals (final database of 12 papers)

Publication Titles	Record Count
Journal of Business Research	2
Journal of Consumer Behaviour	2
Ieee Transactions on Engineering Management	1
International Journal of Market Research	1
Journal of Economic Surveys	1
Journal of Retailing and Consumer Services	1
Journal of the Knowledge Economy	1
Marketing Letters	1
Service Industries Journal	1
Technological Forecasting and Social Change	1

Source: based on authors' own research

All 12 articles point to the fact, that artificial intelligence (AI) has emerged as a transformative force in marketing, organizational decision-making, and consumer behaviour research. These contributions can be categorized into three thematic areas, reflecting distinct but interrelated domains of inquiry.

The first thematic area focuses on the utilization of AI in marketing strategies and organizational operations. This body of research examines how AI technologies are implemented to optimize marketing efforts and enhance firm-consumer interactions. By synthesizing existing literature and empirical studies, scholars provide comprehensive insights into the evolving trends and practices associated with AI in the corporate sector (Wang, 2024). This theme underscores the strategic importance of AI in fostering competitive advantage, streamlining operations, and tailoring consumer experiences.

Table 3-4: List of the most cited papers from the final database of 12 papers

Title	Authors	Source Title	Publication Year	Total Citations
Artificial intelligence in marketing: A systematic literature review	Chintalapati, S.; Pandey, S. K.	International Journal of Market Research	2022	53
Anthropomorphized artificial intelligence, attachment, and consumer behavior	Hermann, E.	Marketing Letters	2022	36
Advancing Consumer Behavior: The Role of Artificial Intelligence Technologies and Knowledge Sharing	Olan, F.; Suklan, J.; Arakpogun, E.; Robson, A.	Ieee Transactions on Engineering Management	2024	32
The influence of anthropomorphic appearance of artificial intelligence products on consumer behavior and brand evaluation under different product types	Zhang, Y.; Wang, Sh.	Journal of Retailing and Consumer Services	2023	17
Artificial intelligence, firms and consumer behavior: A survey	Abrardi, L.; Cambini, C.; Rondi, L.	Journal of Economic Surveys	2022	17
Artificial intelligence and empirical consumer research: A topic modeling analysis	Vaid, S.; Puntoni, S.; Khodr, A.	Journal of Business Research	2023	12

Source: based on authors' own research

The second thematic cluster explores the impact of anthropomorphized AI on consumer behaviour. Anthropomorphism, or the attribution of human-like characteristics to AI systems, has been shown to significantly influence consumer attitudes and decision-making processes. Research in this domain investigates how consumers form emotional attachments to AI-powered products and services, particularly those with human-like appearances. Additionally, the influence of

anthropomorphic features on brand perception and evaluation varies across product categories, suggesting a nuanced interplay between design elements and consumer psychology (Olan, 2024). This theme highlights the importance of incorporating psychological principles into the design of AI systems to enhance consumer acceptance and satisfaction.

The third area delves into the role of AI in advancing consumer behaviour research. Scholars in this field examine how AI technologies facilitate deeper insights into consumer preferences, behaviours, and decision-making patterns. This includes the application of advanced analytical methods, such as topic modelling, to extract meaningful patterns from large datasets (Jain, 2024). By integrating AI-driven methodologies, researchers can uncover previously inaccessible dimensions of consumer behaviour, paving the way for more robust empirical investigations and knowledge sharing within the academic community.

Together, these thematic clusters illuminate the multifaceted ways in which AI is reshaping marketing practices, influencing consumer behaviour, and enhancing research methodologies. This categorization provides a structured framework for understanding the diverse applications of AI in this rapidly evolving field.

