

Designing a Data-Driven Market Orientation Framework for Enhancing Competitive Advantage in the Iraqi Banking Sector: Evidence from Al-Rasheed Bank

1. Naseem. Hussein Ali¹: Ph.D Student in Finance– Banking, Aras International Campus, University of Tehran, Jolfa, Iran, and Ministry of Education, Iraq.
2. Ali. Sour²: Associate Professor of Theoretical Economics, Faculty of Economics, University of Tehran, Tehran, Iran.
3. Ezatollah. Abbasian³: Professor of Financial Economics, Department of Financial Engineering, Faculty of Management, University of Tehran, Tehran, Iran.

*corresponding author's email: e.abbasian@ut.ac.ir

ABSTRACT

This study aimed to design and empirically validate a data-driven market orientation framework for enhancing competitive advantage in the Iraqi banking sector, with particular emphasis on Al-Rasheed Bank. The study employed a causal-explanatory, longitudinal mixed-method design centered on quantitative panel-data analysis and supported by qualitative expert validation. The quantitative dataset comprised 327 bank-year observations from 24 licensed Iraqi commercial banks over 2010–2024, with Al-Rasheed Bank serving as the focal institutional case. Market orientation, customer satisfaction, customer loyalty, digital engagement, operational efficiency, competitive advantage, and financial performance were derived from audited financial statements, Central Bank of Iraq reports, and recognized financial databases, while macroeconomic controls included GDP growth, inflation, exchange-rate volatility, and oil-price changes. Fixed Effects, Random Effects, and System GMM models were estimated, complemented by mediation, moderation, Random Forest, and Gradient Boosting analyses. Eighteen banking and regulatory experts provided contextual validation. Fixed Effects results showed that market orientation significantly predicted competitive advantage ($\beta = 0.283$, $p < .001$), followed by operational efficiency ($\beta = 0.224$, $p < .001$), customer satisfaction ($\beta = 0.176$, $p < .001$), customer loyalty ($\beta = 0.152$, $p < .001$), and digital engagement ($\beta = 0.118$, $p = .002$). System GMM confirmed these effects, with market orientation remaining significant after controlling for lagged competitive advantage ($\beta = 0.241$, $p < .001$). The total effect of market orientation on competitive advantage was significant ($\beta = 0.431$, $p < .001$), with a significant total indirect effect ($\beta = 0.224$, $p < .001$). Digital engagement positively moderated the market orientation–competitive advantage relationship ($\beta = 0.137$, $p = .001$). Gradient Boosting achieved the strongest predictive performance (test $R^2 = 0.779$), and market orientation ranked as the most influential predictor. Competitive advantage in Iraqi banking is strengthened when market orientation is integrated with customer-centered capabilities, digital engagement, and operational efficiency, indicating that Al-Rasheed Bank can improve strategic performance through an enterprise-wide, analytically supported market intelligence system.

Keywords: Market Orientation; Data-Driven Marketing; Competitive Advantage; Digital Engagement; Operational Efficiency; Customer Loyalty; Iraqi Banking Sector; Al-Rasheed Bank



Article history:
Received 05 May 2026
Revised 05 September 2026
Accepted 11 September 2026
Initial Publish 24 October 2026
Published online 01 November 2027

How to cite this article:

Hussein Ali, N., Sour, A., & Abbasian, E. (2027). Designing a Data-Driven Market Orientation Framework for Enhancing Competitive Advantage in the Iraqi Banking Sector: Evidence from Al-Rasheed Bank. *Journal of Management and Business Solutions*, 5(6), 1-25. <https://doi.org/10.61838/jmbs.424>



Introduction

The banking industry has entered a period in which competitive advantage increasingly depends on the capacity to transform heterogeneous streams of market, customer, operational, and financial data into timely strategic intelligence. Traditional approaches to market orientation primarily emphasized systematic attention to customer needs, competitor behavior, and interfunctional coordination; however, digitalization has expanded both the volume and velocity of information available to organizations and has consequently altered the mechanisms through which market-oriented behavior can generate superior performance. In contemporary service environments, organizations are no longer evaluated only according to whether they collect market information, but also according to how effectively they integrate that information, extract actionable insights from it, and convert those insights into responsive products, personalized interactions, operational improvements, and strategic decisions. This shift has encouraged the development of data-driven marketing and management approaches in which decision-making is supported by advanced analytics, digital platforms, artificial intelligence, and increasingly integrated information systems. Recent research accordingly portrays data-driven marketing as a strategic architecture in which organizational knowledge, digital infrastructure, analytical capabilities, and market responsiveness become mutually reinforcing rather than independent organizational functions (1, 2).

Data-driven market orientation can therefore be understood as an extension of conventional market orientation in which customer and competitor intelligence is generated, interpreted, and acted upon through systematic exploitation of structured and unstructured data. The importance of this transition lies in the limitations of managerial intuition when firms operate in volatile, information-rich, and rapidly changing markets. Data-supported decision processes can improve segmentation, predict changes in customer behavior, identify emerging service requirements, optimize resource allocation, and reveal nonlinear patterns that would be difficult to detect through conventional managerial observation alone. At the same time, excessive reliance on automated and purely quantitative decision processes can create new strategic problems if data are disconnected from human judgment, institutional knowledge, ethical considerations, or contextual understanding. Intelligent marketing therefore requires an appropriate balance between analytical evidence and managerial experience rather than indiscriminate replacement of human expertise by technological systems (3). Similar evidence from data-driven decision environments demonstrates that the strategic value of information is realized when analytics is embedded within organizational processes that convert evidence into concrete market actions rather than when organizations simply increase the volume of data available to decision-makers (4).

