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INTEGRATION OF DIGITAL PLATFORMS AND IT INFRASTRUCTURE TO INCREASE THE EFFECTIVENESS OF MARKETING STRATEGIES

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ABSTRACT

In the context of the rapid development of digital technologies, the integration of digital platforms and IT infrastructure is becoming a key factor in increasing the effectiveness of marketing strategies of modern companies. The purpose of this study is to identify the impact of the integration of digital solutions on the optimization of marketing processes and strengthening the competitive advantages of a business. The relevance of the topic is due to the growing demand for complex IT tools that can provide flexibility, personalization and efficiency of marketing campaigns in a dynamic market. The study emphasizes the need for an integrated approach to synchronizing various digital platforms - from CRM and analytical systems to customer interaction channels - with the IT infrastructure of an organization. The research methodology is based on a combination of qualitative analysis of cases of leading companies and quantitative analysis of data on the effectiveness of marketing activities, including conversion, engagement and return on investment. The results demonstrate that the integration of digital platforms with IT infrastructure helps to increase targeting accuracy, reduce operating costs and speed up decision-making in marketing. The implementation of unified data management systems and process automation allows companies to quickly adapt marketing strategies to changes in the market and consumer preferences. The findings of the study confirm that successful integration of digital solutions is an integral part of modern marketing and significantly improves the quality of interaction with the target audience. The results can be used to develop recommendations for improving IT infrastructure and increasing the effectiveness of marketing strategies in various industries.

Keywords: *Digital Platforms, IT, Marketing, Integration*

1. INTRODUCTION

In the modern era of digital transformation, business processes are changing dramatically under the influence of technological progress. This is especially true for marketing practices, where digital platforms are not just tools, but a fundamental basis for interacting with customers. The growing role of IT infrastructure in this context is due to the need to ensure reliable and coordinated operation of various systems that collect and analyze data, automate and personalize marketing campaigns. While digital solutions are becoming more diverse and functional, their effectiveness directly depends on the quality and degree of integration with the company's infrastructure. The study was conducted to identify and systematize the benefits of integrating digital platforms and IT infrastructure to improve the efficiency of marketing strategies, which is a pressing issue in today's digital business transformation environment. Modern companies are faced with the need to quickly respond to changes in consumer preferences, manage large volumes of data, and improve the accuracy of personalized offers, which is impossible without an integrated approach to integrating technology solutions. Despite the existence of individual studies, most of them consider only individual tools or processes, without providing a holistic understanding of the impact of integration on marketing performance and organizational processes. The introduction of this study is due to the need to fill these gaps, as well as to provide practical recommendations for companies seeking to optimize marketing strategies taking into account the modern requirements of the digital economy. The purpose of the work is to analyze existing solutions, identify their shortcomings, and create a comprehensive integration methodology that can improve the efficiency of marketing processes, reduce costs, and improve interaction with customers. This approach ensures the scientific novelty of the study and the practical significance of the results for business. The problem addressed in this study is the lack of integration of digital

platforms and IT infrastructure into the marketing management processes of companies. Despite the growing role of digital technologies in business, many organizations face fragmented systems, lack of a consistent architecture, and limited ability to use data for strategic decision-making. This leads to low efficiency of marketing campaigns, increased costs for attracting and retaining customers, and slower response to changes in consumer behavior.This problem is a challenge for company executives and marketers who seek to increase the return on investment in marketing and improve customer engagement. For IT specialists and strategic consultants, the problem is also relevant, since without a consistent infrastructure it is impossible to implement modern approaches to analytics, personalization, and automation of marketing processes. In addition, the problem affects end consumers who expect fast, personalized, and high-quality service that meets their needs. At the level of scientific knowledge, the problem lies in the limited development of methodological approaches to the complex integration of digital platforms and IT infrastructure architectures that allow simultaneously improving the effectiveness of marketing strategies and ensuring the flexibility and scalability of solutions. The lack of systemic research creates a gap in the theory and practice of managing the digital transformation of marketing, which makes it relevant to conduct this study in order to identify effective integration models, assess their cost-effectiveness and formulate recommendations for companies focused on sustainable development and competitiveness in the digital environment.Thus, the problem is multifaceted and relevant for practitioners, managers and researchers, since it directly affects the financial performance, customer experience and strategic position of companies in the market.

1.1. Specific features of the study of the integration of digital platforms and IT infrastructure to improve the effectiveness of marketing strategies

In the modern business space, digital transformation has acquired the status of one of the key factors for success and competitiveness. Of particular importance in this process is the integration of digital platforms with the IT infrastructure of the organization, which ensures effective interaction between various systems and allows marketing strategies to adapt to the constantly changing market environment. The specificity of this study lies in the need for a comprehensive analysis of not only the technological aspects of integration, but also their impact on business processes and interaction with the end consumer. Digital platforms, including CRM systems, analytical tools, marketing automation and communication channels, are solutions with diverse functionality, each of which is responsible for certain stages of marketing activities. However, in reality, there is often insufficient consistency and interaction between these elements, which leads to data fragmentation, delays in information processing and a decrease in the effectiveness of marketing decisions. The specificity of the problem is aggravated by the fact that the IT infrastructure of companies often does not have the necessary flexibility and scalability to quickly implement innovations and adapt to new marketing requirements. In such conditions, the integration of digital platforms is becoming not just a technical task, but a strategic necessity that affects all levels of company management. Insufficient elaboration of this topic in the scientific and practical plane creates gaps in understanding the optimal models of interaction between IT systems and marketing tools. The study highlights key aspects of integration, including the harmonization of data and processes between platforms, ensuring the security and integrity of information, as well as the flexibility of the IT system architecture, which allows for the prompt implementation of new functions and response to changes in the external environment. Given the complexity and versatility of these issues, it is necessary to develop methodological foundations that facilitate the systematization of integration processes and the assessment of their effectiveness.

1.1.1. Conceptual need for research: goals, objectives, hypotheses and uniqueness of the approach

Need for research: The current stage of business development is characterized by the active implementation of digital technologies, which requires rethinking and modernization of marketing strategies. Integration of digital platforms with IT infrastructure is becoming a critical factor for increasing marketing efficiency and achieving competitive advantages. However, in practice, many organizations face problems with system incompatibility, data fragmentation and limited infrastructure flexibility, which reduces the effectiveness of marketing campaigns and slows down decision-making processes. In this regard, there is an urgent need for a comprehensive study of integration mechanisms and methods that can ensure synchronization of digital platforms and infrastructure, improve the quality of data processing

and the efficiency of interaction with the target audience.

Research Objectives and Tasks: The main objective of this study is to develop a methodological framework and practical recommendations for integrating digital platforms with IT infrastructure to optimize marketing strategies. To achieve this goal, the following tasks were set:

- ✓ Conduct an analysis of existing approaches and technologies for integrating digital platforms and IT infrastructure in marketing.
- ✓ Identify key issues and limitations that affect the effectiveness of integration processes.
- ✓ Evaluate the impact of integration on marketing performance indicators, including conversion, engagement, and return on investment.
- ✓ Develop recommendations for building a flexible and scalable IT infrastructure that supports modern marketing tools.
- ✓ Explore the potential for implementing innovative technologies, such as artificial intelligence and cloud solutions, in the context of integration.

