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DEVELOPMENT OF A PROACTIVE MARKETING PERFORMANCE ASSURANCE SYSTEM IN THE IT SECTOR

Purpose. To develop and substantiate a conceptual approach to the development of a performance assurance system for proactive marketing in the IT sector and to formulate a methodological framework for its measurement based on the integration of leading and lagging indicators.

Methodology. The research is based on a synthesis of dynamic capabilities theory and complexity economics, which allows for treating the marketing system as a complex adaptive system. Conceptual modeling methods were applied to construct a three-dimensional measurement architecture. Empirical verification of hypotheses was conducted using case study methods, comparative, and correlation analysis based on data from global technology companies (Hubspot, Ajax Systems, Softserve) for the period 2023–2025.

Findings. The limitations of the exclusive use of traditional KPIs for evaluating the effectiveness of proactive marketing strategies are substantiated. A comprehensive model is proposed that integrates dual pairs of indicators: SPCR–FARA (market foresight), NRPR–CLV (market shaping), and RDR–ROMI (business resilience). A matrix of diagnostic patterns ("innovator's trap", "inertial growth", "fragile efficiency", "balanced development") has been developed to identify structural imbalances within the marketing efficiency system. The correlation between the growth of leading indicators (pipeline safety margin, share of new products, staff loyalty level) and the future financial performance of companies is empirically confirmed.

Originality. For the first time, the concept of performance system development is substantiated as a process of strategic design and evolution, as opposed to retrospective controlling. A measurement architecture built on the principle of temporal dualism of indicators is proposed, enabling the management of an IT company's future market value.

Practical value. The developed toolkit allows IT company management to reduce strategic uncertainty by improving forecasting accuracy, substantiate investments in innovation, and ensure the resilience of business models amidst the turbulence of the digital economy.

Keywords: *proactive marketing, IT sector, digital economy, marketing efficacy, development, business resilience*

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Introduction. Amidst the paradigm of digital transformation, artificial intelligence (AI), and Big Data, organizational competitiveness is increasingly predicated on the capacity to move beyond mere market reactivity toward the proactive anticipation and intentional orchestration of market shifts [1]. United Nations data indicates that as early as 2016, the global digital economy was valued at approximately $11.5 trillion, representing 15.5 % of global GDP; notably, its expansion over the preceding fifteen-year period outpaced general global economic growth by a factor of 2.5 [2]. Projections by Forrester suggest that by 2028, the digital economy's valuation will escalate to roughly $16.5 trillion, or nearly 17 % of the global GDP [3], thereby consolidating its position as the primary engine of the global economic landscape and a sustainable driver of long-term expansion.

Within this landscape, conventional reactive marketing, predicated on adapting to established demand, is experiencing a progressive decline in strategic utility. In contrast, innovation is increasingly manifesting as a result of systemic data analytics, behavioral pattern projection, and the intentional configuration of novel market niches [4].

Over the preceding decade, the Ukrainian IT sector has demonstrated a growth trajectory among the most significant in Europe; the population of IT firms expanded by 41.1 %, rising from 5,633 in 2014 to nearly 7,977 in 2024. This progression corresponds to a compound annual growth rate of approximately 4.5 % [5]. Such a trend underscores an intensive proactive market configuration, the proliferation of technology-based ventures and startups, and the fortification of the national digital infrastructure, with the most substantial influx of new enterprises occurring between 2017 and 2019.

Globally, these trajectories are further validated through empirical evidence. Research by Deloitte indicates that enterprises characterized by a proactive and mature digital strategy are 4.5 times more likely to achieve sustainable revenue growth compared to organi-

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zations adhering to predominantly reactive management paradigms. Furthermore, the study corroborates that entities with high digital maturity – those systematically investing in digital transformation – possess a formidable competitive edge; approximately 70 % of such organizations report enhanced innovation activity, superior customer retention metrics, and accelerated time-to-market for new products.

According to the research [7], the integration of generative AI into operational workflows can yield productivity gains within domains such as customer operations and marketing ranging from 30 to 45 %, establishing a cornerstone for sustainable economic expansion. Collectively, these data points substantiate that proactive innovation and marketing initiatives translate directly into enhanced Return on Investment (ROI), fortified competitive standing, and the cultivation of enduring customer loyalty; consequently, this necessitates the development of a novel performance measurement framework.

Conventional Key Performance Indicators (KPIs) – most notably Return on Investment (ROI), Conversion Rate, and Customer Acquisition Cost (CAC) – function predominantly as instruments for documenting historical results. Such metrics are insufficient for the comprehensive assessment of proactive marketing strategies that are inherently future-oriented, focusing on predictive trend analysis, the piloting of innovative business architectures, the creation of novel market categories, and the strategic redirection of consumer behavioral patterns.

This precipitates a measurement gap that complicates the justification of long-term capital allocations and impedes the evolution of proactive marketing performance assurance systems. Research by BCG and Google indicates that a mere 39 % of enterprises utilize standardized KPI frameworks, while the majority focus on short-term tactical metrics, thereby restricting the scope for strategic marketing performance management [2]. The trajectory of the domestic digital sector – which generated approximately $7.35 billion in export revenue in 2022 (4.5 % of GDP) despite a broader economic contraction of 29.1 % [8] – unequivocally demonstrates its resilience and necessitates a strategic paradigm shift toward marketing performance management grounded in the principles of systemic development.

In theoretical discourse, marketing effectiveness is conventionally perceived primarily as a function of performance monitoring and evaluation, operationalized through a framework of metrics, indicators, and KPIs. This paradigm is predicated upon retrospective analytical logic and documents the outcomes of managerial decisions, while disregarding the mechanisms that foster a marketing system's capacity for reproducible efficiency within a dynamic environment. In contrast, this research proposes to conceptualize the performance assurance system for proactive marketing in the IT sector *through its system development*). This entails the deliberate formation, design, enhancement, and evolution of a suite of instruments, metrics, analytical frameworks, and digital solutions engineered to sustain an enterprise's proactive marketing behavior. Such a scholarly stance is necessitated by the shifting nature of marketing systems, which currently operate as complex adaptive entities characterized by nonlinear interdependencies, heightened environmental sensitivity, and emergent properties. Within these frameworks, effectiveness cannot be reduced to a static output or a fixed set of control indicators; rather, it is forged through the continuous co-evolution of marketing instruments, consumer patterns, digital ecosystems, and analytical technologies. Consequently, it is appropriate to define marketing effectiveness not as a terminal state, but as a procedural characteristic reflecting the system's inherent capacity for adaptation, learning, and proactive responsiveness.