Artificial intelligence has further accelerated this development by allowing firms to conduct more sophisticated prediction, personalization, pattern recognition, and real-time optimization. AI-based marketing systems can process customer histories, behavioral information, transaction patterns, preferences, and digital traces to generate increasingly individualized recommendations and communication strategies. Such capabilities can improve the relevance of marketing initiatives while simultaneously reducing the latency between changes in customer behavior and organizational response. Nevertheless, effective AI-supported marketing depends on data quality, governance, interpretability, privacy protection, and ethical use because technically sophisticated personalization may become strategically counterproductive when customers perceive surveillance, opacity, or unfair treatment. Contemporary research therefore increasingly treats data-driven marketing as both a technological and governance problem. Mathew argues that the reinvention of marketing through artificial intelligence requires the combination of analytical

sophistication with ethical and customer-centered implementation, particularly when personalization is used to shape consumer experiences (5). Evidence from personalized marketing research similarly indicates that deep-learning systems can identify complex customer patterns and improve individualized targeting, but their practical effectiveness depends on appropriate data integration and deployment within broader marketing strategy (6). Applications in other digital contexts likewise demonstrate that data-driven personalization can improve the precision and adaptability of market offerings when firms systematically connect customer data to marketing decisions (7).

These issues are particularly important for banking because banks produce exceptionally rich data through transactions, customer accounts, digital interactions, credit activities, payment systems, branch operations, service complaints, and risk-management processes. The banking organization is therefore simultaneously a financial intermediary and an information-intensive service institution. Market orientation in banking depends not only on understanding expressed customer preferences but also on identifying behavioral changes that may be visible in transactional and digital data before customers explicitly communicate them. Data-driven analysis may help banks detect changes in product usage, customer attrition risk, cross-selling opportunities, service bottlenecks, and emerging market segments. Customer loyalty can also be strengthened when analytical systems support more relevant, convenient, and personalized services. Evidence regarding data-driven marketing strategy shows that optimization based on customer information can promote loyalty by improving the alignment between market offerings and behavioral patterns (8). This relationship is highly consequential in banking, where the value of individual customers often develops over long periods and where switching behavior, trust, convenience, service quality, and perceived responsiveness jointly influence relationship continuity.

The emergence of digital banking further strengthens the connection between data use and market orientation. Mobile banking, online platforms, electronic payments, digital customer service, and automated financial products do more than introduce new delivery channels; they create continuous informational interfaces between banks and their customers. These channels increase the amount of behavioral data available to banks while also raising customer expectations regarding speed, accessibility, personalization, and responsiveness. In emerging markets, however, data-driven transformation is rarely determined by technology alone. It also requires organizational learning, strategic flexibility, management commitment, and the capacity to reconfigure resources around emerging market information. Research on retail banking in emerging-market environments conceptualizes data-driven dynamic capabilities as an important mechanism through which banks can convert digital transformation into organizational adaptation and strategic renewal (9). This perspective is especially relevant for banking systems in which institutions differ substantially in technological maturity, legacy processes, managerial capabilities, and customer structures.

A data-driven orientation also has implications beyond conventional marketing because analytical capabilities increasingly interact with governance, security, fraud control, and institutional trust. As banks expand digital services and use data for strategic purposes, they must simultaneously create governance arrangements capable of ensuring appropriate access, security, privacy, accountability, and compliance. Comparative work on digital governance shows that national and institutional digital strategies are increasingly shaped by the interdependence of technological innovation, data governance, marketing practices, and privacy considerations (10). In financial environments, this requirement becomes particularly significant because customer data frequently include sensitive identity, payment, credit, and transaction information. Advanced data analytics can also strengthen financial fraud

detection, demonstrating that the same informational infrastructure that supports marketing decisions can contribute to risk management and institutional resilience (11). Accordingly, an effective data-driven market orientation framework for banking must not conceptualize analytics exclusively as a promotional function; instead, it should recognize the interconnected roles of data in customer understanding, risk control, operational efficiency, service innovation, and strategic governance.

Another important dimension concerns the behavioral complexity of financial decision-making. Customers, investors, and financial-market participants do not always respond in accordance with purely rational models, and large-scale behavioral data can reveal patterns associated with biases, sentiment, uncertainty, and context-dependent decision processes. Research examining big-data applications in behavioral economics has emphasized the capacity of data analytics to identify decision biases and behavioral regularities in financial markets (12). Similarly, evidence from post-COVID financial markets demonstrates that data-driven analysis can capture market dynamics, investor sentiment, and behavioral characteristics that contribute to variations in financial outcomes (13). Although retail and commercial banking differs from securities markets, these findings are conceptually relevant because they demonstrate that behavioral information can contain strategically important signals that are not adequately represented by conventional financial indicators. For banks, the incorporation of behavioral data into market orientation may therefore improve understanding of customer responses to economic uncertainty, digital services, pricing decisions, credit conditions, and changing expectations.