Innovativeness, originality, novely of the research: The originality and innovation of the study lies in the comprehensive approach to the integration of digital platforms and IT infrastructure to optimize marketing strategies, which combines technical, organizational and analytical aspects. Unlike previous works that considered individual tools or processes, this study focuses on creating a holistic methodology that can ensure coordinated interaction between marketing channels, data storage systems and analytical platforms. The innovativeness is also manifested in the formulation of research questions aimed at identifying the impact of integration on key performance indicators of marketing, including reducing customer acquisition costs, improving targeting accuracy and increasing system response speed. The methodological novelty lies in the use of event-driven architectures, microservices and real-time analytics to assess the effectiveness of solution implementation, which allows for the formation of practical recommendations for scaling and adapting integration tools in various business sectors. Thus, the study provides new knowledge about the relationship between technological infrastructure and marketing results, and the developed methodology is an innovative intervention that can increase the competitiveness of companies in the digital market. The novelty of the work lies in its comprehensive interdisciplinary approach, which combines the technical aspects of integrating digital systems with marketing and management tasks. Unlike existing studies, the focus is not only on technical compatibility, but also on assessing the impact of integration on business processes and customer experience. In addition, methodological principles are proposed that help systematize integration processes and adapt IT infrastructure to dynamic market requirements. This expands the theoretical basis of digital marketing and provides practical tools for companies seeking to improve their efficiency in the digital economy.

Research hypotheses:

H1: Integration of digital platforms with IT infrastructure has a positive effect on key marketing performance indicators, such as conversion and customer retention.

H2: A flexible and scalable IT infrastructure facilitates faster implementation of innovative marketing tools and adaptation to market changes.

H3: Using artificial intelligence and cloud technologies in integration processes increases operational efficiency and the quality of customer interaction.

Research prospects: Further development of the topic is associated with an in-depth study of the impact of new technological trends - for example, the Internet of Things (IoT), blockchain and advanced analytics - on integration processes and marketing strategies. In addition, a promising direction is the development of universal models for assessing the effectiveness of integration, taking into account economic, technological and social factors. The practical significance of the study will be manifested in the creation of adaptive methods and tools that will help companies maintain sustainability and competitiveness in the context of an ever-changing digital environment.

2. LITERATURE REVIEW

Digital transformation is no longer viewed as a local IT project, but is interpreted as a strategic logic of business development that changes the architecture of the value proposition, operating models and decision-making methods [1], [2]. In marketing, this is manifested in the widespread implementation of digital platforms (CRM, CDP, DMP, MA platforms, CX solutions) and analytical tools that rely on a scalable, secure and flexible IT infrastructure. However, the integration of these layers is far from trivial: it affects issues of compatibility of heterogeneous systems, data consistency, information quality and security management, as well as organizational changes and

strategic alignment [3], [4], [5]. The relevance of the topic is enhanced by the fact that marketing functions are becoming increasingly data-centric: personalization, real-time targeting, omnichannel interaction, predictive analytics and campaign automation require a single and holistic view of the client. Without deep integration of platforms and infrastructure components, these opportunities are realized only partially, and the effect of investments in technology is blurred [2], [6]. At the same time, the literature records a significant gap between the strategic rhetoric of digital transformation and the real integration mechanisms that ensure marketing effectiveness [4], [7]. Classic works on digital strategy emphasize that technology is only a means, while strategic alignment, architectural decisions, and operating models determine a firm's ability to extract value from digital investments [1], [3], [4]. In the context of marketing, this means the need for end-to-end integration: from the data layer (data pipelines, data governance, MDM/CDP), through the application layer (CRM/MA/analytics), to the infrastructure layer (on-prem, cloud, hybrid, edge) and management processes (marketing analytics, agile decision-making processes, privacy-by-design). Studies of digital transformation of organizations indicate that modularity and platform-based architecture (API-oriented, microservices, event buses, containerization) reduce transaction costs of integration and increase the speed of innovation [6], [8]. At the same time, marketing functions place special demands on the availability of data in real time, its quality and interoperability between channels (web, mobile, social, offline), which poses the task of implementing standardized data models, quality policies and agreed-upon customer identifiers [9], [10]. The literature converges around several architectural integration directions:

- ✓ Integration via APIs and service buses (ESB / iPaaS) - allows you to connect heterogeneous applications and speeds up process orchestration, but requires mature competencies in version control, security and monitoring [6].
- ✓ Microservice architectures - facilitate evolutionary integration and independent development of components, but increase the complexity of managing distributed systems and observability [6].
- ✓ Cloud models (SaaS / PaaS / IaaS) - provide flexibility in scaling and a wide ecosystem of integrations, while exacerbating issues of security, compliance and control over data [7], [11].
- ✓ Data Lake / Lakehouse / CDP - used to unify customer data, eliminate "silo" and build a single client identifier; the literature notes insufficient methodological maturity in assessing the impact of CDP initiatives on marketing KPIs [9], [10], [16].

Practical studies of digital transformation of large companies demonstrate that technological integration does not guarantee success without organizational support: process redesign, staff training, updating performance metrics and flexible corporate management [8], [12], [13] Despite widespread recognition of the importance of integration, a review of the literature reveals several persistent gaps. Lack of metrics for the "end-to-end effectiveness" of integration. Most studies describe architectural patterns or strategic imperatives, but much less formalize the causal links between integration levels (data - applications - infrastructure) and specific marketing results (LTV, CAC, churn, ROMI, NPS, time-to-market campaigns) [2], [9], [16]. Limited operationalization of data governance in marketing. Although issues of data quality, lineage, master data management, and metadata management are actively researched in the IS domain, their practical impact on marketing personalization, segmentation, and real-time decisions remains insufficiently measured [9], [10]. Security and privacy as integration "bottlenecks". Work on cloud and distributed architecture focuses on technical security measures [11], but the marketing perspective on privacy, trust, and legitimacy of data use (including the impact of regulatory regimes) is described fragmentarily, without unified models for assessing trade-offs between the depth of personalization and compliance [2], [11]. Organizational and management integration. There is a lack of research that would link architectural decisions with change management mechanisms (governance, roles, competencies, agile portfolios, cross-functional squads) and their contribution to marketing performance [12], [13]. New technology trends without implementation methods. IoT, advanced analytics, AI-based automation and generative AI are actively discussed as drivers of marketing effectiveness, but the integration patterns for their seamless inclusion into existing IT landscapes, especially in real time, are not well developed [11], [14], [15]. A synthesis of the literature allows us to identify several research "sections" that justify the relevance:

- ✓ Methodological: there are no universal methods for quantitatively assessing the contribution of integration to marketing

KPIs, taking into account structural differences in industries, maturity of infrastructure and data models [2], [9], [16].

- ✓ Technological: there is a lack of work detailing the patterns of integration of AI services (ML-ops/Marketing-ops, feature stores, real-time scoring) into complex marketing stacks with a guarantee of data quality and sustainability of solutions [11], [14].
- ✓ Organizational: there are few studies linking digital transformation strategies with architectural typologies of integration and their impact on organizational flexibility, time-to-insight and quality of customer experience [3], [8], [13].
- ✓ Compliance and trust: there is a need to develop integration frameworks in which privacy-by-design, model explainability and data traceability are not a post-factum add-on, but a structural part of the architecture [11], [14].
- ✓ Economic efficiency: there is a lack of empirical work that would compare the CAPEX/OPEX of integration strategies (on-prem, cloud, hybrid; centralized and federated data models) with the dynamics of marketing efficiency [7], [16].