The term "*development*", which is conventionally linked to construction and property management, has assumed a more expansive, transdisciplinary role within the contemporary scientific paradigm, serving as a meta-definition for the strategic evolution of complex systems. Studies by Grumadaitė & Jucevičius [9] illustrate the implementation of the "development" concept in characterizing the formation, progression, and governance of intricate organizational and industrial ecosystems designed for sustained resilience and adaptability. Notably, in the publication *Strategic Approaches to the Development of Complex Organisational Ecosystems: The Case of Lithuanian Clusters*, development is framed as a strategic design and regulated evolution of a complex adaptive system that functions through non-linear mechanisms and resists effective management via traditional linear paradigms. The researchers underscore that the synergy of component interdependence, self-organization, and environmental reactivity demands specialized managerial frameworks centered on the cultivation of systemic capacities rather than simple oversight.

The extrapolation of the development concept to the performance assurance framework for proactive marketing within the IT sector is methodologically substantiated by the inherent constraints of the conventional KPI-centric paradigm. Metrics centered on retrospective performance evaluation fail to encapsulate the maturity level of the marketing ecosystem, its analytical architecture, digital proficiencies, or its capacity for transformation. In contrast, a framework anchored in the theory of dynamic capabilities prioritizes the cultivation and scaling of organizational marketing competencies (*capabilities*), which foster sustainable and replicable efficiency across medium- and long-term horizons.

Furthermore, within the framework of digital transformation in proactive marketing, performance is increasingly contingent not on the discrete application of specific tools or technologies, but on the maturity level of the enterprise's integrated analytical-digital ecosystem. The deployment of Big Data, artificial intelligence algorithms, and predictive analytics necessitates the systemic architectural design of marketing solutions, ensuring their alignment with strategic objectives and organizational workflows. In this regard, the development of a marketing performance assurance system correlates with the concept of dynamic capabilities, as it encompasses the processes of detecting market environment shifts, adapting marketing instruments, and transforming managerial decisions toward proactive market behavior.

Accordingly, the application of the "development" definition to the study of performance assurance systems in IT-sector proactive marketing enables a transition from a reductionist, control-centric interpretation of effectiveness toward a systemic vision. This frame-

work conceptualizes efficiency as the outcome of purposeful evolution, strategic design, and the advancement of the enterprise's marketing system within dynamic and non-linear environments.

Building upon these premises, the development of a proactive marketing performance assurance system is conceptualized as *an integrated managerial process for the strategic configuration and evolution of a framework of indicators, methodologies, analytical tools, and digital solutions*, engineered to augment organizational capacity for forecasting, shaping, and capitalizing on future demand.

Accordingly, the research hypothesis posits that the enhancement of long-term proactive marketing performance within IT enterprises in the digital economy is primarily driven by the development of a performance assurance system. This development, functioning as a purposeful process of strategic design and the evolution of marketing instruments, analytical frameworks, and digital solutions, fosters the organizational capacity to manage future market value rather than merely facilitating the retrospective measurement of historical results.

To operationalize and empirically test the general hypothesis, the following sub-hypotheses have been formulated:

H*1 *(Market Foresight). Elevated values of the SPCR indicator in period *t* are positively associated with a higher level of revenue predictability (***FARA***) in period *t* + 1 and/or more stable revenue growth dynamics in subsequent periods

H*2 *(Market Shaping). Elevated ***NRPR*** metrics in period t demonstrate a positive association with an increase in Customer Lifetime Value (***CLV***) in period *t* + 1 and a rising share of the revenue pipeline generated by new products or market entries, reflecting the strategic expansion of the product-market portfolio in subsequent periods.

H*3 *(Business Resilience). Elevated ***RDR*** metrics in period *t* are positively correlated with more consistent Return on Marketing Investment (***ROMI***) in period *t* + 1 and reduced business model susceptibility to exogenous shocks – specifically through mitigated revenue concentration and/or diminished result volatility. Furthermore, within the scope of empirical verification, resilience may be further operationalized through complementary proxy indicators associated with customer and human capital retention (e.g., retention rate and eNPS), which represent the operational dimension of organizational stability.

The objective of this research is to develop and substantiate a conceptual approach to the development of a proactive marketing performance assurance system within the digital economy, establishing a framework for long-term strategic competitive advantages.

To attain this objective, the following research tasks were identified:

- to examine the constraints of conventional ***KPIs*** regarding the execution of proactive marketing strategies within the digital economic landscape;

- to systematize theoretical frameworks regarding the evolution of marketing performance assessment, emphasizing the transition from reactive to proactive market orientations;

- to substantiate a classification of metrics grounded in the dichotomy of lagging and leading indicators as a methodological foundation for quantifying proactive marketing effectiveness;

- to design a conceptual model for the development of a proactive marketing performance assurance system, integrating various temporal management horizons;

- to conduct an initial validation of the proposed methodological framework within the IT sector to provide empirical verification of its practical utility.

Literature review. The progression of marketing scholarship demonstrates a strategic transition from reactive market responsiveness toward proactive governance centered on market shaping and transformative orchestration. Foundational paradigms in strategic marketing have established the theoretical basis for subsequent conceptual advancements concerning market sensing, value co-creation, and customer-centricity. Scholarly discourse frames market orientation as a dynamic organizational capability that facilitates both environmental adaptation and the proactive construction of novel market opportunities [10, 11].

Scientific discourse substantiates the utility of "*market intelligence*" as a framework for managerial decision-making, achieved through the convergence of proactive market orientation with value creation and customer-centric paradigms [12]. Concurrently, market orientation is increasingly conceptualized as a dynamic organizational capability that facilitates not only environmental adaptation but also the proactive orchestration of novel market conditions [10, 11].

Market-oriented enterprises are characterized by advanced capabilities in *market sensing* and *customer linking* – specifically, the proficiency for early identification of exogenous environmental shifts and the cultivation of sustainable customer relationships. Contemporary empirical evidence substantiates that market orientation exerts a robust positive influence on organizational performance, notably concerning innovativeness, financial outcomes, and customer satisfaction [12, 13]. Furthermore, the research demonstrates that the integration of market orientation with data analytics and digital instruments significantly amplifies its impact on the development of competitive advantages within digital ecosystems. This establishes the foundation for a strategic shift from passive responsiveness to market signals toward the proactive orchestration of demand.

Within this context, the evolution of marketing scholarship is intrinsically linked to the differentiation between reactive and proactive market orientations. Reactive orientation prioritizes articulated consumer needs, whereas proactive orientation is dedicated to uncovering latent, unexpressed needs. The latter demands a more profound investigation into product usage contexts, consistent experimentation with innovative solutions, and a strategic willingness to transform customer value perceptions [12, 14]. Academic literature underscores that it is specifically the proactive orientation that facilitates the creation of novel market opportunities and the establishment of sustainable competitive advantages for enterprises.