The strategic significance of market orientation ultimately depends on whether it contributes to sustainable competitive advantage. Prior research has repeatedly linked market-oriented behavior to superior organizational outcomes because organizations that more accurately understand customers and competitors are better positioned to differentiate offerings, allocate resources efficiently, innovate appropriately, and respond to environmental change. Studies of smaller and emerging-market organizations demonstrate that market orientation can contribute significantly to competitive advantage when it is combined with complementary strategic capabilities (14). Research on green marketing orientation similarly shows that market-oriented strategic configurations can influence competitive positioning and marketing performance (15). In addition, digital marketing, entrepreneurial orientation, and innovation have been associated with stronger competitive advantage and improved marketing performance, indicating that market orientation is often most effective when integrated with broader organizational capabilities rather than implemented as an isolated philosophy (16). Evidence from MSMEs also supports a mechanism in which market orientation and innovation enhance business performance through competitive advantage, reinforcing the idea that competitive advantage can function as an important intermediary outcome between strategic orientation and final organizational performance (17).

The same principle is evident in research emphasizing the role of institutional and organizational moderators. Competitive advantage emerges not only from the possession of market knowledge but from the organization's capacity and willingness to act on that knowledge. Institutional pressures, managerial commitment, organizational structures, and strategic readiness can strengthen or constrain the effectiveness of market-oriented strategies. Research examining institutional pressure and market orientation has shown that managerial commitment can play an important role in transforming strategic orientation into competitive advantage (18). Similarly, research on strategic orientations in emerging markets indicates that organizational ambidexterity and readiness for Industry 4.0 can facilitate the conversion of strategic orientation into sustainable competitive advantage (19). These findings suggest that any framework designed for banking should incorporate not merely a direct path from market

orientation to performance, but also the organizational and technological mechanisms through which market information is transformed into strategically meaningful outcomes.

Internal organizational orientation is also important in this transformation. Market responsiveness is ultimately enacted by employees, managers, technological units, branches, and customer-facing functions; consequently, data-driven market strategies can fail when information is concentrated within a small analytical unit and is not disseminated throughout the organization. Research on internal marketing and entrepreneurial orientation has emphasized the importance of aligning internal organizational processes with externally focused market objectives (20). This issue has particular relevance for large banks characterized by hierarchical structures and geographically dispersed branches, where customer knowledge may be fragmented across operational units. A data-driven framework must therefore facilitate horizontal and vertical information flows so that customer insights, market signals, and analytical findings can be translated into coordinated decisions across marketing, operations, technology, risk, and senior management.

Relational knowledge provides another important theoretical foundation. Data should not be regarded merely as numerical records but as a mechanism for strengthening knowledge about customer motives, interactions, preferences, and relationship trajectories. Research examining data-driven consumer motivation through a relational marketing perspective highlights how systematic analysis of customer information can deepen relational knowledge and inform more effective engagement strategies (21). Although developed in a different sector, this logic is transferable to banking because customer relationships are repeated, information-rich, and trust dependent. A bank capable of integrating transactional data with service experiences and relationship histories can potentially anticipate emerging needs and design more appropriate retention and engagement strategies. Decision-intelligence approaches in other markets similarly illustrate how multiple information sources can be integrated to improve marketing decisions under complex conditions (22). Thus, the strategic advantage of a data-driven bank lies not merely in storing more customer information, but in developing decision processes that convert dispersed data into relational and competitive knowledge.

Recent advances in artificial intelligence also imply that competitive advantage may increasingly depend on the interaction between analytical capabilities, entrepreneurial orientation, and strategic agility. AI capabilities can enhance competitive positioning by improving opportunity recognition, decision speed, prediction, personalization, and resource reconfiguration, but such effects are unlikely to be uniform across organizations. Evidence suggests that entrepreneurial orientation can mediate the relationship between AI capability and competitive advantage, while strategic agility can determine the extent to which technological capabilities yield superior outcomes (23). This perspective reinforces the need to move beyond technologically deterministic frameworks. In the banking context, purchasing sophisticated analytics software or expanding digital infrastructure does not automatically generate competitive advantage. Competitive gains depend on whether the institution can use technological resources to strengthen market sensing, customer responsiveness, organizational learning, and rapid strategic adaptation.

Despite the expanding literature on data-driven marketing, strategic orientation, and digital capabilities, several limitations remain relevant to the Iraqi banking context. Much of the existing evidence has been generated in retailing, e-commerce, SMEs, sports, academic marketing, or non-Iraqi emerging markets, while empirical models specifically integrating data-driven market orientation, customer outcomes, digital engagement, operational efficiency, financial performance, and competitive advantage in Iraqi banking remain limited. Moreover, many studies rely on cross-sectional survey evidence, which provides important perceptual information but is less suitable

for capturing long-term adjustment, macroeconomic shocks, temporal dependence, and unobserved institutional heterogeneity. Banking performance is inherently dynamic; current profitability, customer relationships, operational capacity, and competitive position are partly shaped by their previous levels. A framework intended for Iraqi banking therefore requires longitudinal analysis capable of distinguishing within-bank changes from persistent organizational differences and common economic disturbances.

This requirement is especially important in Iraq, where banks operate within a distinctive economic and institutional environment characterized by substantial exposure to oil-market fluctuations, changes in macroeconomic activity, inflationary pressures, exchange-rate uncertainty, evolving financial regulation, and uneven levels of digital development. These conditions can obscure the independent effect of market-oriented strategy if empirical analysis does not control for systemic influences. At the same time, differences in digital maturity across Iraqi banks create an analytically valuable setting for examining whether digital engagement strengthens the relationship between market orientation and competitive advantage. For Al-Rasheed Bank, these questions have direct strategic relevance because a large established banking institution must reconcile legacy structures and operational routines with growing expectations for data-based decision-making, digital service delivery, improved customer responsiveness, and competitive adaptation.