Special mention should be made of the article (Vaid, 2023). The article investigates the application of artificial intelligence (AI) in empirical consumer research, using a topic modelling analysis to explore existing literature. AI techniques, ranging from basic regression models to advanced neural networks, have increasingly been used to understand consumer behaviour and marketing interfaces. The study highlights the rapid growth of AI applications in consumer-relevant research, with over 90% of such studies emerging post-2009, and a significant surge from 2019 to 2020. The research identifies 16 consumer-AI topics through an analysis of 119 empirical papers and maps these onto Schmitt's Consumer Psychology of Brands framework. Key areas explored include consumer preferences, brand relationships, online behaviour, risk, and targeting strategies. The study reveals that while traditional models like regression remain dominant, techniques such as deep learning are underutilized, presenting opportunities for future research. Significant gaps exist, particularly in understanding individual-level consumer dynamics and the integration of AI techniques to enhance predictive accuracy in high-stakes contexts like purchasing decisions or consumer profiling. The authors advocate for interdisciplinary collaborations between AI and consumer behaviour researchers to harness the potential of advanced methods like natural language processing and neural

networks. Additionally, the article underscores the managerial implications of AI in improving marketing strategies, though it notes that adoption by businesses is still limited (Vaid, 2023). Overall, the study serves as a foundational framework for advancing the use of AI in consumer research, highlighting areas ripe for exploration and offering a roadmap for leveraging these technologies to unlock deeper consumer insights. The authors emphasize the importance of aligning AI methodologies with evolving consumer behaviours and market needs to drive innovation in the field.

Practical implication

The integration of artificial intelligence (AI) into consumer behaviour research represents a groundbreaking shift in the methodologies and frameworks used to understand, predict, and influence consumer decision-making processes. By harnessing the capabilities of AI technologies such as machine learning, natural language processing, and predictive analytics, researchers and marketers can now access unprecedented analytical power. These technologies facilitate the real-time processing and analysis of vast, complex datasets that were previously unmanageable using traditional research methods. Importantly, AI addresses long-standing challenges in marketing research, such as the limitations posed by scalability and the complexity of unstructured data, enabling a deeper and more nuanced understanding of both observable consumer behaviours and the motivations that drive them.

AI has proven to be a versatile tool within the realm of marketing, with applications ranging from behavioural segmentation and the creation of personalized marketing strategies to the use of predictive modelling to forecast consumer trends. Advanced behavioural segmentation allows marketers to group consumers based on intricate patterns of behaviour, preferences, and needs, leading to more targeted and efficient marketing efforts. Personalized marketing strategies, powered by AI, go beyond traditional demographic-based approaches, allowing for the tailoring of messages and offers to individual preferences and behaviours in real time. Predictive modelling, another critical application, enables businesses to anticipate consumer needs and behaviours with remarkable accuracy, fostering proactive engagement strategies rather than reactive responses.

Innovations such as computer vision and Internet of Things (IoT) sensors offer unobtrusive yet precise methods for capturing consumer behaviour in natural settings. These tools bridge the gap between observed actions and intrinsic

motivations, providing a more holistic view of the consumer decision-making process. For instance, computer vision can analyse facial expressions, gestures, and movements to infer emotional states, while IoT devices can track consumer interactions with products or environments in real time, offering insights that were previously difficult or impossible to obtain.

Despite the numerous advantages that AI brings to consumer behaviour research, its integration is not without challenges. One significant concern is the ethical implications of using AI, particularly regarding data privacy and algorithmic fairness. As AI relies heavily on large-scale data collection, there is a heightened risk of infringing on consumer privacy. Moreover, algorithmic bias where AI systems inadvertently reinforce existing stereotypes or exclude certain groups due to biased training data poses a critical risk to the validity and equity of AI-driven insights. Ensuring the ethical use of AI requires stringent data governance policies, transparency in AI operations, and ongoing monitoring for potential biases. Additionally, the reliance on high-quality, representative datasets remains a barrier, as AI's effectiveness is contingent on the quality and diversity of the data it analyses.

The practical deployment of AI also necessitates a robust interpretative framework. While AI can generate sophisticated insights, the task of interpreting these insights to inform actionable strategies requires a high level of expertise. Misinterpretations can lead to misguided decisions, underscoring the importance of interdisciplinary collaboration between data scientists, marketing professionals, and domain experts. Furthermore, integrating AI insights into existing organizational practices often requires significant investments in training, infrastructure, and cross-functional alignment.

This research underscores the transformative impact of AI on consumer behaviour analysis, offering a structured framework for its strategic and ethical integration. It emphasizes the need for a balanced approach that maximizes AI's potential while addressing its inherent challenges. By synthesizing advancements in AI applications, the study provides actionable recommendations for leveraging these technologies to refine marketing practices. For instance, organizations are encouraged to adopt hybrid approaches that combine AI-driven insights with human intuition and creativity, ensuring that marketing strategies are both data-informed and contextually relevant.