Subsequent scholarship has expanded these frameworks within the paradigm of the digital economy and corporate digital transformation, where proactive market orientation is identified as a primary catalyst for digital innovation, the architecture of novel business mod-

els, and the augmentation of organizational competitiveness within volatile digital ecosystems. Research by Kumar, Rajan, and Venkatesan, alongside Morgan, Feng, and Whitler, demonstrates that proactive market orientation – operationalized through innovativeness and customer-centricity – substantially amplifies long-term financial performance [12, 13]. Furthermore, contemporary scholarly literature emphasizes that the efficacy of proactive market orientation is significantly enhanced when integrated with data analytics and digital technologies, which facilitate a more precise identification of latent consumer needs and the formulation of pioneering market offerings [10, 11].

The evolution of market orientation paradigms has catalyzed a corresponding transformation in the methodological approaches to assessing marketing effectiveness. Conventionally, performance appraisal focused predominantly on retrospective financial outcomes and tactical operational indicators – such as sales volume, profitability, and market share – alongside discrete metrics of customer engagement. Such frameworks conceptualized marketing effectiveness as a static terminal output rather than a systemic organizational capacity for the sustainable reproduction of value.

Contemporary research in the field of *performance measurement* emphasizes that financial metrics are predominantly retrospective in nature and fail to facilitate the timely identification of shifts in quality, customer satisfaction, or innovativeness – factors that serve as precursors to future effectiveness. Consequently, scholarly discourse substantiates the necessity of transitioning toward integrated multidimensional evaluation systems. Within these frameworks, financial indicators are categorized as *lagging indicators*, whereas non-financial metrics are interpreted as *leading indicators* that drive the organization's future performance [14, 15].

The subsequent advancement of this logic transpired within the field of strategic management, where financial and operational indicators are conceptualized as the outcomes of established organizational capabilities for *sensing, seizing, and transforming opportunities* [16]. It is these specific capabilities that dictate the long-term effectiveness of enterprises within turbulent environments and constitute the foundation for the evolution of contemporary performance management paradigms.

Parmenter's D. framework for "winning KPIs" underscores the necessity of a rigorous conceptual distinction between outcome indicators (predominantly lagging) and ***KPIs*** themselves. The latter are defined as a selective set of manageable leading metrics intrinsically linked to daily operations and proactive organizational behavior [15].

Within the paradigm of digital transformation, the operationalization of organizational dynamic capabilities is increasingly mediated by the integration of *Artificial Intelligence (AI) into decision-support systems*. Specifically, research titled Artificial Intelligence in Ensuring the Business Economic Security posits that the deployment of machine learning algorithms for monitoring and analyzing operational data enhances the adaptability of business processes and resource allocation efficiency. This configuration establishes the necessary conditions for preemptive managerial decision-making [17]. In the sphere of marketing, this evolution necessitates a transition from reactive responsiveness to demand fluctuations toward the proactive orchestration of demand through data-driven analytics.

The technological foundation for the transition from reactive to proactive marketing logic is constituted by digital marketing communication environments powered by artificial intelligence tools, alongside *Internet of Things (IoT)* infrastructure, which facilitates the continuous, real-time generation of behavioral and service-related data [18]. This structural shift establishes the prerequisites for migrating from retrospective marketing performance assessment toward the utilization of predictive effectiveness indicators.

In the operational practice of major multinational corporations, the "measurement gap" between tactical outcomes and marketing's strategic contribution is highlighted by joint research from *BCG* and *Google*. The authors posit that a majority of organizations continue to rely on a restrictive set of channel-specific metrics, which precludes an accurate assessment of marketing's impact on long-term brand equity and innovation [2].

Consequently, theoretical analysis of marketing performance assurance systems indicates that market orientation has evolved from a reactive stance toward a proactive, market-shaping approach; while proactive orientation enhances innovativeness and sustained corporate performance, contemporary marketing effectiveness measurement frameworks remain largely confined to the reactive paradigm of lagging metrics. Within the modern digital economy, there is a burgeoning requirement for the systematic application of leading indicators that encapsulate an enterprise's future potential, innovative capacity, and resilience.

Concurrently, a synthesis of contemporary research findings indicates the absence of a holistic perspective regarding proactive marketing effectiveness as a systemic attribute that is forged and reproduced through the evolution of the marketing system. This necessitates an investigation into the development of a proactive marketing performance assurance system, conceptualized as a process of strategic configuration and transformation of performance management instrumentation. Distinguishing itself from conventional *marketing performance measurement models*, this approach entails the integration of market orientation constructs, dynamic capabilities, and multidimensional metric systems. It further involves the convergence of lagging and leading indicators into a strategically oriented framework capable of evolving in alignment with environmental shifts and the digital landscape.

Results. *Design of the proactive marketing performance assurance system*. Within the framework of this research, design is conceptualized as the foundational phase of the performance assurance system's development, consisting of the structural-logical configuration of a predictive marketing management loop oriented toward preemptive managerial decision-making.

The development of the proactive marketing performance assurance system is interpreted as an expansive, integrated managerial process that encompasses not only design but also the subsequent evolution, adaptation, and refinement of the system of indicators, methodologies, and digital solutions to augment the enter-

prise's capacity for forecasting, shaping, and capitalizing on future demand. The architectural design logic is predicated on the transformation of information streams (weak signals, Big Data) into strategic benchmarks through three hierarchical levels of decomposition, corresponding to the fundamental modules of the enterprise's strategic potential:

Analytical module (Market foresight) – designed to quantify the accuracy of predictive analysis, identify latent needs and systematically scan the external environment to detect weak signals. This module corresponds to the *anticipation* stage in business resilience models and provides the information basis for the further development of marketing decisions.

Operational module (Market shaping) – focused on assessing the organization's capacity to capitalize on innovations and architect novel market niches prior to the articulation of consumer demand. Within the system's development, this module facilitates the conversion of analytical insights into proactive market maneuvers.

Security-strategic module (Business resilience) – oriented toward quantifying the adaptive robustness of marketing investments, the diversification of market presence, and the mitigation of exogenous shocks, thereby ensuring the stability of developmental outcomes amidst high environmental turbulence.

A pivotal component of the proposed architecture is the conceptual demarcation between lagging and leading indicators, accounting for their temporal orientation and functional purpose. Lagging indicators (specifically ROMI and FARA) reflect the realized utility of proactive marketing initiatives, whereas leading indicators (SPCR, NRPR, and RDR) delineate the system's capacity for sustained development, innovativeness, and adaptability. This approach facilitates the conceptualization of the metric system not merely as a static recording mechanism, but as an instrument for strategic design and the evolutionary development of proactive marketing performance.