The conceptual logic emerging from the literature therefore supports a multidimensional model. First, market orientation should directly enhance competitive advantage because systematic market intelligence improves the alignment between organizational decisions and market conditions. Second, customer satisfaction and customer loyalty should operate as relational mechanisms linking market responsiveness to sustained customer value. Third, operational efficiency should serve as an internal conversion mechanism because market information cannot generate competitive value if a bank lacks efficient processes for implementing responsive actions. Fourth, digital engagement should function both as a direct capability and as a contextual amplifier of market orientation, since data-driven strategies can be implemented more rapidly and precisely through digitally enabled channels. Finally, macroeconomic conditions must be incorporated because competitive and financial outcomes are influenced by forces beyond organizational control. This architecture is compatible with the broader evidence that strategic orientations create value through complementary capabilities, organizational readiness, managerial commitment, and digitally enabled adaptation rather than through isolated strategic variables (9, 18, 19).

A further methodological implication follows from the complexity of these relationships. Linear econometric models remain essential for causal explanation, parameter estimation, and control of unobserved heterogeneity, but they may not adequately identify threshold effects, high-order interactions, or nonlinear relationships among digital engagement, customer behavior, operational efficiency, and financial outcomes. Predictive analytics and machine-learning approaches can complement econometric estimation by identifying structures that are difficult to specify *ex ante*. The broader literature on predictive analytics demonstrates the strategic value of integrating information systems with predictive tools for marketing decision-making (2), while developments in data-driven marketing emphasize the increasing importance of combining analytical methods with strategic interpretation (1). Accordingly, combining panel econometrics with machine-learning analysis provides a more comprehensive analytical architecture: econometric models can test theoretically specified relationships and address endogeneity, while machine-learning algorithms can evaluate predictive performance and detect nonlinear patterns. Such methodological integration is particularly appropriate when the objective extends beyond statistical association toward the design of an operational framework capable of informing managerial decision-making.

Taken together, the literature indicates that the next stage of market orientation research requires greater integration of market intelligence, digital capability, customer analytics, organizational efficiency, strategic adaptability, and predictive technologies. Data-driven marketing research has established the value of personalization and analytical decision support (5-7); studies of customer strategy show that optimized data use can strengthen loyalty (8); digital-governance research emphasizes institutional safeguards surrounding data-intensive transformation (10); financial analytics research demonstrates the relevance of advanced data techniques for behavioral interpretation and risk control (11, 12); and strategic-orientation studies consistently indicate that competitive advantage depends on the combination of market orientation with organizational, technological, and innovative capabilities (14-17). However, these strands have rarely been integrated into a longitudinal, bank-specific framework capable of explaining both the direct and indirect pathways through which data-driven market orientation contributes to competitive advantage in Iraq.

Accordingly, the aim of this study is to design and empirically validate a data-driven market orientation framework for enhancing competitive advantage in the Iraqi banking sector, with particular emphasis on Al-Rasheed Bank, by integrating market orientation, customer satisfaction, customer loyalty, digital engagement, operational efficiency, financial performance, and macroeconomic conditions within a longitudinal econometric and predictive analytical framework.

Methods and Materials

This study adopted an applied, causal-explanatory research design with a predominantly quantitative orientation, supplemented by qualitative expert validation, to develop and empirically validate a data-driven market orientation framework for enhancing competitive advantage in the Iraqi banking sector. The quantitative component was based on longitudinal panel data, allowing simultaneous examination of variations across banking institutions and changes within individual banks over time. This design was considered appropriate because the proposed framework assumes that market orientation does not influence competitive and financial outcomes in isolation, but rather operates through interconnected mechanisms involving customer satisfaction, customer loyalty, digital engagement, operational efficiency, and the broader macroeconomic environment. The longitudinal structure also enabled the study to distinguish persistent bank-specific characteristics from temporal economic shocks and to examine whether the effects of market-oriented capabilities emerged contemporaneously or with a time lag. The observation period covered 2010–2024, thereby providing a sufficiently extended temporal horizon to capture major structural, technological, regulatory, and macroeconomic transformations affecting the Iraqi banking industry. The unit of quantitative analysis was the bank-year observation. The target population comprised licensed commercial banks operating in Iraq during the study period, while Al-Rasheed Bank was treated as the focal institutional case for detailed interpretation of the estimated relationships and the practical design of the proposed framework. Because the population of eligible commercial banks was incorporated to the greatest extent permitted by data availability, a census-oriented sampling strategy rather than conventional probabilistic sampling was adopted. Banks entering or leaving the market during the observation period were retained whenever reliable observations were available; consequently, the empirical dataset could be treated as an unbalanced panel rather than excluding institutions with incomplete temporal coverage. This procedure reduced survivorship bias and preserved information on structural changes in the Iraqi banking market.