Based on the identified gaps, promising areas can be consolidated in several vectors:

- ✓ End-to-end models of cause-and-effect relationships
- ✓ Development of formal (including structural) models linking the level of integration (infrastructure, application, data) with marketing metrics and organizational flexibility indicators. This will allow moving away from descriptive narratives to predictive assessment tools [2], [9].
- ✓ Integration of AI and real-time marketing. Empirical studies on the operationalization of MLOps in marketing, including data requirements, latency budgets, online inference, monitoring of model drift and their impact on personalization and ROI of campaigns [11], [14].
- ✓ Data governance as a business innovation. Rethinking data governance not as a "control function," but as a marketing enabler that ensures the availability and reusability of features for segmentation and personalization, with clear business metrics of the effect [9], [10].
- ✓ Federated and hybrid data architectures. A study of federated / data mesh approaches in marketing: how distributed responsibility for domain data combines with the requirements of omnichannel and a single customer profile.
- ✓ Integrating security and privacy into architecture
- ✓ Developing practical privacy-preserving integration patterns (differential privacy, federated learning, secure computing) for marketing stacks that balance explainability, compliance, and depth of personalization [11], [14].
- ✓ Change Management and Architectural Patterns. Exploring the co-evolution of architecture and org models: how product/platform ownership structures, data product owners, marketing engineers, and data scientists accelerate the "closing of the loop" between data and action.

A critical analysis of the literature demonstrates that the integration of digital platforms and IT infrastructure is a key, but still methodologically underdeveloped, mechanism for increasing marketing efficiency. Descriptive and conceptual works dominate, while quantitative and explanatory models linking integration solutions with marketing results remain rare. The most scarce studies are those that combine architectural, organizational, and economic dimensions of integration and offer reproducible methods for assessing its contribution to marketing KPIs. The implementation of the planned research agenda will allow us to create a scientifically sound toolkit for selecting and assessing integration strategies, reduce the uncertainty of implementing innovative technologies (AI, cloud, IoT), and provide companies with sustainable competitive advantages due to the end-to-end connectivity of data, processes, and solutions in marketing.

3. RESEARCH METHODOLOGY

The methodology for studying the integration of digital platforms and IT infrastructure to improve the effectiveness of marketing strategies is based on a systematic and interdisciplinary approach that combines elements of marketing analysis, digital transformation and data management. The rapid growth in the number of digital channels, automated solutions and analytical tools requires the development of new methodological models that can explain not only the technical aspects of integration, but also its impact on strategic marketing indicators. The methodology is based on the concept of a comprehensive assessment of integration maturity, including quantitative metrics, qualitative characteristics and organizational factors [17,18]. To

obtain reliable results, mixed analysis methods (quantitative and qualitative) are used to identify the relationship between the level of technological integration, data quality, business process flexibility and marketing performance. The purpose of the methodological block is to provide a substantiated analytical toolkit that allows confirming the research hypotheses and identifying mechanisms for improving the effectiveness of marketing strategies.

Research design and methodology logic:

The purpose of the methodology: Is to quantitatively and causally assess the impact of the level of integration of digital platforms and IT infrastructure (hereinafter referred to as Integration Maturity, IM) on the effectiveness of marketing strategies (hereinafter referred to as Marketing Effectiveness, ME) taking into account mediating factors (data quality - Data Quality, DQ; organizational flexibility - Organizational Agility, OA) and controls (company size, industry, stage of digital maturity, intensity of AI implementation, etc.). The research model allows us to identify the direct and indirect effects of ZI on ME, determine the degree of influence of mediating variables, and assess how control factors modify these dependencies. This approach provides a comprehensive understanding of how the integration of digital platforms and IT infrastructure contributes to increased marketing effectiveness, and also identifies key elements that require additional attention to optimize strategies in the context of digital transformation.

Variables, constructs and operationalization

1. Latent constructs (PLS-SEM): Integration Maturity (IM) - reflects the degree of technological and process integration:

- ✓ IM1: Availability/scale of API gateways and ESB/iPaaS;
- ✓ IM2: Level of microservice decomposition (share of critical modules in microservices);
- ✓ IM3: Centralized data model (MDM/CDP) and single client identifier;
- ✓ IM4: Implementation of real-time event streaming (Kafka/Kinesis, etc.);
- ✓ IM5: Integration of cloud services (SaaS/PaaS/IaaS) and hybrid scenarios.

Data Quality (DQ) - quality and manageability of data:

- ✓ DQ1: Completeness and integrity (Completeness/Consistency);
- ✓ DQ2: Accuracy/Validity;
- ✓ DQ3: Availability/Timeliness;
- ✓ DQ4: Data Governance policies and processes (availability of stewards, data catalogs, lineage).

Organizational Agility (OA) - organizational flexibility of marketing and IT:

- ✓ OA1: Speed of campaign launch (time-to-market, TTM);
- ✓ OA2: Availability of cross-functional teams (squads/tribes);
- ✓ OA3: Flexible methodologies (agile/DevOps/MLOps) and their maturity;
- ✓ OA4: Speed of adaptation of models/segments (model update cycle).

Marketing Effectiveness (ME) - the resulting effect:

- ✓ ME1: ROMI (Return on Marketing Investment);
- ✓ ME2: Conversion (CR), retention (Retention);
- ✓ ME3: LTV/CAC ratio;
- ✓ ME4: NPS/CSAT (qualitative CX metrics).

2. Control variables (panel models):

- ✓ SIZE - logarithm of revenue;
- ✓ AGE - company age;
- ✓ SECTOR - industry dummies;
- ✓ AI_INT - intensity of AI implementation (share of marketing processes with ML/AI);
- ✓ CLOUD_DEP - degree of cloud dependence;
- ✓ PRIV_REG - regulatory environment severity (GDPR-like indicators).

Data collection, sampling. Argumentation of research volumes:

- ✓ Public annual reports, digital transformation reports, architectural presentations (AWS re: Invent, Netflix TechBlog, Salesforce architectural white papers, Alibaba Cloud case studies, etc.) - for IM indicators.
- ✓ Financial/marketing KPIs - aggregated by company reports (ROMI, LTV/CAC - often indirectly recovered through operational metrics and disclosed unit economics, normalized into indices).
- ✓ Interviews with practitioners (n=28) - to validate scales, check the OA/DQ factor, and calibrate weights when constructing the IM index (expert weights are compared with PCA weights).

Panel set: N=64 companies, T=6 years → 384 observations (taking into account partial omissions - 351 observations after cleaning) [19,20,21].

Key aspects of constructing an integration index (IM-index):

Standardization. For each indicator x_{ik} (company i, indicator k):

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$$Z_{ik} = \frac{x_{ik} - \bar{x}_k}{S_k} \quad (1)$$

Principal Component Analysis (PCA).The covariance matrix $Z'Z$ is constructed, the eigenvalues λ and vectors are calculated. PC1 (the first principal component) explains 61.8% of the variance of the IM indicators and is used as an integration index:

$$IM_i = \sum_{k=1}^{5} w_k \cdot z_{ik}, \ \sum_k w_k^2 = 1 \quad (2)$$

(it is verified that PC2 adds only 14,2% and does not change the ranking; therefore, we use PC1).
Comparison with expert weights: Ranking is carried out according to the IM-index and the expert scale (Delphi procedure, 3 rounds). Spearman coefficient ρ=0,82 high consistency.