For each defined dimension, a system of quantitative metrics has been established, relevant for operationalizing the development of the performance assurance system based on empirical data from IT enterprises. The proposed model further entails the institutionalization of performance management processes through the implementation of a continuous feedback loop based on the "measurement – interpretation – managerial action – correction" cycle. This establishes the methodological prerequisites for transitioning from episodic evaluation toward dynamic strategic orchestration, wherein the metric system serves as an active driver for the creation of novel market value.

The implementation of the proposed conceptual architecture will facilitate:

1) augmentation of the enterprise's capacity to orchestrate future demand and construct novel market segments;

2) enhancement of the marketing system's sensitivity toward nascent shifts in consumer behavior;

3) development of business model resilience through the integration of risk-oriented metrics into strategic managerial decision-making;

4) Digital transformation of performance monitoring predicated on the utilization of real-time analytics.

The terminal phase of design within the development of the performance assurance system involves delineating quantitative verification methods for the proposed framework, specifically correlation analysis, regression modeling, and comparative panel data analysis. Within this article, these procedures are presented at a conceptual level, establishing a methodological foundation for the subsequent empirical validation of the proposed approach's strategic viability.

Methodological framework of the proactive marketing performance assurance system. The formulation of a methodological framework for the proactive marketing performance assurance system within the digital economy necessitates a fundamental reassessment of traditional epistemological approaches to performance measurement. The classical paradigm of marketing controlling, which has dominated economic scholarship in recent decades, was predicated on a Newtonian, mechanistic perception of the market as a linear system, where managerial intervention (input) results in a predictable and proportional outcome (output). Within this paradigm, the methodology was restricted to a set of retrospective metrics (KPIs) intended to register deviations from a predetermined trajectory. However, as established in the introductory premises of this research, the contemporary IT sector functions as a Complex Adaptive System (CAS), distinguished by nonlinearity, emergence, and the stochasticity of processes.

In this context, the methodological framework cannot be confined to passive instruments for assessing past events. It must undergo a transformation into a development system – a purposeful process of designing, accumulating, and evolving the enterprise's systemic capabilities to generate future value. The ontological distinction between the concept of "development" and traditional "performance management" lies in the strategic shift from resource control to the cultivation of potential.

The methodological construct of this research is predicated on a synthesis of three theoretical platforms:

1. ***Second-order cybernetics*** – the marketing system is conceptualized as an observer in active interaction with its environment. Consequently, the methodological framework incorporates feedback loops wherein measurement itself constitutes an act of reality construction (through goal formulation and attentional focusing).

2. ***Dynamic capabilities theory*** – the methodology necessitates the measurement of dynamic processes rather than static assets (e.g., brands, customer bases). This includes the organizational capacity to perceive environmental shifts (sensing), capitalize on emerging opportunities (seizing), and reconfigure the business model (transforming).

3. ***Complexity economics*** – the acknowledgement that marginal fluctuations in leading indicators (for instance, the qualitative composition of the sales pipeline) can catalyze substantial, non-linear impacts on financial outcomes through network effects and positive feedback mechanisms.

Consequently, the proposed methodological framework addresses three interconnected scientific and practical objectives: *first*, it facilitates the operationalization of the abstract construct of "proactivity" through a coherent system of quantitative dimensions; *second*, it in-

tegrates managerial time horizons by reconciling short-term operational efficiency with long-term strategic potential; *third*, it establishes a foundation for systemic resilience by embedding mechanisms for assessing robustness against exogenous shocks directly into the performance calculus.

The architectonics of this methodological framework is predicated upon a three-dimensional matrix that decomposes marketing activity into three strategic performance indicators tailored for the IT sector: ***Market foresight, market shaping, and business resilience***. This architecture encapsulates the logic of the transition from the analytical conceptualization of prospective opportunities to the active orchestration of the market environment and the preservation of long-term organizational viability within highly turbulent ecosystems.

- ***the market foresight*** indicator reflects the cognitive capacity of the performance assurance system to precede external environmental dynamics. Within the digital economy – characterized by truncated product lifecycles and the escalating cost of strategic fallibility – the aptitude for identifying latent demand and accurately interpreting weak market signals constitutes a critical intangible asset. Methodologically, this dimension is oriented toward the quantification of uncertainty and the assessment of managerial expectation precision. It addresses the fundamental inquiry: "*To what extent does the system adequately perceive prospective market shifts, and what is its degree of readiness for their operationalization*?" The metrics within this block evaluate the quality of predictive analytics and the reliability of forecasts that underpin investment and product-related decisions;

- ***the market shaping*** indicator captures the active, transformational role of marketing. Diverging from adaptive models, the proactive approach entails not merely a reaction to market fluctuations but the purposeful modification of the market landscape. Methodologically, this dimension represents a transition from the exploitation of extant niches to the architecture of novel markets and value propositions. If the Market Foresight vector functions as the system's "*sensory apparatus*", the Market Shaping vector serves as its "*operational instrument*". This dimension evaluates the organization's capacity to generate demand for products and solutions for which consumer needs remain unarticulated, while simultaneously sustaining established relationships over the long term;

- ***the business resilience*** indicator ensures the homeostasis of the proactive marketing system. High levels of short-term effectiveness lose managerial relevance should the system collapse under the weight of exogenous shocks, such as technological disruptions, regulatory shifts, or geopolitical crises. Methodologically, this dimension integrates risk management instrumentation into marketing analytics, facilitating the assessment of the structural reliability of revenue streams and the efficiency of resource utilization. In this context, business resilience functions as the "immune system" of proactive marketing, guaranteeing not only organizational survival but also the capacity for development amidst pervasive uncertainty.

The pivotal component of the methodological framework comprises the development indicators of the ***proactive marketing effectiveness assurance system***. Unlike conventional performance metrics, these indicators characterize the system's inherent capacity for self-adjustment, organizational learning, and strategic adaptation within dynamic environments.

The development of the proactive marketing effectiveness assurance system is framed as a multi-stage methodological procedure predicated on the paradigm of indicator dualism. This framework integrates both leading and lagging indicators into a centralized architecture for proactive governance and strategic performance verification. According to the proposed logic, this dualistic nature extends beyond the metric selection, manifesting within the systemic evolution process itself, which involves the following interrelated phases:

Phase 1. Constructing a framework of dual proactive marketing performance indicators, which entails identifying a pair of complementary metrics – leading and lagging – for every strategic trajectory.

Phase 2. Methodological interpretation and calibration of these dual indicators throughout the management cycle, involving the alignment of operational managerial actions informed by leading indicators with a retrospective analysis of historical performance.