The conceptual architecture of the study positioned market orientation as the principal strategic explanatory construct and financial performance and competitive advantage as major organizational outcomes, while customer satisfaction, customer loyalty, digital engagement, and operational efficiency were incorporated as transmission mechanisms through which market-oriented practices could create superior banking performance. Market orientation was conceptualized in terms of the bank's capacity to acquire, interpret, disseminate, and respond to information concerning customers, competitors, and changing market conditions. Customer satisfaction reflected customers' favorable evaluation of banking services and service experiences, whereas customer loyalty represented the stability and continuity of customer relationships and their tendency to maintain or expand their banking interactions. Digital engagement captured the extent to which customers and banks used electronic and digitally enabled banking channels, while operational efficiency represented the ability of each institution to transform financial, technological, and human resources into banking outputs with minimum avoidable cost and process inefficiency. Competitive advantage was conceptualized as the bank's sustained capacity to achieve superior market, customer, operational, and financial outcomes relative to competing institutions. Financial performance was assessed through complementary indicators reflecting profitability, asset utilization, and other relevant dimensions of banking performance. Because banking performance is also strongly affected by systemic economic conditions, GDP growth, inflation, exchange-rate volatility, and oil-price fluctuations were incorporated as macroeconomic control variables. These variables were particularly important in the Iraqi context because fluctuations in economic activity, currency conditions, and petroleum revenues may simultaneously influence banking liquidity, credit activity, customer behavior, and profitability, thereby confounding the estimated relationship between market orientation and organizational performance.

A qualitative validation component was incorporated to increase the contextual validity of the data-driven framework and to ensure that the statistical specifications reflected the institutional characteristics of Iraqi banking. Participants in this component were selected purposively from individuals possessing relevant professional knowledge of banking strategy, marketing, risk management, digital banking, financial management, or banking regulation. The expert group included senior banking managers, marketing and customer-relations officers, risk specialists, digital banking personnel, and individuals familiar with regulatory and supervisory practices. Particular attention was given to obtaining insights relevant to Al-Rasheed Bank while also incorporating perspectives capable of representing conditions within the broader Iraqi banking system. Expert participation was not used as a substitute for the longitudinal quantitative evidence; instead, the qualitative component served to assess construct relevance, refine the operational interpretation of variables, identify institution-specific mechanisms, and support interpretation of statistical and machine-learning results. Accordingly, the overall methodological structure can be characterized as an integrated data-driven design in which longitudinal banking evidence constitutes the main empirical foundation and expert evidence provides institutional and interpretive validation.

Data were collected through a structured multi-source procedure combining financial and institutional secondary data, macroeconomic information, digital and customer-related indicators, and semi-structured expert interviews. A standardized data-extraction protocol was developed to ensure that observations collected from different banks and different years were defined consistently. Bank-level financial and operational data were obtained primarily from audited annual financial statements, published bank reports, official reports and statistical publications of the Central Bank of Iraq, and other credible national and international financial databases containing information relevant to Iraqi commercial banks. For each bank and year, the extraction protocol recorded financial statement variables,

profitability measures, asset and liability information, operating expenses, income components, customer-related indicators when disclosed, information on branch and service activities, and available indicators of digital banking development. Macroeconomic data, including real GDP growth, inflation, exchange-rate behavior, and oil-price movements, were obtained from official and internationally recognized sources such as the International Monetary Fund and the World Bank. Data from multiple sources were cross-checked wherever overlapping observations were available in order to identify transcription errors, inconsistent definitions, retrospective revisions, or unexplained discontinuities in individual series. Monetary variables were standardized where necessary, and ratio-based measures were preferred when comparisons across institutions of substantially different sizes could otherwise create scale-related distortion.

The principal constructs were operationalized using observable indicators and standardized composite measures derived from the available longitudinal information. Market orientation was measured through a data-driven index reflecting observable manifestations of customer orientation, competitor awareness, market responsiveness, service adaptation, and the systematic use of market information in strategic and operational decision-making. Where direct annual measures were not continuously available, indicators were extracted from documented bank activities and consistently reported institutional variables rather than assuming the existence of survey observations for historical years. Customer satisfaction was operationalized using available measures of customer service outcomes, complaints and service-quality performance, retention-related information, and other consistently documented customer-experience indicators. Customer loyalty was represented by indicators reflecting customer retention, continuity of deposits or accounts, relationship stability, and sustained use of bank services. Digital engagement incorporated indicators such as the adoption and utilization of electronic banking channels, digital transactions, online or mobile banking facilities, electronic payment services, ATM and card-based activity, and other documented digital interactions. Operational efficiency was measured using conventional banking efficiency indicators, including cost-to-income relationships, operating-cost measures, income-generation efficiency, and relevant asset- or employee-based productivity measures where comparable data were available. Financial performance was assessed through measures such as return on assets, return on equity, net interest or operating margins, profitability, and other relevant performance indicators. Competitive advantage was subsequently modeled as a multidimensional outcome reflected in sustained relative improvements in customer, operational, market, and financial performance. Prior to index construction, the direction of each indicator was standardized so that higher values consistently represented higher levels of the underlying construct, and variables measured on substantially different scales were normalized to facilitate comparability.

A semi-structured interview protocol was used for the qualitative validation stage. The interview questions focused on the practical meaning of market orientation in Iraqi commercial banking, mechanisms used by banks to collect and exploit customer and competitor information, determinants of customer satisfaction and loyalty, the strategic role of digital banking channels, operational constraints affecting market responsiveness, and the pathways through which market orientation could generate sustainable competitive advantage. Participants were also asked to assess the relevance of the variables incorporated into the quantitative model and to identify context-specific factors that might not be fully represented in publicly available financial datasets. The interview protocol maintained a common thematic structure across participants while allowing follow-up questions when respondents identified institutionally important issues. These qualitative data were subsequently used for model refinement and contextual interpretation rather than for estimating the principal causal coefficients. Before econometric estimation,

the final quantitative database underwent an extensive data-screening procedure. Duplicate observations, impossible values, coding inconsistencies, and abnormal year-to-year changes were investigated against original source documents. Missing observations were evaluated according to their extent and underlying pattern; variables with inadequate longitudinal coverage were not mechanically imputed when doing so could introduce artificial temporal patterns. Continuous variables displaying extreme observations were examined against their source records, and sensitivity analyses using alternative treatment of extreme values were planned to determine whether influential observations materially changed the substantive conclusions.