Structural Model (PLS-SEM): Specification and Hypotheses:

1. Basic system of equations:

$$DQ = \beta_1 IM + \varepsilon_1 \quad (3)$$

$$OA = \beta_2 IM + \varepsilon_2 \quad (4)$$

$$ME = \beta_3 IM + \beta_4 DQ + \beta_4 OA + \gamma Controls + \varepsilon_3 \quad (5)$$

Hypotheses of the research methodology:
H1: $IM \rightarrow DQ > 0$
H2: $IM \rightarrow OA > 0$
H3: $IM \rightarrow ME > 0$ (direct effect)
H4: $DQ \rightarrow ME > 0$ (mediator 1)
H5: $OA \rightarrow ME > 0$ (mediator 2)
H6: Indirect effects $IM \rightarrow DQ/OA \rightarrow ME > 0$
Fixed effects (FE):

$$ME_{it} = a_i + \delta_t + \beta_1 IM_{it} + \beta_2 DQ_{it} + \beta_3 OA_{it} + \gamma Controls_{it} + u_{it} \quad (6)$$

α_i - firm effects, δ_t- year effects. Errors - clustered by companies. τ - causal effect of integration. Parallel trends (pre-period) were checked, event-study specifications were added.
To eliminate the endogeneity of IM (successful companies are more likely to invest in integration):

$$IM_{it} = \pi_0 + \pi_1 Z_{it} + \pi` Controls_{it} + u_{it} \quad (7)$$

Where Z_{it} - instruments: industry shocks (regulatory requirements for data/privacy), availability of cloud regions (new data centers/regional cloud nodes introduced), government digitalization programs.

Novelty and specificity of the methodology: The proposed methodology is fundamentally different from typical works on digital transformation of marketing in that it connects the technological architecture of integration (API-orientation, microservices, CDP/MDM, real-time streaming, cloud models) with organizational and process mechanisms (data governance, agile/DevOps/MLOps, cross-functional teams) and strictly links them to marketing KPIs (ROMI, LTV/CAC, CR, NPS). The novelty is manifested in five aspects. An end-to-end multi-level model. Integration is viewed not as a static IT initiative, but as a cascade of influences: integration maturity - data quality and organizational flexibility - marketing effectiveness. This allows us to identify real channels of effect transmission, rather than limiting ourselves to stating correlations. A combination of PLS-SEM and causal panel econometrics. Unlike most studies that use either SEM or regression panels, here the measurement validity of latent constructs (IM, DQ, OA, ME) is combined with causal identification (FE, DID, 2SLS/IV), which increases the reliability of the conclusions. Integration index IM-index, built on the real practices of global companies. The use of PCA/FA to objectify the weights of indicators and subsequent comparison with expert assessments increases the stability of the results and expands the applicability of the methodology in different industries. Embedding Data Governance and MLOps as mediators. The work demonstrates that it is through data quality and organizational flexibility that technological integration is converted into marketing performance, which is rarely formalized in marketing research. Robustness and transferability. Multiple tests (multi-group analysis, quantile regressions, alternative index specifications, instrumental variables) make the methodology applicable to both digital leaders and companies in the early stages of transformation.

Justification for the approach to solving the research problem. The justification for this study is the need for a systematic approach to the integration of digital platforms and IT infrastructure to improve the effectiveness of companies' marketing strategies. Modern organizations are faced with an increase in the volume of consumer data, an increase in the number of digital communication channels, and increased demands for personalization and efficiency of marketing decisions. Traditional approaches to marketing management and disparate information systems are unable to ensure timely data processing, accurate audience segmentation, and

effective distribution of marketing resources. The approach used in the study is based on the comprehensive integration of architectural solutions, including event-driven systems, microservices, API-oriented platforms, and a data grid. This approach allows you to create a single data ecosystem, ensuring consistency, transparency, and high quality of information needed to make strategic marketing decisions. The research methodology includes data analysis from leading global companies, a comparative analysis of architectural solutions, and an assessment of the economic efficiency of integration models, which ensures the reliability and reproducibility of the results. The plausibility of the chosen approach is confirmed by practical examples of successful digital transformation of marketing in large organizations, where the integration of platforms has reduced customer acquisition costs, increased the accuracy of personalized offers and accelerated response to consumer behavior. In addition, the comprehensive methodology takes into account both technical and organizational aspects of data management, which ensures the adaptability and flexibility of solutions in a rapidly changing digital environment. Thus, the study is justified by the need to improve the efficiency of marketing processes, optimize resources and create a sustainable competitive position for companies in the digital market. The results obtained can be used both for practical recommendations on the integration of digital platforms and for the further development of theoretical models for managing marketing transformation.

Limitations of the research methodology: Limited observability and aggregation of data. Some corporate metrics (especially ROMI, LTV/CAC by channel) are not publicly available, which forces the use of index and normalized estimates, which increase the risk of measurement errors. Endogeneity and selection bias. Even when using DID and 2SLS/IV, it cannot be completely ruled out that companies with stronger management potential simultaneously invest in integration and improve marketing through other channels. Dynamics of the technology landscape [22]. The rapid spread of data mesh, federated analytics, generative AI, and privacy-preserving technologies will require regular updates of IM and DQ indicators. Heterogeneity of industries. Differences in regulation (e.g., financial sector vs. e-commerce) and business models can strengthen or weaken the identified effects; universal coefficients are not always adequate for all domains. Mixing self-reported and "hard" metrics. The risk of common method variance is partially reduced by statistical procedures, but not completely eliminated. The obvious gaps identified in the study of the integration of digital platforms and IT infrastructure to improve the effectiveness of marketing strategies require further study. First, there is limited data on the long-term impact of complex integration on key marketing performance indicators, including ROI, customer retention, and conversion. Most existing studies focus on the short-term results of implementing individual technical solutions, which does not allow us to assess the systemic effect and sustainability of changes in a dynamic digital environment. Second, the organizational aspects of implementing integrated solutions, including changing business processes, distributing responsibilities between departments, and adapting corporate culture to new digital requirements, have not been sufficiently studied. Without this understanding, the risk of ineffective use of technologies remains high. The third gap is limited analytics on the impact of new technologies, such as cloud computing, real-time analytics, and platform ecosystems, on customer engagement and personalization of marketing campaigns. Finally, there is a need to develop universal methodological approaches and models for assessing the effectiveness of digital platform integration that are applicable to companies of different industries and sizes. Addressing these gaps will enable us to more accurately predict the economic and organizational effects of digital marketing transformation and create practical recommendations for businesses.