Phase 3. Diagnostic evaluation of the proactive marketing effectiveness assurance system's states, based on analyzing the interaction patterns between leading and lagging indicators to ascertain the system's maturity, adaptability, and structural resilience in a dynamic context.

Table 1 operationalizes the principle of indicator dualism, whereby each strategic trajectory is assessed through a dyad of complementary metrics: ***a leading indicator*** utilized for proactive process governance and a ***lagging indicator*** employed to validate economic outcomes and refine strategic premises. This integrated approach facilitates the execution of the system's development function, as leading indicators serve as instruments of managerial intervention, while lagging indicators function as mechanisms for systemic learning and strategic autonomous calibration.

To operationalize the development function within the proactive marketing effectiveness assurance system, the managerial interpretation of indicators is paramount, as it facilitates the conversion of measurement outcomes into a substantive basis for strategic decision-making. This interpretive process entails defining specific target ranges and critical thresholds that serve as actionable triggers for managerial intervention. Table 2 provides a systematic overview of the methodological interpretation of key indicators as aligned with the development logic of the proactive marketing system.

The pragmatic utility of the introduced methodological framework is actualized through the interpretation not of isolated metric values, but rather of coherent configurations of leading and lagging indicators that encapsulate the system's diagnostic states. Such an analytical perspective facilitates the identification of not merely current performance levels, but also structural disequilibrium among innovative engagement, operational execution, and financial realization – a capability of fundamental significance for the development of the proactive marketing system. The structural rationale of the proposed diagnostic state matrix conceptually builds upon classical portfolio analysis paradigms (notably, the

Table 1

The proactive marketing performance development indicator system

Indicator			Formula	Methodological interpretation
Market foresight	Leading	Sales Pipeline Coverage Ratio (SPCR)	$SPCR = \frac{\sum_{i=1}^{n} VV_{oppi} \cdot P_{win}}{TR_{target}} V$	Delineates the "safety buffer" of prospective sales. It represents the ratio of potential pipeline opportunities to projected financial targets [20]
	Lagging	Forecast-to-Actual Revenue Alignment (FARA)	FARA = 1 – \frac{	Evaluates the integrity of the corporate analytical framework. It illustrates the degree of variance between realized outcomes and projections, thereby ascertaining the robustness of the planning infrastructure (Hyndman R. J., Athanasopoulos G., 2021)
Market shaping	Leading	New Revenue Pipeline Ratio (NRPR)	$NRPR = \frac{\Sigma V_{new_market}}{\Sigma V_{total\ pipe}}$	Quantifies the share of prospective revenue derived from innovative products or untapped markets. It serves as a diagnostic indicator of activity in the orchestration of "blue oceans" [21]
	Lagging	Customer Lifetime Value (CLV)	$CLV = \sum_{t=1}^{t} \frac{(R_t - C_t}{(1+d)^t} - CAC$	A comprehensive evaluation of longitudinal customer equity. It corroborates the financial viability of retention architectures and the structural depth of established relationship dynamics [22]
Business resilience	Leading	Revenue Diversification Ratio (RDR)	$RDR = \frac{1}{HHI} = \frac{1}{\sum_{n=1}^{n} S_i^2}$	Assesses the degree of revenue portfolio diversification, determining the structural robustness of the business against the loss of individual accounts or market segments [23]
	Lagging	Return on Marketing Investment (ROMI)	$ROMI = \frac{GM_{attr} - E_{mkt}}{E_{mkt}} \cdot 100\ \%$	A financial benchmark of investment efficacy. It illustrates the system's proficiency in yielding returns on allocated resources through a retrospective lens (Farris, P. W., Bendle, N. T., Pfeifer, P. E., Reibstein, D. J., 2021)

BCG matrix), yet fundamentally reconfigures their substantive foundation. Deviating from conventional models predicated on static market metrics – such as market share and growth velocity – the advanced matrix is anchored in the axes of temporal dualism: the leading capacity for potential generation and the lagging capacity for financial extraction. This methodology permits the evaluation of the dynamic resilience inherent within the entire marketing system, transcending the static assessment of individual products or business trajectories. Table 3 systematizes the core diagnostic patterns and delineates the corresponding managerial logic governing their interpretation.

The delineated methodological framework operates not as a mechanism of static reporting, but rather as a cyclical governance apparatus for the development of the proactive marketing system, sequentially integrating predictive modeling, outcome validation, and strategic recalibration. The synthesis of dual indicators and diagnostic patterns facilitates a paradigm shift from retrospective performance appraisal toward the proactive governance of future efficacy. This structural evolution permits the conceptualization of the system not merely as an instrument of control, but as a primary driver for strategic advancement and the fortification of business model resilience.

To empirically validate the scientific hypothesis concerning the efficacy of the formulated methodological framework and the introduced system of leading indicators (SPCR, NRPR, RDR), a retrospective analysis encompassing the operational dynamics of prominent technology enterprises during the 2023–2025 longitudinal period was executed. This empirical approbation is oriented toward delineating the correlational nexus between the magnitudes of leading indicators – specifically within the domains of market anticipation and proactive market shaping – and the sustained trajectory of corporate financial outcomes.

The empirical verification of the "***Market Foresight***" construct was executed utilizing the ***Sales Pipeline Coverage Ratio (SPCR)*** metric cluster, drawing upon the published financial disclosures of ***HubSpot*** [23]. Within the enterprise's internal methodological framework, the "*Calculated Billings*" metric exhibits functional equivalence to the SPCR indicator conceptualized by the author, as it serves as a primary leading indicator for projected revenue streams. Fig. 1 delineates the dynamic interrelation between the growth trajectories of *Calculated Billings* and the organization's realized revenue, thereby facilitating a robust empirical assessment of the capacity inherent in leading indicators to accurately forecast subsequent financial efficacy.

As indicated by the data delineated in the graphical representation, the trajectories of the leading indicator and the lagging financial outcome exhibit robust structural congruence. In 2024, a 21 % augmentation in the *Calculated Billings* metric (expressed in constant currency) established a substantive empirical foundation for the precise prognostication of future revenue streams. This leading growth was accompanied by a commensurate expansion in ***HubSpot's*** aggregate revenue, which culminated at an equivalent threshold of 2.63 billion USD. Such a dynamic explicitly corroborates the inherent capacity of leading indicators to accurately encapsulate and project the prospective financial efficacy of the enterprise.