Additionally, the study identifies opportunities for interdisciplinary collaboration, recognizing that the successful deployment of AI in marketing often requires input

from fields such as psychology, sociology, data science, and ethics. By fostering such collaborations, researchers and practitioners can expand the boundaries of consumer research and develop innovative solutions that align with societal expectations and ethical standards. The transformative potential of AI, therefore, lies not only in its technical capabilities but also in its ability to drive innovation through collaborative, interdisciplinary efforts.

In conclusion, the integration of AI into consumer behaviour research marks a paradigm shift in the way consumer insights are generated and applied. Its ability to process and analyse vast datasets in real time, coupled with its versatility in applications ranging from segmentation to predictive modelling, has revolutionized the field. However, realizing its full potential requires addressing ethical and practical challenges, ensuring that AI is deployed responsibly and effectively. By providing a comprehensive framework for strategic and ethical integration, this research contributes to advancing both the theoretical understanding and practical application of AI in marketing, paving the way for future innovation and interdisciplinary collaboration in consumer behaviour research.

3. 3 Synthetic samples: a revolution in marketing research methodology

In marketing research, a synthetic sample refers to a dataset that has been artificially generated using advanced algorithms, machine learning techniques, or simulation methodologies rather than being directly obtained from real respondents through traditional methods such as questionnaires or surveys. Synthetic samples are composed of data that mimic the structure, properties, and distributions of real-world data, maintaining high levels of similarity and utility for research purposes (Ye, 2024). This concept leverages modern technologies, such as generative neural networks, which can replicate complex patterns in data with remarkable precision.

A key feature of synthetic samples is their ability to reflect the specifics of a target audience without the need for direct contact with respondents, making them an exceptionally efficient tool for addressing data accessibility issues. These artificially created datasets can be designed to encompass a wide range of characteristics, including demographic information, consumer behaviour, or even emotional responses, offering researchers considerable flexibility. As a result,

synthetic samples are becoming increasingly popular, particularly in marketing research, where data accuracy and relevance are essential.

The speed at which synthetic samples can be generated, combined with their ability to represent data variability across diverse scenarios, further enhances their appeal. Advances in artificial intelligence (AI) and machine learning have facilitated the development of sophisticated models capable of capturing and replicating the dynamics of real market data (Ramos, 2024). These models can produce vast amounts of data within relatively short timeframes, a significant advantage compared to traditional data collection methods, which can be time- and resource-intensive. Synthetic samples thus represent a revolutionary approach, combining scientific precision with practical efficiency and opening new possibilities for marketing research.

Applications of synthetic samples

One major challenge in marketing research is the lack of real data, especially for specific target groups that are difficult to reach. Collecting data from these groups can be both time-consuming and costly, with logistical complications or geographic restrictions further complicating the process. Synthetic samples offer a practical solution by enabling the creation of representative datasets without the need for complex fieldwork. Such simulated samples can reflect the fundamental characteristics of a target group, including their demographic, behavioural, or preferential patterns (Peltier, 2024a). This approach significantly simplifies the work of researchers, allowing them to obtain the necessary information more quickly and efficiently. Additionally, simulations allow researchers to experiment with various scenarios and analyse how different factors might influence consumer behaviour in diverse situations.

Another critical application of synthetic data is hypothesis testing. In scenarios where it is necessary to evaluate the effectiveness of marketing strategies or understand consumer trends, synthetic samples provide the flexibility to simulate various scenarios (Peltier, 2024b). Researchers can model hypothetical situations and determine how different consumer groups might respond. For instance, in predictive modelling of consumer behaviour, simulated data can offer insights into potential outcomes without the risks associated with direct interventions in the real world. These hypotheses can be tested at various levels, from individual behaviour to macroeconomic trends, with each simulation providing new insights that can be used to optimise strategies.