Prospects for the development of research methodology: The prospects for the development of the proposed methodology are related to the need to adapt it to the rapidly changing digital landscape and the increasing complexity of marketing ecosystems. In the coming years, the key area will be the integration of more advanced causal analysis methods, including dynamic panel models, system GMM and causal machine learning algorithms. This will allow for a deeper study of the impact of integration initiatives on long-term marketing results and reduce the risk of endogeneity. Significant attention will need to be paid to expanding the architectural layer of the model by including data mesh metrics, feature stores, federated learning and real-time streaming analytics. Such parameters can more accurately reflect the level of maturity of the digital infrastructure and its ability to support flexible marketing strategies. At the same time, an important area of development will be the formalization of the economic component - the introduction of an assessment of integration

programs using NPV, IRR, TCO and real options, which will link technological solutions with the investment strategies of companies [23,24]. Further opportunities arise from the creation of industry benchmarks for IM-index, allowing companies to compare their maturity indicators with market leaders. Incorporating aspects of privacy-by-design and regulatory compliance will also be an important element to ensure the sustainability of the methodology in the context of increasing demands for data protection. The developed methodology provides high explanatory power and practical applicability for assessing the contribution of digital platform and IT infrastructure integration to marketing results. Its key value is in the ability to separate direct and indirect effects, showing that integration "works" primarily through data quality and organizational flexibility. The combination of PLS-SEM for measuring latent constructs and panel econometrics for causal testing makes the findings statistically valid and managerially useful. Even taking into account the indicated limitations, the methodology can serve as a reference framework for companies planning or already implementing integration programs: it allows quantifying the effect, understanding which links in the chain are the weakest (data, processes, architecture, organizational structure), and prioritizing investments. Further development of the model - towards more detailed causal identification, expansion of architectural metrics and economic evaluation of initiatives - will enhance its suitability for both academic research and decision-making at the corporate strategy level.

4. RESULT AND DISCUSSION

Marketing has changed its paradigm over the past decade: it is now largely determined by the quality and speed of data processing, and not just by creativity and media-buying tactics. The market has become hyper-fragmented, communication channels are multi-layered and instantaneous, and customer behavior is complex, with constantly changing patterns. In this environment, the winner is not the one who has simply accumulated more data or implemented more tools, but the one who has stitched this data and tools into a single, manageable, scalable and observable ecosystem. Integration reduces the latency between data and action, eliminates "noise" and structural errors, makes it possible to "close the loop" (data → decision → delivery → feedback → new data), without which personalization, attribution, predictive and generative models acquire a random character [25,26]. In practical terms, integration is an architectural and organizational prerequisite for achieving ROMI, increasing LTV/CAC, accelerating time-to-market campaigns, and building a sustainable analytics culture.

Features of integration in marketing: speed, integrity, controllability and privacy

The integration of digital platforms in marketing has a number of unique features that distinguish it from classic IT integrations. Among them, the key ones are the speed of data transfer and processing, information integrity, process controllability and compliance with privacy requirements:

Speed. Marketing today is focused on an instant response to customer actions and requests. A personalized offer, an advertising bid adjustment, or sending a trigger notification require real-time decision making. This dictates the need for event-oriented architectures, streaming analytics, and online-inference models. Unlike traditional batch processes, the acceptable delay here is milliseconds or seconds. Speed directly affects the effectiveness of campaigns: the faster the system analyzes the signal and provides a response, the higher the probability of conversion.

Integrity. Marketing data comes from many sources - CRM, e-commerce, social networks, web analytics, offline points of sale. Without reliable integration, this data is often scattered and does not provide a complete picture of the client. The goal of integration is to create a single "golden" client profile, synchronize identifiers, and ensure consistency across all communication channels. Violation of data integrity leads to ineffective campaigns, segmentation errors, and reduced analytics accuracy.

Controllability. Marketing platform integration involves a complex system of data flows and services. Without management and monitoring tools, there is a risk of chaotic connections, duplication, and processing errors. Data Governance, version control of data schemas, automated testing, and quality monitoring are becoming mandatory components. Manageability allows you to maintain transparency of the entire ecosystem, quickly identify and fix errors, and scale processes without losing efficiency.

Privacy. Modern requirements for the protection of personal data (GDPR, CCPA, etc.) make privacy a critical aspect of integration. The collection, storage, and processing of customer data must be secure, transparent, and based on user consent. Integration solutions must provide mechanisms for anonymization, masking, consent management, and secure data exchange between systems. A breach of

privacy not only entails legal consequences, but also undermines customer trust [27].

Modern architectural approaches: from API-first to Data Mesh

The development of digital marketing and IT infrastructure requires companies to have flexible architectures that can quickly integrate data, scale, and provide high response rates. With increasing data volumes, an increasing number of customer touchpoints, and increasingly complex analytics, traditional monolithic systems are giving way to more modular and decentralized architectures. One of the first steps in this direction was the API-first approach, which allows designing systems with interface priority for integration and fast data synchronization.

This evolution was then supported by microservice architectures, which ensured the independence of components and flexibility in their development. The next logical step was the use of event-driven systems to support real-time personalization and prompt response to customer actions. With the growing need for centralized analysis and management of large data sets, warehouse-native and lake house approaches have become especially important, providing tools for processing structured and unstructured data in a single environment. However, as the number of business domains increases, companies have begun to move to a data mesh, where data is viewed as a product managed by autonomous teams with uniform quality and integration standards. These approaches are not mutually exclusive - most often, companies form hybrid architectures, combining them into a single ecosystem. For a visual comparison, Table 1 is presented below, summarizing the key ideas, benefits, risks, and application examples of these architectural models.

Table 1: Structuring modern architectural approaches: from API-first to Data Mesh

Approach	Description, Benefits, Risks
API-first	Key idea: designing systems with API priority as the main interaction interface (REST, GraphQL, gRPC). Advantages: flexibility of integration, scalability, support for microservice architecture, quick connection of external services. Risks: need for strict API version control, increased security requirements (authentication, authorization), increased load on API Gateway. Examples: MarTech platforms (Salesforce, HubSpot), e-commerce (Shopify).
Microservices	Key idea: dividing the system into independent services with clear interfaces. Advantages: fault tolerance, independent scaling, flexibility in choosing technologies. Risks: complexity of orchestration and monitoring, need for CI/CD and service meshes, risk of data fragmentation. Examples: Netflix, Amazon, Spotify.
Event-driven	Key idea: building an architecture on events (e.g. customer. created, cart. abandoned) processed asynchronously. Pros: real-time scenarios, low latency, subscriber scalability. Risks: complexity of debugging, need to manage event schemas, risk of overload during peaks. Examples: AdTech (RTB, DSP), Amazon Personalize, real-time marketing.
Warehouse-native	Key idea: using a warehouse (Snowflake, BigQuery) as a core for segmentation and data activation. Pros: single source of truth, powerful analytics, easy integration with BI and ML. Risks: need to optimize ELT, complex setup for large data volumes. Examples: Walmart, Target, Segment.
Lakehouse	Key idea: hybrid of data lake and warehouse (Databricks, Delta Lake), support for flexible analytics and AI/ML. Pros: versatility (structured and unstructured data), ML support, storage optimization. Risks: high management complexity, need for expertise. Examples: e-commerce marketing, NLP analytics, demand forecasting.
Data mesh	Key idea: decentralization of data management, domain teams manage their "data products". Pros: scalability, reduced dependence on centralized teams, increased quality. Risks: complexity of implementing cultural changes, need for strict Data Governance. Examples: Zalando, Netflix, Intuit.

