

DATA-DRIVEN MARKETING AND DIGITAL INTELLIGENCE: MEASURING MATURITY IN SLOVAK ORGANIZATIONS

Miroslav REITER

Abstract

This paper examines the level of data-driven marketing maturity and the use of digital intelligence tools among Slovak organizations. Based on a quantitative survey ($n = 124$) covering three key dimensions: marketing automation tools, customer lifecycle data management, and social media analytics, the study identifies how organizations integrate data into their strategic and operational marketing processes. The results show that while most respondents actively use online tools such as newsletters, chatbots, and AI systems, data management often remains fragmented across multiple platforms. A significant portion of organizations collect customer data throughout the entire lifecycle, but analytical utilization is still limited. Furthermore, only half of the surveyed organizations systematically analyze social media data, indicating a gap between digital infrastructure and strategic data application. The findings highlight the need for comprehensive CRM integration, advanced data analytics, and a stronger alignment between marketing intelligence and digital maturity development.

Key words:

customer relationship management, data-driven marketing, digital intelligence, digital maturity, social media analytics

JEL Classification M31, M15, O33, L86

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INTRODUCTION

The rapid digitalization of marketing processes has shifted organizational priorities from technology adoption toward data-driven decision-making and knowledge-based performance. In this new paradigm, digital intelligence serves as a critical enabler of marketing effectiveness, integrating customer insights, automation, and analytics across multiple channels. Empirical studies confirm that modern marketing organizations increasingly rely on analytics, machine learning, and artificial intelligence to enhance personalization and strategic responsiveness, yet the gap between adoption and strategic use persists in practice.

Recent literature conceptualizes data-driven marketing maturity as a multidimensional and staged capability encompassing strategy, data integration, technology, processes, skills, culture, and measurement. The most influential works, such as Cao et al. (2019) and Johnson et al. (2019, 2021), propose either formative higher-order constructs or staged assimilation models explaining how firms evolve from initial adoption to routinized, data-driven operations. Empirical validation through structural equation

modeling has established that data-driven use depends on sensemaking mechanisms such as external knowledge acquisition, data quality improvement, experimentation, and information dissemination. These findings emphasize that marketing maturity cannot be captured by tool presence alone but must reflect the integration and regular use of analytics in decision-making.

In the Slovak and Central European context, organizations face persistent barriers that limit this transition. Studies from Slovakia, Poland, and the Czech Republic show that while awareness and perceived usefulness of analytical and automation tools are high, their systematic application remains limited due to deficits in data quality, analytical competence, and digital culture. Evidence from the DACH region complements these findings by identifying similar inhibitors, suggesting a regional pattern of underutilization relative to technological adoption.

The purpose of this paper is to analyze data-driven marketing maturity among Slovak organizations and to identify key factors that influence the integration of digital intelligence

into marketing practice. The study examines three focal domains: marketing automation, customer lifecycle data management, and social media analytics. The research contributes to understanding how organizations can bridge the gap between adoption and strategic use of digital tools and develop a culture of evidence-based marketing management.

2. PROBLEM FORMULATION AND METHODOLOGY

The development of data-driven marketing capabilities is one of the key conditions for achieving competitiveness and sustainable growth in the digital economy. Although organizations increasingly recognize the importance of customer data, analytics, and automation, many of them remain at the initial stages of digital maturity. The central research problem addressed in this paper is how Slovak organizations utilize digital intelligence tools to manage marketing communication, collect and process customer data, and analyze information from social media channels.

The paper formulates its main research question as follows: What is the level of data-driven marketing maturity among Slovak organizations, and which factors influence their ability to transform collected data into actionable marketing intelligence? The study focuses on three specific dimensions of digital maturity:

- (1) the use of online marketing communication tools such as newsletters, chatbots, and AI-based systems;
- (2) customer lifecycle data management and the integration of information across CRM systems;
- (3) the analytical use of social media data for decision-making and marketing optimization.

The research methodology is based on a quantitative survey conducted among Slovak organizations from various sectors in 2024. The questionnaire contained 14 questions, out of which three (C12–C14) are analyzed in this paper. These questions explore the extent of digital tool adoption, the systematic collection of customer data, and the use of social media analytics. The total sample consisted of 124

valid responses obtained from representatives of small, medium, and large enterprises.