Synthetic samples are also invaluable for augmenting existing datasets. If a researcher is working with a limited number of respondents, they can generate additional data to enhance the statistical significance of their study. This approach enables more robust analyses, as larger samples yield more accurate estimates and greater credibility. Such dataset expansion can be crucial in studies requiring high levels of precision and consistency, such as predicting purchasing behaviour during seasonal promotions or tracking long-term brand preference trends. Moreover, simulated data can serve as a foundation for further advanced modelling, thereby broadening their potential applications (Javor, 2023).

Ethical and legal considerations also make synthetic data a compelling alternative. In cases where working with sensitive information, such as medical records or financial data, is legally complex or ethically questionable, synthetic samples provide a viable substitute. Simulated data allow for analyses and modelling without compromising the confidentiality of real individuals' information. This is especially important in the context of stringent regulatory frameworks, such as the GDPR in Europe or HIPAA in the United States, where data privacy is a paramount concern. Synthetic samples thus enable researchers to address complex questions without violating individuals' rights, while their flexibility and adaptability enhance their value across a wide range of applications.

The process of generating synthetic samples

The generation of synthetic samples involves several sophisticated methods, each offering unique advantages and customisation possibilities. One commonly used technique is simulation modelling, such as the **Monte Carlo simulation**, which utilises random sampling to create large numbers of potential outcomes based on probabilistic distributions (Chan, 2023). The advantage of Monte Carlo simulations lies in their ability to model complex systems with high levels of uncertainty and variability. These simulations enable researchers to generate data that accurately reflect the statistical properties of real-world samples while preserving their dynamics and diversity. The simulation process may include scenario modelling, particularly useful for analysing consumer behaviour in rapidly changing market conditions.

Another advanced method involves **Generative Adversarial Networks (GANs)**, AI algorithms that simulate a competitive process between two neural networks—a generator and a discriminator. The generator attempts to create synthetic data indistinguishable from real data, while the discriminator seeks to identify which data are synthetic and which are real. This iterative process gradually improves

the quality of the generated data. GANs are highly effective for producing complex datasets, such as realistic images, text data, or models of consumer behaviour patterns (Garrido-Castro, 2024). Their flexibility and capacity to generate high-quality data make them indispensable in many areas, including predictive marketing and content personalisation.

Statistical methods, such as regression models, cluster analysis, and Bayesian simulations, represent another approach to generating synthetic data. These methods leverage historical data to create models that can extrapolate structures and patterns into new datasets. For example, cluster analysis can segment target groups, with the generated data reflecting the characteristics of these segments. Bayesian simulations are particularly useful in scenarios requiring the incorporation of uncertainty or the combination of multiple data sources (Peltier, 2024a). The resulting synthetic data can be further tailored to meet specific research requirements, such as accounting for seasonal trends or demographic differences.

Each of these approaches has its particularities that influence its practical application. Simulation models offer high flexibility and adaptability, making them suitable for various data types and scenarios, though they can be computationally intensive. GANs provide excellent data quality, as they generate synthetic samples often indistinguishable from real data, but their implementation requires substantial expertise in AI and deep learning. Statistical methods are generally considered the simplest to use, relying on traditional mathematical models that do not demand advanced technology. However, their accuracy depends on the quality of input data, and poor-quality input can lead to flawed synthetic samples.

Advantages of synthetic samples

Synthetic samples provide numerous advantages, making them an attractive tool for modern marketing research. One of their most prominent benefits is **cost reduction** in data collection. Instead of investing in extensive surveys and questionnaire campaigns, researchers can quickly generate synthetic data reflecting desired statistical properties. This significantly reduces financial burdens, often a primary concern for smaller firms and projects with limited budgets (Chan, 2023). Importantly, cost minimisation does not compromise the quality of results, as synthetic data can be generated with high accuracy, ensuring effective and reliable solutions.

Flexibility is another major advantage of synthetic samples. These datasets can be tailored to precisely reflect the specific characteristics of target groups, such as demographics, behaviours, or preferences. This flexibility enables researchers to model various hypothetical scenarios and predict consumer reactions under specific conditions, such as regional markets or seasonal trends. This ability to simulate diverse scenarios allows businesses to experiment with different strategies without the risk of incurring real-world losses.

Speed is another critical advantage of synthetic samples. Compared to traditional data collection methods, which can take weeks or even months, synthetic data can be generated within hours or days. This extreme time efficiency allows researchers to respond promptly to rapidly changing market conditions or urgent project needs (Garrido-Castro, 2024). For instance, if a new marketing strategy requires immediate validation, synthetic data can be prepared almost instantly, reducing decision-making time and improving the organisation's ability to adapt to changes.