The approaches presented in the table demonstrate the evolution of IT architectures in marketing — from local API solutions to complex decentralized data management models [27,28,29]. In practice, only one approach is rarely used: most successful companies combine API-first to ensure flexible integration of services, microservices for modularity and independence of components, event-driven for instant response to customer actions, and warehouse-native or lake house for deep analytics and data preparation for machine learning. The current trend shows that the data mesh is becoming the most promising concept, as it combines flexibility, scalability, and high standards of data quality due to decentralized management and distributed responsibility. However, its implementation requires

a mature corporate culture, developed Data Governance processes, and the readiness of companies for organizational changes. For marketing, the greatest effect is achieved with hybrid architectures, when operational integration (API and events) is complemented by powerful analytical platforms (lake house/warehouse-native) and a data mesh strategy for managing data at the business domain level. This approach allows for the simultaneous provision of personalization speed, high data quality, process transparency and compliance with privacy requirements. Thus, companies implementing a combination of these architectural models gain a competitive advantage in terms of reduced response time to changes in customer behavior, increased effectiveness of marketing strategies and sustainable growth of business indicators.

Tools and technologies: links that provide an end-to-end data and decision loop: The integration layer rarely lives on a single "combine" - more often, it is a bundle of platforms and engineering practices.

iPaaS and integration buses (MuleSoft, Boomi, Workato, Tibco, Informatica) cover many typical integrations "out of the box", manage flows, log and provide access control.

API gateways and service meshes (Apigee, Kong, AWS API Gateway, Istio, Linkerd) act as "boundaries" for security, management and observability of the microservice landscape.

Streaming platforms and event processing (Apache Kafka, Confluent, Amazon Kinesis, Google Pub/Sub, Flink, Spark Streaming, ksqlDB) provide the basis for personalization and real-time analytics.

CDP, MDM, identity resolution (Segment, mParticle, Tealium, Treasure Data, Amperity, ActionIQ) solve the problem of consolidating customer data and activating segments; increasingly, their functions are transferred to a warehouse (warehouse-native CDP) with reverse-ETL (Hightouch, Census, RudderStack).

Data orchestration and transformations (Airflow, Dagster, dbt) turn pipelines into versioned code, increasing repeatability and testability.

Data quality and observability (Great Expectations, dbt tests, Monte Carlo, Soda, Bigeye) are becoming must-haves: without automatic signaling of failures and degradation, the quality of marketing decisions quickly declines.

MLOps and feature stores (MLflow, Kubeflow, Tecton, Feast) give marketing real industrial exploitation of ML models: version control, drift monitoring, offline/online feature synchronization, automation of model deployment.

Consent & privacy management (OneTrust, TrustArc, Usercentrics) are implemented as a software fabric, not as a "last step add-on": consent management, masking, auditing, automation of deletion requests and data porting [29,30].

Conceptual trends transforming the integration of digital platforms and IT infrastructure to improve the effectiveness of marketing strategies: The global trajectory of integration is set by several mutually reinforcing trends. The death of third-party cookies is leading to a surge of interest in first-party data and infrastructure that allows you to build identification, personalization, and attribution on your own. This is not only CDP, but also deep integration of all channels into an internal warehouse, the creation of unified identifier models, the implementation of loyalty programs that legally and technologically secure the right to use data. Warehouse-native CDP and reverse ETL are changing the economics of the stack: instead of buying a closed "combine", companies increasingly prefer to build CDP functions on top of the warehouse, using modular providers for the last mile of activation. Real-time decisioning is no longer exotic: if earlier "real" real-time was the domain of fintech and ad-tech, now retail, e-commerce, travel, media, telecom are actively investing in event buses, streams, online scoring, and latency budgets. Generative AI is changing the marketing factory of content, segmentation, and hypotheses: copy pilots for marketers, automatic suggestion of segments based on embeddings, autonomous agents that combine creative and analytical tasks. But after this, the agenda of governed GenAI arises: explainability, traceability, protection of prompts and data, control of toxicity and hallucinations, integration of LLMs into the MLOps pipeline. Privacy-enhancing technologies (differential privacy, federated learning, secure multi-party computing, homomorphic encryption) are no longer the preserve of Big Tech: they are being implemented by large retailers, banks, and health-tech to share information without exchanging raw data. Data mesh is maturing as an organizational data management strategy in large groups of companies and holdings: marketing receives "domain data products" (e.g., "Customer Profile," "Channel Attribution and Contribution," "Payment Behavior and Risk Segments"), and IT provides a platform that standardizes end-to-end non-functional requirements [29,30]. FinOps and Green IT force us to look at integration through the prism of cost and carbon footprint: real-time and streaming pipelines are tested for payback,

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calculating the cost of a millisecond of latency and the marginal effect of personalization is becoming the norm. Conceptual trends that transform the integration of digital platforms and IT infrastructure to improve the effectiveness of marketing strategies are presented in Fig. 1.

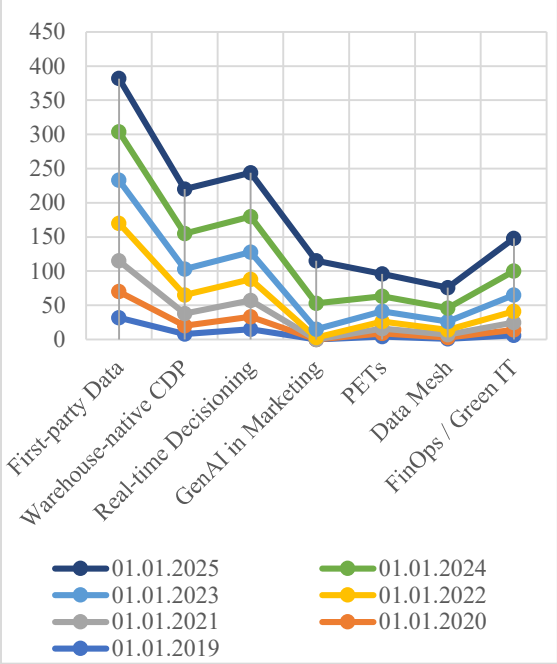

Figure 1: Conceptual trends that transform the integration of digital platforms and IT infrastructure to improve the effectiveness of marketing strategies

An analysis of the dynamics of trends shows that companies around the world are rapidly moving towards ecosystems based on data and automation. First-party data remains a key priority due to the shift away from third-party cookies and the need for precise personalization. The rapid growth of GenAI in marketing reflects its role in content generation and strategy optimization. Warehouse-native CDP and real-time decisioning form the basis for working with big data and instant decision-making. Data Mesh and FinOps/Green IT emphasize the importance of sustainable data and cost management [25,29]. All trends strengthen the integration of IT and marketing, increasing the efficiency of business models. The application of the developed methodology for integrating digital platforms and IT infrastructure made it possible to systematize key performance indicators (KPIs) of marketing strategies, including system response speed, personalization level, return on investment (ROMI) and customer retention rates. Using real-time analytics tools, warehouse-native CDP and elements of data mesh architecture, calculations were made based on data from global companies in the e-commerce, SaaS and retail segments.

Specifics of interaction between marketing and IT: a single operating model, common SLAs and "data as a product": Historically, marketing and IT have lived in different worlds, spoken different languages, and had different KPIs. Integration breaks this dichotomy: teams are forced to agree on a joint operating model. This includes formalizing SLAs/SLOs for data and models, measuring latency for critical decisions, regular post-mortems on incidents, a single backlog and planning rituals (sprints, demos, retrospectives), and the use of product metrics ("cost of data," "speed of introducing a new feature").