The empirical basis of the research was a structured online questionnaire conducted throughout 2024. Its design followed the methodological standards of quantitative survey research, drawing conceptual inspiration from international studies on digital readiness, particularly those by ADMA and Deloitte (2018), and complemented by the OECD (2024) indicators of digital economy performance. The questionnaire focused on identifying strategic, financial, and operational aspects of digital transformation within marketing practice. The data collection was implemented electronically via e-mail invitations and targeted social media communication, addressing a broad range of Slovak organizations across multiple sectors. A total of 152 complete responses were obtained, corresponding to a 16 percent response rate from the original sample of 937 contacted entities.

The collected responses were evaluated using descriptive and comparative statistical procedures. Frequency and percentage analyses were supported by visual representations to interpret major patterns in digital strategy implementation, technological adoption, and marketing resource allocation. The analytical process was performed using Microsoft Excel in combination with Python-based tools, notably the Pandas and Matplotlib libraries, within a Jupyter Notebook environment. This combination ensured both methodological transparency and the reproducibility of analytical steps.

The overall methodological framework thus provided a reliable empirical foundation for assessing the degree of digital maturity and the integration of data-driven approaches in Slovak marketing organizations.

Collected data were processed using descriptive and comparative statistical methods to identify patterns and relationships between the adoption of marketing technologies and the level of data utilization. The results were interpreted in the context of established maturity models of data-driven marketing (Cao et al., 2019; Johnson et al., 2019; Johnson et al., 2021) and empirical evidence from European studies on digital analytics and automation (Zumstein et al., 2022;

Semerádová & Weinlich, 2020; Rostek & Zawistowska, 2019).

The methodological approach combines the analysis of frequency distributions, cross-tabulations, and qualitative interpretation of open-ended responses. This triangulated perspective allows the identification of adoption-use gaps, the assessment of digital intelligence maturity, and the formulation of recommendations for improving the integration of CRM, automation, and analytics into marketing management. The findings contribute to the understanding of how Slovak organizations can progress from fragmented data management toward fully data-driven marketing strategies supported by continuous learning and evidence-based decision-making.

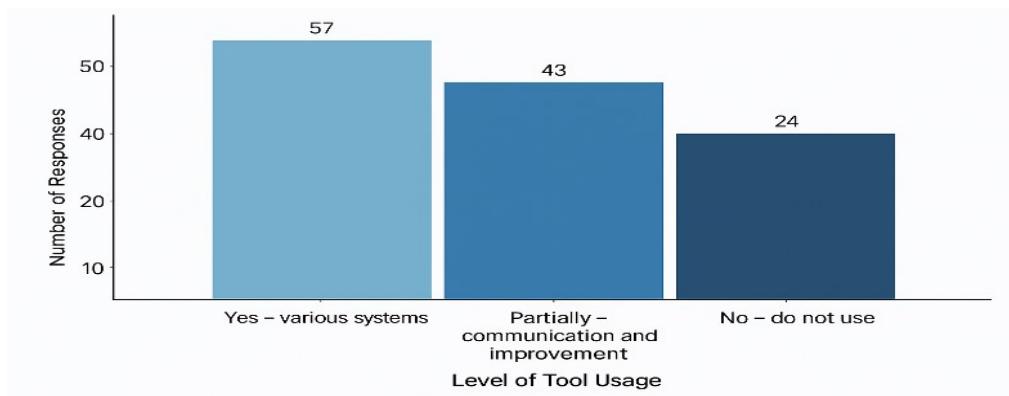
3. PROBLEM SOLUTION

The analysis of survey results provides a comprehensive view of how Slovak organizations apply digital intelligence in their marketing activities. The examined questions focus on the use of online communication tools, the management of customer lifecycle data, and the analytical processing of information from social media platforms. Together, these areas represent the key indicators of data-driven marketing maturity.