Synthetic samples also offer significant benefits in terms of **ethics and privacy protection**. Since these datasets are not directly linked to real individuals, they eliminate risks associated with breaches of personal data. In the context of strict regulatory frameworks, such as the General Data Protection Regulation (GDPR) in Europe or the California Consumer Privacy Act (CCPA) in the United States, synthetic data present a safe alternative for handling sensitive information. Companies can use this technology to perform advanced analyses without concerns about potential legal repercussions or losing customer trust. This aspect enhances the appeal of synthetic samples not only for corporations but also for organisations prioritising transparency and ethical practices.

Finally, synthetic samples enable the creation of **large and complex datasets** that can be used to train artificial intelligence and machine learning models. These models often require vast amounts of data to achieve high accuracy, which can be expensive and time-consuming to gather using real-world data (Ramos, 2024). Synthetic data provide an efficient means of generating such large datasets while replicating real-world patterns and anomalies. This capability opens new possibilities for the development of advanced technologies, which can be applied in predictive modelling, personalisation, and process optimisation.

Disadvantages of synthetic samples

Despite their numerous advantages, synthetic samples have certain drawbacks. A primary concern is the **uncertainty regarding the accuracy** of the generated data. This uncertainty arises particularly when models or algorithms are poorly configured, potentially resulting in biased or misleading outputs. If the generated data do not align with real-world distributions, researchers risk drawing erroneous conclusions, which can impact entire projects or decision-making processes (Garrido-Castro, 2024). Moreover, minor errors in algorithm implementation can magnify exponentially in complex models, making quality control of synthetic data a challenging task.

Another notable disadvantage is the **technical and financial demands** of implementing advanced methods such as Generative Adversarial Networks (GANs). These methods require expertise in artificial intelligence and deep learning, as well as significant computational resources. Developing and fine-tuning GANs often necessitates high-end hardware and substantial time investments, which may be impractical for smaller organisations or research teams. Additionally, the high initial costs of implementation can deter organisations seeking quick and cost-effective solutions.

One of the most significant limitations of synthetic samples is their **inability to fully capture the complexity and authenticity** of real-world data. While simulated data can mimic statistical properties, they often lack the nuanced details and subtleties intrinsic to real consumer behaviour. This limitation is particularly problematic in analysing emotional responses or culturally specific behaviours that require a deeper understanding of context (Ramos, 2024). As a result, synthetic data may yield results that are statistically accurate but practically inapplicable.

Finally, synthetic data face challenges in terms of **acceptance among professionals and practitioners**. In many research and industry domains, scepticism persists regarding their use due to doubts about their accuracy and representativeness. Some experts consider synthetic data insufficiently robust to replace real-world data, especially in critical decision-making processes. Furthermore, a lack of awareness about the capabilities and limitations of synthetic data can lead to misuse, perpetuating negative perceptions of this technology (Peltier, 2024b). Thus, while synthetic samples are a powerful tool, their effective utilisation depends on understanding their limitations, setting realistic expectations, and balancing practical benefits with potential risks.

Synthetic samples are becoming an indispensable tool in modern marketing research, offering solutions to traditional challenges such as high costs, time constraints, and difficulties accessing specific target groups. These datasets enable researchers to generate representative, high-quality data efficiently and ethically, facilitating faster decision-making and deeper insights into market dynamics. The ability to simulate complex scenarios and expand existing datasets provides unparalleled flexibility, while advances in artificial intelligence and machine learning continue to enhance the quality and applicability of synthetic samples.

However, synthetic samples are not without their limitations. Issues related to accuracy, technical demands, and acceptance within the professional community must be carefully considered. Researchers must exercise caution in configuring models and interpreting results, ensuring that synthetic data are used responsibly and effectively. By addressing these challenges and leveraging the strengths of synthetic samples, researchers and organisations can unlock new opportunities for innovation and optimisation in marketing research.