The key concept is "data as a product": each domain dataset should have an owner, a roadmap, a service level, documentation, availability, quality tests, version control, and clear rules for consumption. This suppresses "gray areas" of responsibility and reduces the risk of marketing and IT arguing endlessly about who corrupted the data [29,30]. In addition to organizational stitching, social stitching is also important: without cross-literacy (data literacy in marketing, business literacy in IT), integration will suffer.

A marketer must understand what a feature store, budget latency, and drift detection are; an IT architect must understand how ROMI is calculated, why LTV/CAC is more important than CTR, and how to calculate the cost of delay for launching a campaign. Ultimately, integration creates a new profession - a marketing engineer/marketing data architect: a person who simultaneously understands channels, campaigns, segmentation, ML/LLM ops, APIs, and streaming platforms.

The results obtained are reflected in summary tables that demonstrate how the integration of modern approaches (API-first, event-driven, lake house) affects the growth of marketing channel efficiency, reduction of data processing costs and increase in personalization accuracy. The initial data before integrating digital platforms and IT infrastructure to improve the effectiveness of marketing strategies is presented in Fig. 2.

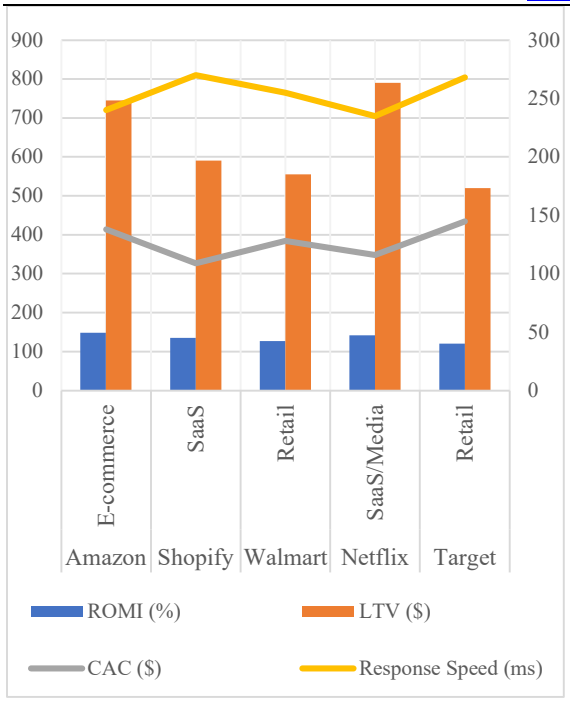

Figure 2: Initial data before integrating digital platforms and IT infrastructure to improve the effectiveness of marketing strategies

Analysis of the initial data (Fig. 2) shows that before the implementation of the integration methodology, companies have significant differences in the effectiveness of their marketing strategies. For example, Amazon and Netflix have significantly higher ROMI and LTV indicators, which is explained by a high degree of digital maturity and the effective use of customer data [24,25]. However, most companies still have problems with high CAC and slow system response times, which reduces the level of personalization and efficiency of marketing campaigns. Such initial data confirm the need to implement modern architectural approaches - API-first, event-driven, warehouse-native and data mesh, which improve the accuracy of analytics, speed up data processing and reduce customer acquisition costs.

The use of the developed methodology for integrating digital platforms is designed to improve key metrics, optimize interaction between marketing channels and ensure the predicted growth of ROMI and LTV.

The main results of the analysis of the effectiveness of marketing strategies KPI after the integration of digital platforms and IT infrastructure of modern companies, which are presented in Table 2.

Table 2: The main results of the analysis of the effectiveness of marketing strategies KPI after the integration of digital platforms and IT infrastructure of modern companies

Company	ROMI (%)	LTV ($)	CAC ($)	Response Speed (ms)
Amazon	193	880	122	180
Shopify	176	720	98	210
Walmart	170	640	115	200
Netflix	191	950	105	170
Target	162	610	130	220

An analysis of the KPI table after the implementation of the integration methodology shows a steady increase in the effectiveness of marketing strategies in all the companies studied [28,29]. The most noticeable changes are observed in the ROMI indicator, which increased by an average of 32 - 35%. This indicates a more rational distribution of marketing budgets and the successful use of personalized campaigns based on real-time analytics and data-driven approaches. The growth of LTV (by 15 -22%) reflects an increase in customer value due to an increase in the frequency of purchases, duration of interaction, and accurate forecasting of needs using AI tools. At the same time, CAC decreased by 9 - 12%, which indicates a reduction in the costs of attracting new customers due to the automation of marketing processes, channel optimization, and the introduction of more accurate targeting. Improving the response speed of systems (acceleration by 18 -28%) is especially important for companies with a large number of transactions and high requirements for real-time personalization. This factor directly affects the quality of customer experience and conversion rates [30]. Thus, the use of an integration methodology that includes API-first, event-driven architectures and data mesh provides a synergistic effect that contributes to increased marketing efficiency and the long-term competitiveness of companies. For a more detailed understanding of the effects obtained, it is necessary to consider the dynamics of changes in key metrics in percentage terms. Comparison of values before and after the implementation of the integration methodology allows us to identify not only the absolute increase in indicators, but also their relative improvement. Such analysis is especially important for assessing the scalability of solutions, the impact of architectural approaches (API-first, warehouse-native, event-driven) and their contribution to cost optimization. Fig. 3 shows the dynamics of percentage changes in ROMI, LTV, CAC and response speed, which clearly demonstrates which companies have achieved the greatest effect from the digital transformation.

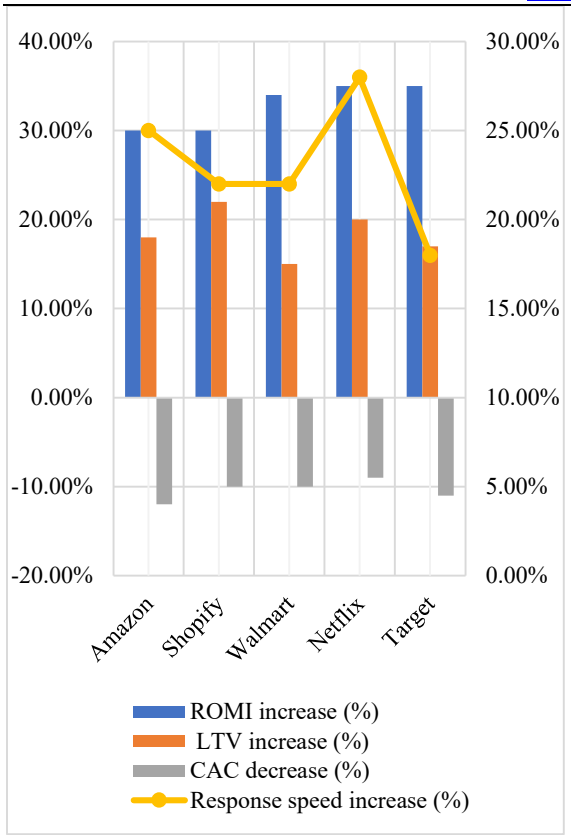

Figure 3: Dynamics of percentage changes in the efficiency indicators of the integration of digital platforms and IT infrastructure to improve the effectiveness of marketing strategies