Data analysis was conducted through a sequential analytical framework integrating descriptive analysis, panel-data econometrics, causal-mechanism testing, dynamic estimation, machine-learning prediction, and qualitative interpretation. The initial phase involved descriptive statistics and exploratory longitudinal assessment of all study variables. Means, standard deviations, minimum and maximum values, temporal trends, and pairwise correlations were examined to identify the general characteristics of the banking panel and differences between Al-Rasheed Bank and the wider banking sector. Before estimating the structural relationships, the dataset was subjected to diagnostic procedures appropriate for longitudinal banking data. Multicollinearity was examined using correlation matrices and variance inflation factors. Cross-sectional dependence was assessed because Iraqi banks are exposed to common monetary, regulatory, oil-market, political, and macroeconomic shocks that may generate contemporaneous correlations between institutions. The stationarity properties of longitudinal variables were evaluated using appropriate panel unit-root procedures, particularly for variables whose levels exhibited strong temporal trends. Heteroskedasticity and serial correlation were also investigated, and robust or clustered standard errors were employed where necessary to obtain statistically reliable inference. Model specifications additionally incorporated year effects to capture common temporal shocks and bank-specific effects to account for persistent unobserved differences across institutions.

The baseline econometric relationship was specified as a panel regression in which financial performance or competitive advantage was expressed as a function of market orientation, customer satisfaction, customer loyalty, digital engagement, operational efficiency, and macroeconomic controls. The general specification can be expressed as $Y_{it} = \beta_0 + \beta_1 MO_{it} + \beta_2 CS_{it} + \beta_3 CL_{it} + \beta_4 DE_{it} + \beta_5 OE_{it} + \gamma Z_{it} + \mu_i + \lambda_t + \varepsilon_{it}$, where i denotes the individual bank, t denotes year, Y_{it} represents the relevant performance or competitive-advantage outcome, Z_{it} represents the vector of macroeconomic control variables, μ_i captures time-invariant bank-specific heterogeneity, λ_t captures common time-specific effects, and ε_{it} represents the idiosyncratic error term. Both Fixed Effects and Random Effects estimators were initially considered, and the appropriateness of the alternative specifications was evaluated using formal specification procedures, including the Hausman test. Fixed Effects estimation was particularly important for controlling unobservable institutional characteristics that remain relatively stable over time, such as organizational legacy, governance traditions, institutional mandate, and persistent managerial characteristics. Random Effects models were estimated as comparative specifications where their underlying assumptions were empirically supportable.

Because financial performance and competitive advantage in banking are inherently dynamic and current outcomes may depend on previous-period outcomes, dynamic panel estimation using the Generalized Method of Moments was employed as a major robustness and causal-inference strategy. The dynamic specification incorporated lagged values of the dependent variable as well as potentially endogenous explanatory variables, thereby allowing the analysis to represent adjustment processes that cannot be adequately captured by static panel

regressions. System GMM was used where appropriate to address simultaneity, reverse causality, omitted-variable bias, and the potential endogeneity of constructs such as market orientation, digital engagement, operational efficiency, and financial performance. Lagged values of endogenous variables were used as internal instruments subject to conventional validity requirements. The adequacy of the GMM specification was evaluated through tests of serial correlation in the differenced residuals and tests of overidentifying restrictions, while the instrument set was restricted where necessary to avoid instrument proliferation. Coefficient estimates, robust standard errors, test statistics, probability values, and confidence intervals were used to evaluate the statistical significance and magnitude of the proposed relationships. Economic significance was considered alongside statistical significance so that substantively trivial effects were not interpreted as strategically important merely because they achieved conventional significance thresholds.

The analytical model explicitly examined the mechanisms through which market orientation could generate competitive advantage. Mediation analyses were specified to determine whether the influence of market orientation on performance was transmitted through customer satisfaction, customer loyalty, digital engagement, and operational efficiency. Particular attention was given to sequential mechanisms in which stronger market orientation improves customer satisfaction, greater satisfaction strengthens loyalty, and loyalty subsequently contributes to financial and competitive outcomes. Interaction terms were also introduced to determine whether the effects of market orientation varied as a function of digital engagement. The interaction between market orientation and digital engagement was of particular theoretical interest because the strategic value of market knowledge may depend on the bank's ability to translate that knowledge into responsive digital services and customer interactions. Continuous variables entering interaction equations were appropriately transformed or centered where necessary to improve interpretability and reduce nonessential multicollinearity. Marginal effects were subsequently examined for statistically meaningful interaction terms to determine how the predicted influence of market orientation changed across different levels of digital engagement.

To complement econometric estimation, Random Forest and Gradient Boosting algorithms were employed as nonlinear predictive models. Their inclusion did not replace causal panel estimation; rather, machine-learning analysis was used to determine whether complex nonlinearities, higher-order interactions, and threshold relationships provided additional predictive information beyond the linear econometric specifications. The panel observations were partitioned using procedures that respected the temporal structure of the data to minimize information leakage between training and validation observations. Model performance was evaluated using out-of-sample prediction criteria such as root mean square error, mean absolute error, and the coefficient of determination, as appropriate to the predicted outcome. Variable-importance measures and dependence-based interpretation were subsequently used to identify variables making the largest contribution to predicted competitive and financial performance. Particular attention was directed toward possible nonlinear behavior in market orientation and digital engagement, including whether improvements in digital engagement generated disproportionately stronger performance gains after particular levels of organizational market orientation had been reached.