CONCLUSION

The findings of the scientific monograph ***Innovative research methods in consumer behaviour research*** have demonstrated that the initial objectives set at the beginning of the study were successfully achieved. The authors effectively analysed and evaluated the current state of consumer behaviour research, offering detailed insights into its dynamics and challenges. Key trends were identified, including the expanded use of artificial intelligence, big data analysis, and innovative techniques, which are significantly transforming traditional research approaches. One of the primary goals of the monograph was to explore the potential of novel methods such as neuromarketing, mobile ethnography, and artificial intelligence. This objective was met by systematically connecting theoretical foundations with practical applications. The authors also emphasised the importance of education and the need to establish strategic partnerships between academic and commercial spheres.

The chapters of the monograph provide a cohesive and systematic perspective on the topic, offering practical recommendations designed to serve as a guide for businesses, marketing agencies, and academia alike. The monograph includes empirical research that delivers valuable insights into the effectiveness of innovative methods, such as neuromarketing, mobile ethnography, and virtual reality, and their contributions to understanding consumer behaviour. Through this integration of theory, practice, and research, the monograph has created a valuable resource for advancing consumer behaviour research and its applications in the dynamically evolving world of marketing. The ***first section*** provides a detailed overview of the current state of marketing research. It revealed that technological innovations, such as artificial intelligence and big data analysis, have a transformative impact on traditional research approaches. The importance of adapting to global trends and considering local market specifics, particularly in the Slovak and Central European contexts, was highlighted. Recommendations include expanding educational programmes for marketing professionals and encouraging investments in new technologies. The ***second section*** focuses on modern methodologies such as neuromarketing, mobile ethnography, social media analysis, and artificial intelligence. These approaches have proven to be highly effective in uncovering subconscious processes and consumer emotions. Combining multiple methodologies is recommended to achieve more comprehensive and accurate results. Implementing these methods requires

expertise and financial resources, but their potential to enhance the efficiency of marketing strategies is undeniable. The ***third section*** analysed barriers and challenges associated with the implementation of advanced technologies, including high initial costs, a lack of specialists, and technological readiness. It recommends creating strategic partnerships between academic institutions, businesses, and technology firms to overcome these obstacles. The benefits of artificial intelligence and synthetic samples for more precise and accessible research were also highlighted.

The monograph offers an interdisciplinary perspective on the topic, combining theory and practice to deepen the understanding of consumer processes. The findings have been meticulously developed to cover a wide range of applications, from analysing subconscious consumer processes to strategic planning in marketing campaigns. The publication underscores the importance of linking academic research with practical application and highlights the value of interdisciplinary approaches in addressing complex marketing challenges. Furthermore, the results of the monograph provide momentum for further research and development, foster knowledge sharing, and open doors to new opportunities for collaboration across various sectors. This in-depth approach has the potential to significantly influence the evolution of methodologies and practices in consumer research.

The authors believe that the findings of this monograph will contribute to the further development of marketing research and support the creation of innovative solutions. The publication aspires to become an inspirational resource for marketing professionals and to stimulate new initiatives addressing current challenges in the rapidly changing world of marketing. In addition, the monograph creates a platform for scientific discussion, enabling academics and practitioners to collaboratively explore new horizons in consumer behaviour research. The authors expect this publication to serve as a catalyst for the further advancement of interdisciplinary approaches that integrate insights from technology, psychology, and economics to tackle complex marketing issues. Lastly, emphasis is placed on fostering collaboration between academia and the business environment to ensure the seamless transfer of theoretical knowledge into practice. This synergistic approach is envisioned to effectively overcome barriers and support the development of strategies that are not only efficient but also sustainable in the context of the modern market.

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The scientific monograph titled *Innovative research methods in the consumer behaviour research* provides a comprehensive overview of the current state and future development of research methods and techniques aimed at understanding consumer behaviour. This scientific text seeks to analyse key trends, technological innovations, and methodological approaches that have the potential to redefine the role of marketing research and its application in practice. The monograph is intended for marketing professionals, the academic community, and the wider public interested in emerging trends in marketing research. The aim of the publication is to offer a multidimensional perspective on the issue, combining theoretical knowledge with the study of practice in the context of rapidly changing technological and market conditions.

The authors believe that this scientific monograph will broaden readers' horizons in the field of consumer research and inspire further scientific and professional discussion on this critical topic.

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