Use of online communication tools

The first evaluated indicator (Question C12) examined whether organizations use online tools such as newsletters, social networks, chatbots, or AI systems to attract and retain customers. The majority of respondents confirmed active use of these tools, which suggests that Slovak organizations recognize the potential of digital marketing for client acquisition and relationship management. However, many respondents reported that their current use is limited to operational functions without advanced automation or data integration. This indicates that digital tools are often used as communication channels rather than as sources of structured analytical insight. Similar findings were reported by Johnson, Muzellec and Zahay (2021), who highlight that marketing departments often adopt big data tools but fail to achieve routinized analytical use. These results indicate that while organizations understand the strategic importance of digital communication, the analytical feedback loop between marketing activities and customer insights remains weak. The implementation of marketing automation and CRM-linked content tools could enhance personalization and measurement of campaign effectiveness. Organizations that integrate communication data with analytical dashboards can achieve better targeting precision and optimize customer engagement. Therefore, improving automation maturity should be considered a priority area of digital transformation in Slovak marketing practice.

Figure 14: Use of online tools for marketing communication and client acquisition



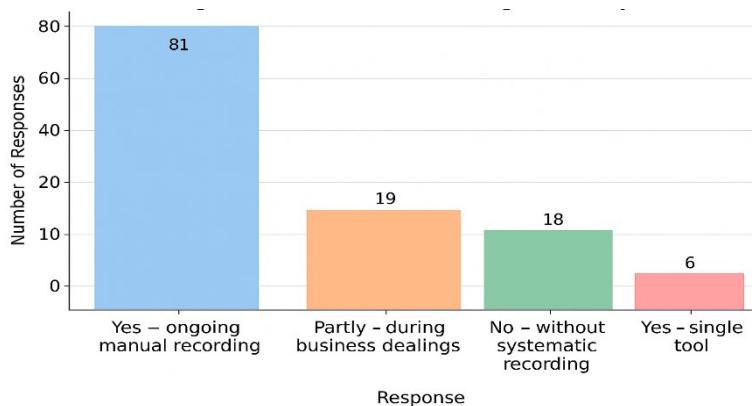
Source: own work

Customer lifecycle data management

The second focus area (Question C13) explored how organizations collect and manage customer data throughout the entire lifecycle. A significant portion of respondents confirmed that data are gathered continuously through CRM, ERP, or other databases, which demonstrates a relatively high degree of digitization. Nevertheless, the integration and analytical use of these data remain limited. Only a smaller group of organizations declared that they maintain a unified customer view accessible across departments. This confirms the conclusions of Cao, Duan and El Banna (2019), who emphasize that the real maturity of marketing analytics depends not only on the existence of systems but also on the

organization's ability to integrate data and apply them in strategic decisions. In Slovakia, fragmented databases and manual data processing are still common, which reduces the efficiency of data-driven marketing processes. The findings also suggest that organizations often underestimate the value of continuous customer data enrichment and cleansing. Establishing unified data governance frameworks could help reduce duplication and inconsistencies across systems. Furthermore, integrating transactional and behavioral data would enable a more holistic understanding of customer journeys and lifetime value. Achieving such integration represents a critical step toward the creation of adaptive and intelligence-driven marketing ecosystems.

Figure 15: Recording customer data across the entire lifecycle



Source: own work

Use of social media analytics

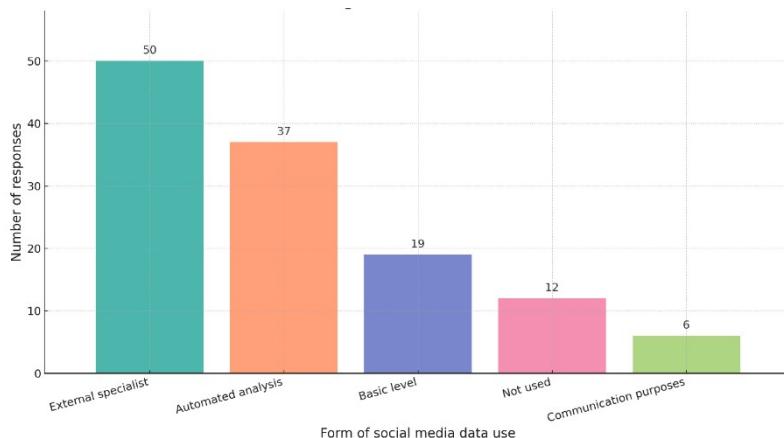
The third analyzed indicator (Question C14) measured the extent to which organizations work with data from social media. More than half of the surveyed organizations stated that they actively monitor and evaluate social data, while the rest either plan to use them in the future or employ social networks primarily for basic communication purposes. This finding is consistent with the study of Zumstein, Jörger and Zelic (2022), which demonstrated that European