Table 2

Methodological interpretation of key indicators within the proactive marketing development system

Indicator	Interpretation	Managerial Implications
SPCR (Sales Pipeline Coverage Ratio)	Critical state (Pipeline volume is insufficient to mitigate deal attrition risks): $SPCR < 3.0x$ Optimal state (Balanced strategic buffer): $3.0x \leq SPCR \geq 5.0x$ Excessive state (Suboptimal lead qualification or "sandbox" effect): $SPCR > 5.0x$	If this threshold is reached, an immediate intensification of top-of-funnel lead generation investment is imperative; otherwise, a liquidity deficit in subsequent operational cycles becomes unavoidable
FARA (Forecast-to-Actual Revenue Alignment)	Low precision (Planning volatility): $FARA < 0.85$ (variance >15 %) Acceptable accuracy (Functional uncertainty threshold): $0.85 \leq FARA < 0.95$ High precision (Controlled operational environment): $FARA\ 0.95 \leq$ (variance 5 %)	A variance exceeding the 15 % threshold – regardless of its directionality – signifies a fundamental deficit in comprehending the underlying demand drivers. Such conditions necessitate the recalibration of predictive scoring frameworks utilized for deal probability assessment
NRPR (New Revenue Pipeline Ratio)	Stagnation (Reliance on legacy assets): $NRPR < 15\ \%$ Development (Moderate portfolio revitalization): $15\ \% \leq NRPR < 30\ \%$ Aggressive expansion (Proactive market shaping): $NRPR \geq 30\ \%$	A decline below the 15 % threshold precipitates a state of strategic vulnerability for the enterprise: the profit margins of legacy products undergo progressive erosion, whereas novel market offerings remain undeveloped. This condition necessitates an immediate reallocation of financial resources toward research and development (R&D) alongside product marketing initiatives
CLV:CAC Ratio (as part of the CLV)	Unprofitability (Each marginal client generates a net deficit): $CLV : CAC < 1 : 1$ Vulnerability risk (Suboptimal recoupment and heightened susceptibility to environmental shifts): $1 : 1 \leq CLV : CAC < 3 : 1$ Efficacy (Alignment with the industry standard for operational performance): $CLV : CAC \geq 3 : 1$	A ratio falling below the 3:1 threshold dictates an imperative to either decrease customer acquisition costs (through marketing channel optimization) or augment the Customer Lifetime Value (via the implementation of upselling and cross-selling strategies, alongside the enhancement of retention rates)
RDR (Revenue Diversification Ratio)	Elevated risk (Overdependence on a concentrated base of one or two major accounts): $RDR < 0.6$ Moderate diversification: $0.6 \leq RDR < 0.8$ Robust resilience (The attrition of any single client does not precipitate a systemic crisis) $RDR \geq 0.8$	A diminished ratio signifies the structural fragility of the business model. The primary strategic imperative necessitates expansion into novel industry verticals or geographic domains to systematically dilute the revenue concentration of dominant accounts
ROMI (Return on Marketing Investment)	Inefficacy (Marketing investments fail to achieve financial recoupment): $ROMI < 100\ \%$ Break-even equilibrium: $ROMI \approx 100\ \%$ High profitability (Target benchmark for mature SaaS/IT enterprises): $ROMI \geq 500\ \%$ (5:1)	A depressed value occurring alongside elevated proactive metrics (SPCR/NRPR) signifies the presence of "cost-intensive innovations". This condition necessitates the systematic optimization of the sales funnel and the enhancement of conversion rates

Table 3

The diagnostic state matrix of the performance assurance system

Diagnostic Pattern	Configuration of Leading and Lagging Indicators	System State Interpretation	Managerial Implications
"Innovator's Trap"	Elevated SPCR and NRPR metrics; Depressed FARA and ROMI metrics	The enterprise generates a substantial volume of market opportunities and innovations yet lacks the capacity to effectively convert them into financial outcomes. The fundamental issue resides in a pronounced operational execution gap or excessive acquisition costs	A strategic pivot toward conversion enhancement and cost optimization. Recalibration of lead scoring frameworks is required to augment FARA
"Inertial Growth"	Depressed SPCR and NRPR metrics; Elevated CLV and ROMI metrics	Financial success is driven by the exploitation of legacy assets (a "cash cow" scenario). High current operational efficiency obscures an underlying deficit in future potential. This poses a severe risk of strategic collapse within 1–2 operational cycles	Urgent capital allocation toward R&D and the marketing of novel niches. The establishment of an NRPR target (representing the revenue share from new products) as a primary KPI is imperative
"Fragile Efficiency"	Elevated FARA and ROMI metrics; Depressed RDR metric	The organization operates with precision and efficiency but relies heavily on a narrow client base or a singular market. Any exogenous shock could prove fatal to the business model	Portfolio diversification. It necessitates the deliberate sacrifice of a portion of short-term ROMI to penetrate new market segments, thereby elevating the RDR
"Balanced Development"	Metrics across all categories reside within established target ranges	The system operates harmoniously: innovations are successfully validated by the market, and systemic risks are adequately diversified	Scaling of successful operational practices and a transition toward a strategy of aggressive expansion

The accrued empirical evidence corroborates that the systematic surveillance of the strategic buffer within the sales pipeline establishes a fundamental premise for attenuating the discrepancies between projected and realized performance metrics. This attenuation is inextricably linked to the escalation of the *Forecast-to-Actual Revenue Alignment (FARA)* indicator. Such an interrelation, in turn, catalyzes an elevated degree of enterprise predictability, functioning as a quintessential precondition for the efficacious implementation of proactive marketing governance.

The empirical validation of the "***Market shaping***" construct was conducted as the next phase of the study. The efficacy inherent in the Market Shaping vector and its corresponding metric, the *New Revenue Pipeline Ratio (NRPR)*, was critically examined through the lens of the product strategy deployed by ***Ajax Systems*** [25]. Governed by the parameters of the advanced methodological framework, sustained and scalable corporate growth is strictly predicated on the systematic generation of nascent revenue channels, a condition satisfied via the rigorous market introduction of novel products and solutions.

Fig. 2 provides a visual representation of the correlational nexus between the velocity of novel product introductions and the commensurate expansion of the corporate product portfolio. This empirical visualization substantiates the instrumental role of proactive *Market Shaping* in accumulating the latent capacity for future revenue generation. The derived empirical findings corroborate the methodological validity of employing the *NRPR* metric as a foundational leading indicator for the conceptualization of emerging markets and the facilitation of sustainable, long-term corporate expansion.