A comprehensive robustness strategy was employed to determine whether the principal conclusions were sensitive to estimation assumptions, variable definitions, extreme observations, or major economic disturbances. Alternative measures of financial performance and competitive advantage were estimated, model specifications were progressively expanded with macroeconomic controls and time effects, and the stability of coefficient direction and magnitude was compared across Fixed Effects, Random Effects, and dynamic GMM estimators. Sensitivity

analyses were also conducted by modifying selected operational definitions and examining subperiods characterized by different economic conditions. Historical validation was performed by comparing model-generated performance estimates with observed outcomes over the study period, with special attention to the trajectory of Al-Rasheed Bank. Finally, findings from econometric and machine-learning analyses were compared with the expert interview evidence through analytical triangulation. Convergence between statistical relationships and expert assessments was treated as evidence of contextual validity, whereas divergence was examined to identify institutional mechanisms, measurement limitations, or Iraqi banking characteristics not fully observable in the numerical data. The final data-driven market orientation framework was therefore derived from the combined evidence of longitudinal causal estimation, nonlinear predictive analysis, robustness testing, and expert-based institutional validation.

Findings and Results

The final quantitative dataset consisted of 327 bank-year observations obtained from 24 commercial banks operating in Iraq during the 2010–2024 study period. Because several banks did not have complete observations for every year, particularly for customer-related and digital-banking indicators, the final dataset constituted an unbalanced panel. Al-Rasheed Bank was retained throughout the observation period and was treated as the focal institutional case in the interpretation of the results. The complementary qualitative validation stage included 18 banking and regulatory experts selected on the basis of direct professional experience with banking strategy, marketing, customer management, digital banking, risk, financial management, or regulatory supervision. Of these participants, 14 (77.8%) were male and 4 (22.2%) were female. The mean age of the experts was 46.72 years ($SD = 7.81$), with ages ranging from 34 to 61 years. Regarding educational qualifications, 3 participants (16.7%) held a bachelor's degree, 9 (50.0%) held a master's degree, and 6 (33.3%) held a doctoral degree. In terms of professional experience, 3 experts (16.7%) had fewer than 10 years of experience, 8 (44.4%) had between 10 and 19 years, and 7 (38.9%) had 20 years or more of banking or regulatory experience. The expert group included 5 senior or branch-level banking managers (27.8%), 4 marketing or customer-relations specialists (22.2%), 3 risk or financial-management specialists (16.7%), 3 digital-banking or information-systems specialists (16.7%), and 3 regulatory or supervisory experts (16.7%). Twelve participants (66.7%) had direct professional experience with Al-Rasheed Bank or with institutions maintaining operational or supervisory relationships with the bank. This composition provided adequate diversity of organizational perspectives for contextual validation of the quantitative results, while the longitudinal banking dataset remained the principal empirical basis for hypothesis testing and framework development.

Table 1. Descriptive Statistics of the Main Study Variables

Variable	N	Mean	SD	Minimum	Maximum
Market Orientation (MO)	327	3.48	0.61	1.92	4.76
Customer Satisfaction (CS)	327	3.54	0.58	2.01	4.82
Customer Loyalty (CL)	327	3.39	0.63	1.84	4.79
Digital Engagement (DE)	327	3.12	0.79	1.21	4.88
Operational Efficiency (OE)	327	3.44	0.57	1.95	4.71
Competitive Advantage (CA)	327	3.37	0.60	1.81	4.74
Financial Performance Index (FP)	327	3.31	0.66	1.69	4.85
Return on Assets (%)	327	1.47	0.83	-0.91	3.89
Return on Equity (%)	327	10.84	5.72	-4.16	25.63
Cost-to-Income Ratio (%)	327	55.92	11.68	31.74	86.11

GDP Growth (%)	327	3.21	5.89	-11.32	13.79
Inflation Rate (%)	327	3.86	2.74	0.18	10.52
Exchange-Rate Volatility	327	0.074	0.051	0.009	0.241
Oil-Price Change (%)	327	4.73	26.18	-47.11	55.02

As shown in Table 1, the banking institutions included in the analysis displayed moderate to relatively high levels of market orientation, customer satisfaction, customer loyalty, operational efficiency, and competitive advantage. Market orientation had a mean of 3.48 (SD = 0.61), while customer satisfaction showed the highest average among the principal strategic constructs at 3.54 (SD = 0.58). Customer loyalty averaged 3.39 (SD = 0.63), indicating that favorable customer evaluations did not translate uniformly into equally high relationship continuity across all bank-years. Digital engagement had a comparatively lower mean of 3.12 and the largest standard deviation among the principal organizational constructs (SD = 0.79), suggesting substantial heterogeneity among Iraqi banks in the adoption and utilization of digital banking channels. This variability was important for the subsequent analysis because it provided sufficient cross-bank and temporal differentiation to examine whether digital engagement strengthened the performance consequences of market orientation. Operational efficiency averaged 3.44 (SD = 0.57), whereas competitive advantage and the composite financial performance index recorded means of 3.37 (SD = 0.60) and 3.31 (SD = 0.66), respectively. The conventional accounting indicators also demonstrated considerable heterogeneity. Mean return on assets was 1.47%, although the minimum of -0.91% indicated that some bank-year observations were associated with negative profitability. Return on equity averaged 10.84% and ranged from -4.16% to 25.63%, while the mean cost-to-income ratio was 55.92%, with a wide range from 31.74% to 86.11%. The macroeconomic indicators confirmed that Iraqi banks operated under substantially changing external conditions during 2010–2024. GDP growth displayed pronounced volatility, ranging from -11.32% to 13.79%, and oil-price changes ranged from -47.11% to 55.02%. These variations supported the methodological decision to include macroeconomic controls and year effects in the subsequent panel models rather than attributing all fluctuations in banking performance to bank-level strategic variables.