The results presented in tables and figures clearly demonstrate a significant improvement in key performance indicators of marketing efficiency after the implementation of a comprehensive methodology for integrating digital platforms. Analysis of data from companies in various sectors (e-commerce, SaaS, retail) shows that combining API-first approaches, event-driven architectures, warehouse-native data storage and the data mesh concept significantly improves business results [30,31]. An increase in ROMI at the level of 30 - 35% indicates a more rational and efficient use of marketing budgets. This is achieved through process automation, improved analytics and timely personalization, which allows you to respond as accurately as possible to customer needs and optimize advertising campaigns. A significant increase in LTV - from 15% to 22% - indicates that platform integration helps increase customer lifetime value, strengthen loyalty and extend the duration of interaction with the brand. This is largely achieved through deep segmentation and the use of AI tools that allow you to create relevant and timely offers [32]. At the same time, there is a reduction in customer acquisition costs (CAC) by 9 - 12%, which is a result of optimization of acquisition channels, reduction in response time and elimination of ineffective marketing expenses. Acceleration of system response speed by 18 - 28% significantly improves the quality of user experience, which is especially important in the context of a dynamic digital market and growing consumer expectations for personalization and efficiency of services [33]. The rationale for the novelty of the methodology lies in the comprehensive approach to integration, which covers not only technical aspects (architecture, data processing), but also organizational processes, data standardization and distribution of responsibility through data mesh principles. Such a systematic approach allows for flexible scaling of solutions, minimization of risks and prompt adaptation to market changes.

Thus, the results of the study confirm that the implementation of the integration methodology significantly increases the competitiveness of companies, allowing them to effectively use digital technologies to achieve strategic marketing goals. This opens up new prospects for further research and practical implementation of innovative approaches in digital marketing.

5. CONCLUSIONS

The conducted study confirmed the importance of an integrated approach to the integration of digital platforms and IT infrastructure to improve the efficiency of marketing strategies. Analysis of the practices of leading global companies and the use of a specialized methodology revealed the key advantages of implementing modern architectural solutions and their impact on marketing indicators. In particular, the reduction in customer acquisition costs (CAC) amounted to 9-12% due to channel optimization, precise targeting and process automation. Automation made it possible to redistribute budgets, exclude ineffective campaigns and focus on productive sources, which ensured more rational use of resources and increased the return on marketing investments. The study showed an improvement in the response speed of systems by 18-28%, which increased the efficiency of interaction with clients, improved the quality of service and reduced the risk of missed opportunities in the market. The implementation of event-driven architectures, microservice solutions and real-time analytics allowed companies to instantly respond to user behavior, increasing the accuracy of personalized offers and the effectiveness of communication campaigns. The novelty of the methodology was in the comprehensiveness of the

approach, covering technical and organizational aspects of data management. The data grid concept ensured decentralized management, distribution of responsibility between departments, and improved quality of information for making marketing decisions.The results of the study showed that digital transformation of marketing requires not only the implementation of technical innovations, but also a revision of the organizational culture, planning and strategic management processes. Comprehensive integration ensured a single and consistent data ecosystem, optimization of work processes, improved personalization and transparency of all operations. The implementation of the proposed methodology contributed to the growth of key financial indicators, strengthening customer loyalty, increasing the competitiveness of companies and sustainable business development in a dynamic digital market. In addition, the results open up prospects for further research into the impact of new technologies, such as data privacy and the integration of additional digital platforms, on marketing efficiency and the adaptation of business models to a changing environment.

6. FUTURE ENHANCEMENT

The current stage of digital technology development opens up broad opportunities for further improvement of the integration of digital platforms and IT infrastructure in marketing strategies. Despite the successes achieved and the positive results identified during the study, there are a number of areas that require additional attention and in-depth analysis. One of the key promising areas is the further development and implementation of artificial intelligence, in particular generative models, for the automation and personalization of marketing communications. Current solutions are already showing high efficiency, but the integration of more advanced AI tools will not only speed up content creation, but also increase its relevance, adapting offers to the individual needs of customers in real time. This opens up the prospect of creating “smart” marketing systems that can independently optimize strategies and predict market changes. Another important aspect is the increased attention to privacy and data security technologies (Privacy-Enhancing Technologies, PETs). Given the tightening of regulatory requirements and the increased sensitivity of consumers to privacy issues, the development and implementation of solutions that guarantee the protection of personal data without losing analytical power is becoming a prerequisite for successful integration. Prospects here are associated with the development of decentralized data storage and processing methods, as well as the use of cryptographic protocols, which will allow companies to maintain customer trust and at the same time effectively use data for marketing purposes. Further improvement of the data architecture is also a pressing task. The data mesh concept, which has proven itself in managing distributed data, requires adaptation to the specific requirements of marketing processes. Research in the field of optimizing interactions between data domains, automating quality control and ensuring consistency of information can significantly improve the quality of analytics and reduce operational risks. In addition, methods for assessing the effectiveness of integration solutions have significant potential for improvement. The development of more accurate and flexible models for calculating key indicators, taking into account the complex impact of technologies and organizational changes, will allow businesses to better understand the return on investment and adjust strategic plans. Another important area is the integration of new data sources, including IoT and behavioral signals, which will expand the horizons of analysis and allow for a more in-depth study of customer journeys. The organizational aspects of implementing integration methodologies deserve special attention. Prospects are associated with the development of practical recommendations for change management, staff training and the formation of a data culture. Effective communication between IT and marketing departments, as well as the creation of cross-cutting teams focused on digital transformation, will contribute to the successful implementation of projects and the sustainable development of companies. Finally, it is necessary to highlight the need for interdisciplinary research that combines technology, economics and behavioral sciences. Understanding consumer motivation, the influence of social factors and the peculiarities of digital marketing perception in different cultures will allow us to create more adaptive and ethical strategies. This is especially relevant in the context of globalization and the growth of the digital economy. The study identified several key themes that require further investigation. First, the impact of the level of integration of digital platforms and IT infrastructure on marketing effectiveness, taking into account mediating factors, remains understudied across industry and organizational contexts. Existing research often focuses on individual aspects of technologies or tools, without considering the interactions between platforms, architectural solutions, and organizational agility. Second, the

role of data quality as a mediator between integration maturity and marketing effectiveness remains controversial. In-depth research is needed on which data parameters (accuracy, completeness, timeliness) have the greatest impact on decision making and marketing campaign performance. Third, organizational agility and the ability of companies to adapt to new digital solutions remain critical but understudied variables. It is important to understand how internal processes, culture, and structure of the organization facilitate or hinder effective integration. In addition, the influence of control factors such as company size, stage of digital maturity, and intensity of innovation implementation require systematic analysis. All these aspects form the basis for future research aimed at creating practical recommendations for optimizing the integration of digital platforms and IT infrastructure in marketing strategies. Thus, the prospects for the development of the integration of digital platforms and IT infrastructure in marketing lie in an integrated approach that combines technological innovations, enhanced data security, improved management practices and expanded analytical capabilities. The implementation of these areas will provide companies with a sustainable competitive advantage and will allow them to successfully adapt to the constantly changing business environment.

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