companies often perceive the value of social data but lack the analytical frameworks and skills required for effective utilization. In the Slovak context, the challenge lies in transforming large volumes of social interactions into actionable insights that can guide marketing strategies and customer engagement initiatives. Despite the growing use of social networks, the majority of organizations still rely on manual or basic monitoring rather than automated analytics platforms. Investing in social listening tools and sentiment analysis could significantly improve

market understanding and brand perception tracking. Moreover, integrating social analytics with CRM systems would allow the measurement of customer sentiment in real time, supporting proactive communication and

reputation management. Developing analytical competencies in this area could therefore become a major competitive advantage for Slovak organizations.

Figure 16: Working with data from social networks



Source: own work

DISCUSSION

The combined interpretation of these results shows that Slovak organizations are at an intermediate stage of data-driven marketing maturity. The adoption of digital tools is relatively widespread, but their strategic integration into analytical and decision-making processes is limited. The findings confirm the existence of an adoption-use gap, as described in international research by Johnson, Friend and Lee (2019) and Semerádová and Weinlich (2020). The main barriers to achieving full maturity include insufficient analytical competence, fragmented data infrastructures, and the lack of a consistent data culture that supports evidence-based management.

To overcome these challenges, organizations need to focus on developing analytical skills, improving data quality, and implementing governance frameworks that ensure systematic data utilization. Advanced

CRM integration, automation of reporting, and the implementation of social analytics tools could significantly enhance marketing performance. Furthermore, cross-functional cooperation and continuous learning are essential for embedding data-driven decision-making into the organizational culture.

Overall, the empirical evidence confirms that the transformation toward data-driven marketing in Slovakia is progressing but remains uneven across sectors. The results highlight the need for a comprehensive digital strategy that links technology, data, and human capabilities into a coherent system of digital intelligence, enabling organizations to achieve higher levels of competitiveness and sustainable growth in the digital economy.

CONCLUSION

The presented study examined the level of data-driven marketing maturity in Slovak

organizations through three key dimensions: the use of online communication tools, customer lifecycle data management, and the application of social media analytics. The results confirm that the adoption of digital tools is relatively high, but their strategic use and analytical integration remain limited. Organizations in Slovakia are gradually transitioning from operational digitalization to more advanced forms of digital intelligence, yet they face persistent barriers related to analytical skills, data quality, and technological integration (Cao et al., 2019).

The findings reveal that many organizations still rely on fragmented information systems and isolated marketing activities, which hinders the effective transformation of data into actionable insights. The research identified a clear adoption-use gap, where the presence of digital tools does not automatically lead to their full analytical utilization. This aligns with previous studies emphasizing that data quality, culture, and competence are the main determinants of marketing maturity (Johnson et al., 2021).

To achieve sustainable progress, organizations should focus on the systematic

integration of CRM, automation, and social analytics platforms into unified data ecosystems. Building a data-oriented culture supported by training and analytical competence development is equally essential. Public institutions and professional associations can play a significant role by promoting digital literacy programs and encouraging collaboration between academia and industry.

Future research should extend the current analysis by applying longitudinal data and structural equation modeling to evaluate causal relationships between technology adoption, data integration, and marketing performance. Expanding the sample and including comparative studies with neighboring Central European countries would also provide valuable insights into regional dynamics of digital intelligence development.

The study contributes to the growing body of knowledge on digital transformation and marketing maturity by providing empirical evidence from Slovakia and outlining practical steps that can help organizations bridge the gap between digital adoption and strategic data-driven marketing.

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Contact:

Ing. Miroslav Reiter, PhD.
Bratislava University of Economics and Management
Furdekova 16 851 04 Bratislava, Slovakia
e-mail: miroslav.reiter@itacademy.sk
ORCID-ID: 0000-0003-1804-651X