The accelerated cadence of product launches – evidenced by an escalation from 29 iterative releases in 2023 to 100 in 2025 – functioned as the primary catalyst for the substantial augmentation of ***Ajax Systems'*** product portfolio, culminating in a comprehensive matrix of 280 distinct offerings. The generated empirical outcomes elucidate that elevated magnitudes of the *NRPR* indicator, which denote the ascending share of novel products within the architecture of prospective revenues, establish the indispensable prerequisites for scaling the product ecosystem and executing successful

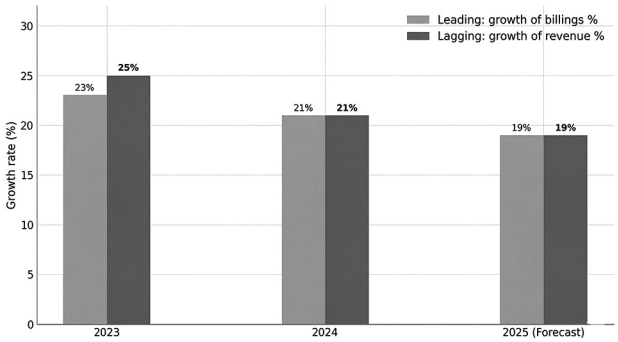

Fig. 1. An empirical illustration of the structural nexus between leading and lagging indicators (The HubSpot Case)

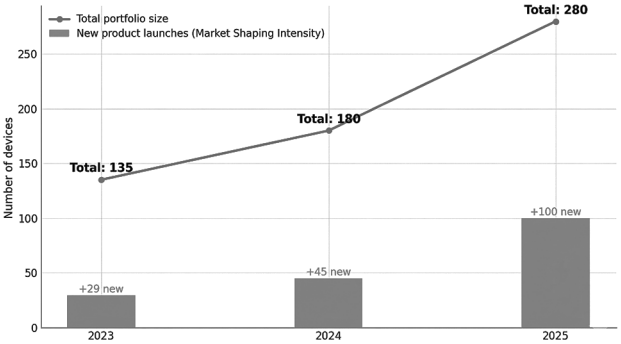

Fig. 2. The dynamics of product portfolio expansion as an empirical manifestation of Market Shaping intensity (The Ajax Systems Case)

market penetration strategies under conditions of rigorous global competition.

Verification of the "***Business resilience***" vector. Within the architecture of the digital economy, the resilience vector exhibits a fundamentally dualistic ontology, predicated upon the enterprise's concurrent capacity to retain both human and client capital. Contextualized within this paradigm, the empirical approbation of the formulated model – leveraging the ***SoftServe*** enterprise as an analytical exemplar – facilitates the critical examination of human capital loyalty as a prospective leading determinant of operational business stability [25].

Specifically, the *employee Net Promoter Score* (*eNPS*) is conceptualized as a leading indicator, whereas parameters of operational stability and client retention function as lagging indicators that encapsulate the longitudinal manifestation of managerial interventions. Fig. 3 illustrates a synthesized analysis of SoftServe's *eNPS* trajectory in juxtaposition with the industry-wide benchmark for the 2023–2025 period, demonstrating the structural alignment between its variance and the *Client Retention Rate.*

An examination of the temporal dynamics delineated in Fig. 3 facilitates the extraction of two cardinal managerial and diagnostic deductions concerning the interplay between the leading and lagging indicators of corporate resilience.

1. ***The cultivation of a "Resilience buffer".*** SoftServe's *eNPS* metric manifests a robust affirmative trajectory – evidencing an escalation from 68 to 72 points – and substantially surpasses the industry-wide benchmark, which stagnates at approximately 56 points. This pronounced differential signifies the materialization of a structural "resilience buffer" within the human capital ecosystem, a strategic reserve that significantly mitigates corporate vulnerability to exogenous shocks and operational hazards over the medium-term horizon.

2. ***The congruence of leading and lagging indicators.*** The accrued empirical data delineate a persistent structural alignment between the trajectory of human capital loyalty and the corresponding metrics of client retention. The progressive escalation of the *eNPS* (graphically represented by the dark-grey columns) is inextricably accompanied by an augmentation in the *Client Retention Rate* (denoted by the black trendline), which expanded from an initial baseline of 89 to 95.8 % throughout the longitudinal parameters of the study. This specific configuration of leading and lagging indicators

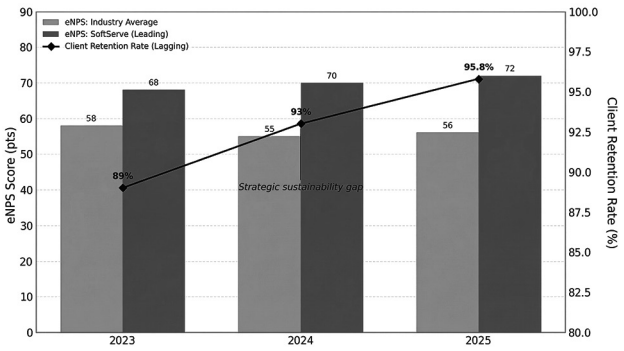

Fig. 3. The structural congruence between the dynamics of personnel loyalty (eNPS) and the stability of the client base (The SoftServe Case)

warrants the interpretation of workforce engagement and structural team stability as a paramount precondition for sustaining the client base and preserving the operational resilience of the enterprise amidst conditions of macroeconomic volatility.

Discussion. The research outcomes are structurally congruent with theoretical postulates delineating the evolutionary trajectory of marketing orientation – from a reactive to a proactive paradigm. Furthermore, they align with contemporary methodologies for efficacy measurement within the digital economy, an environment wherein the strategic prominence of leading indicators is systematically escalating. The advanced methodological framework – which integrates ***leading*** and ***lagging*** metrics across the three cardinal dimensions of market anticipation, market shaping, and business resilience – demonstrates robust applied validity. This validity is substantiated through the operational analysis of enterprises that systematically deploy advanced analytics, continuous innovation, and structural diversification as primary instruments for sustainable, long-term development.

The acquired empirical results corroborate the methodological imperative to transition from the retrospective surveillance of marketing performance toward the strategic utilization of indicators fundamentally oriented toward prospective growth potential. Specifically, the ***HubSpot*** case study elucidates that the continuous advancement of predictive analytics and comprehensive sales pipeline evaluation systems significantly catalyzes the enhancement of corporate predictability. The dynamic escalation of the enterprise's revenue – from 883 million USD in 2020 to 2.63 billion USD in 2024 – coupled with the augmentation of the net *revenue retention metric* to 104 % in the fourth quarter of 2024 [23], is strictly congruent with the operational logic governing the measurement of market anticipation within the proposed model. Consequently, this structural alignment warrants the interpretation of leading indicators not merely as prognostic instruments, but as substantive mechanisms for the systematic mitigation of strategic uncertainty.

The theoretical postulate asserting that a proactive marketing orientation necessitates an enterprise's capacity not merely to react to nascent market fluctuations, but to actively engineer novel segments and proprietary revenue streams, finds robust empirical reflection within the analytical outcomes of market-shaping strategies.

Particular analytical scrutiny within this discourse must be allocated to the dimension of corporate resilience. Contemporary frameworks for ensuring marketing efficacy must encapsulate not exclusively the quantitative metrics of growth, but equally the organizational capacity to sustain operational equilibrium within environments characterized by severe turbulence. The empirical analysis of ***SoftServe's*** operational dynamics throughout the 2022–2024 longitudinal period substantiates that the augmentation of its international footprint, the concurrent expansion of its client base, and the systemic scaling of operations across North America, the European Union, and Latin America are intrinsically coupled with an escalated degree of revenue diversification [25]. This trajectory exhibits strict struc-

tural alignment with the conceptual paradigm of evaluating corporate resilience via the *RDR* and *ROMI* indicators. Consequently, this alignment permits the interpretation of resilience not as a stochastic occurrence, but as the direct manifestation of a systemic, proactive policy strategically calibrated for long-term organizational stability, superseding the conventional prioritization of transient operational efficiency.

A comprehensive synthesis of the derived empirical outcomes facilitates the articulation of the following cardinal theoretical postulates:

1. A proactive marketing orientation establishes the foundational prerequisites for elevating organizational innovativeness and securing sustained, long-term performance, demonstrating distinct superiority over reactive operational paradigms.
2. Leading indicators function as a paramount governance instrument within the architecture of the digital economy, empirically enabling the prognostication of prospective market dynamics and the systematic attenuation of strategic uncertainty.
3. The structural integration of leading and lagging metrics into a cohesive, complex adaptive system constitutes an indispensable precondition for the strategically substantiated governance of marketing efficacy.
4. Market anticipation, proactive market shaping, and business resilience operate as deeply interconnected constituents within the efficacy development apparatus, structurally mirroring the evolutionary logic of contemporary enterprises navigating the digital milieu.

Consequently, the synthesized theoretical postulates, corroborated by the empirical outcomes of the case analyses, decisively validate the methodological imperative to transition toward a proactive logic in the measurement of marketing efficacy. Furthermore, they robustly substantiate the heuristic value inherent in the advanced conceptual framework for developing a performance assurance system tailored to the exigencies of the digital economy.

Conclusions. The digital economy engenders a novel logic for the conceptualization and measurement of market value, fundamentally pivoting the marketing focus from mere adaptation to pre-existing demand toward proactive anticipation and the aggressive shaping of nascent markets. Within an ecosystem where strategic decision-making is increasingly predicated upon data analytics, artificial intelligence algorithms, and digital platforms, the competitive advantage of an enterprise is dictated not primarily by its reactive velocity, but rather by its intrinsic capacity to systematically engineer prospective developmental trajectories.

This manuscript substantiates the critical imperative to transition from a retrospective, KPI-oriented paradigm of marketing efficacy appraisal toward the conceptualization of a proactive marketing performance assurance system, structured as a continuous, strategically oriented developmental process. It is methodologically expedient to conceptualize the efficacy of proactive marketing not merely as a terminal outcome, but as the systemic capacity for the continuous reproduction of future market value. A conceptual methodological framework has been devised, unifying the three cardinal dimensions of proactive marketing: Market Foresight, Market Shaping, and Business Resilience. Within the parameters of this framework, a system of dual indicators is introduced, integrating leading (*SPCR, NRPR, RDR*) and lagging (*FARA, CLV, ROMI*) metrics to ensure strict temporal congruence between managerial interventions and their consequent economic outcomes. The leading indicators execute the function of instruments for proactive governance and the engineering of prospective demand, whereas lagging indicators perform the critical function of validation and systemic strategic learning. Furthermore, a matrix of diagnostic patterns is advanced, facilitating the precise identification of structural disequilibria among innovative engagement, operational execution, and terminal financial realization.

Empirical approbation, executed utilizing the operational context of IT enterprises, robustly corroborated the existence of a persistent structural nexus between the dynamic trajectories of leading indicators and subsequent financial outturns. This substantiates their inherent prognostic value and validates the necessity of their integration within strategic marketing governance architectures. Consequently, the proposed methodological approach orchestrates a transition from the fragmented measurement of marketing efficacy toward its systemic development – a paradigm rigorously oriented toward the generation, capitalization, and continuous reproduction of prospective market value. This framework ultimately establishes a robust methodological foundation for elevating the long-term strategic competitiveness of enterprises operating within the IT sector.

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Девелопмент системи забезпечення ефективності проактивного маркетингу в IT-секторі

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Мета. Розроблення й обґрунтування концептуального підходу до девелопменту системи забезпечення ефективності проактивного маркетингу в IT-секторі та формування методологічної рамки ефективності вимірювання на основі інтеграції випереджальних і запізнілих індикаторів.

Методика. Дослідження ґрунтується на синтезі теорії динамічних здібностей і концепції складних адаптивних систем, що дає змогу розглядати маркетингову систему як динамічну багаторівневу структуру. Тривимірну архітектуру оцінювання сформовано на основі концептуального моделювання. Емпіричну складову дослідження забезпечено через кейс-стаді, порівняльний і кореляційний аналіз даних глобальних технологічних компаній (*Hubspot, ajax Systems, Softserve*) за період 2023–2025 рр.

Результати. Обґрунтована обмеженість використання традиційних ключових показників ефективності проактивних маркетингових стратегій. Запропонована комплексна модель, що інтегрує дуальні пари індикаторів: *SPCR–FARA* (ринкове передбачення), *NRPR–CLV* (формування ринку) та *RDR–ROMI* (стійкість бізнесу). Розроблена матриця діагностичних патернів («пастка інноватора», «інерційне зростання», «крихка ефективність», «збалансований девелопмент») для ідентифікації структурних дисбалансів у системі показників маркетингової ефективності. Емпірично підтверджена наявність кореляції між зростанням випереджальних показників (запас міцності пайплайну, частка нових продуктів, рівень лояльності персоналу) та майбутньою фінансовою результативністю компаній.

Наукова новизна. Уперше обґрунтована концепція девелопменту системи ефективності як процесу стратегічного проєктування й поступової трансформації, на відміну від ретроспективного контролінгу. Запропонована архітектура вимірювання, побудована на принципі часового дуалізму індикаторів, що дозволяє управляти майбутньою ринковою цінністю IT-компанії.

Практична значимість. Розроблений інструментарій дозволяє менеджменту IT-компаній знижувати стратегічну невизначеність через підвищення точності прогнозування, обґрунтовувати інвестиції в інновації та забезпечувати резильєнтність бізнес-моделей в умовах турбулентності цифрової економіки.

Ключові слова: *проактивний маркетинг, IT-сектор, цифрова економіка, ефективність маркетингу, девелопмент, стійкість бізнесу*