Table 2. Panel Data Diagnostics and Model-Specification Tests

Diagnostic Test	Statistic	p-value	Decision
Breusch–Pagan LM test for panel effects	$\chi^2 = 184.63$	< .001	Pooled OLS rejected
Hausman specification test	$\chi^2 = 31.47$	< .001	Fixed Effects preferred to Random Effects
Wooldridge test for serial correlation	F = 18.92	< .001	First-order serial correlation detected
Modified Wald test for groupwise heteroskedasticity	$\chi^2 = 296.41$	< .001	Heteroskedasticity detected
Pesaran CD test	CD = 6.83	< .001	Cross-sectional dependence detected
Maximum Variance Inflation Factor	3.27	—	No serious multicollinearity
Mean Variance Inflation Factor	2.11	—	No serious multicollinearity
CIPS test: Market Orientation	-3.42	.002	Stationary
CIPS test: Customer Satisfaction	-3.18	.006	Stationary
CIPS test: Customer Loyalty	-3.06	.009	Stationary
CIPS test: Digital Engagement	-2.91	.014	Stationary
CIPS test: Operational Efficiency	-3.36	.003	Stationary
CIPS test: Competitive Advantage	-3.27	.004	Stationary
CIPS test: Financial Performance	-3.11	.007	Stationary

The diagnostic results reported in Table 2 established the suitability of panel-data estimation while also identifying several characteristics of the dataset that required econometric correction. The Breusch–Pagan Lagrange Multiplier test was statistically significant ($\chi^2 = 184.63$, $p < .001$), indicating that bank-specific panel effects were present and that conventional pooled ordinary least squares estimation would be inappropriate. The Hausman test was also

statistically significant ($\chi^2 = 31.47$, $p < .001$), suggesting systematic differences between the Fixed Effects and Random Effects estimators and supporting Fixed Effects as the principal static panel specification. At the same time, the Wooldridge test indicated significant serial correlation ($F = 18.92$, $p < .001$), while the modified Wald test demonstrated significant groupwise heteroskedasticity ($\chi^2 = 296.41$, $p < .001$). The Pesaran CD statistic was likewise significant ($CD = 6.83$, $p < .001$), confirming contemporaneous dependence among Iraqi banks, which was theoretically expected because institutions were simultaneously exposed to common regulatory changes, exchange-rate developments, fiscal conditions, political shocks, and oil-market fluctuations. Consequently, the main Fixed Effects estimates were calculated using standard errors robust to heteroskedasticity and within-bank dependence, while dynamic System GMM estimation was employed as an additional strategy for addressing endogeneity and temporal persistence. Multicollinearity did not represent a substantive threat to estimation because the maximum VIF was 3.27 and the mean VIF was 2.11, both comfortably below the commonly applied threshold of 5. The cross-sectionally augmented panel unit-root results further indicated that the principal strategic and performance variables were stationary at conventional significance levels, with CIPS statistics ranging from -2.91 for digital engagement to -3.42 for market orientation. Taken together, these findings demonstrated that the dataset possessed appropriate variation for panel estimation while simultaneously justifying the use of bank effects, time effects, robust inference, and dynamic estimators in the principal hypothesis tests.

Table 3. Fixed Effects, Random Effects, and System GMM Estimates of Competitive Advantage

Predictor	Fixed Effects β (SE)	p-value	Random Effects β (SE)	p-value	System GMM β (SE)	p-value
Lagged Competitive Advantage	—	—	—	—	0.286 (0.061)	< .001
Market Orientation	0.283 (0.049)	< .001	0.314 (0.044)	< .001	0.241 (0.057)	< .001
Customer Satisfaction	0.176 (0.045)	< .001	0.192 (0.042)	< .001	0.149 (0.050)	.003
Customer Loyalty	0.152 (0.041)	< .001	0.167 (0.039)	< .001	0.131 (0.046)	.005
Digital Engagement	0.118 (0.038)	.002	0.134 (0.035)	< .001	0.109 (0.043)	.012
Operational Efficiency	0.224 (0.047)	< .001	0.238 (0.044)	< .001	0.193 (0.052)	< .001
GDP Growth	0.031 (0.014)	.027	0.033 (0.013)	.014	0.025 (0.012)	.038
Inflation Rate	-0.052 (0.021)	.015	-0.048 (0.020)	.018	-0.044 (0.020)	.029
Exchange-Rate Volatility	-0.097 (0.041)	.020	-0.089 (0.039)	.024	-0.083 (0.039)	.035
Oil-Price Change	0.036 (0.015)	.019	0.039 (0.015)	.011	0.031 (0.014)	.026
Bank Fixed Effects	Yes	—	No	—	Controlled	—
Year Fixed Effects	Yes	—	Yes	—	Yes	—
Observations	327	—	327	—	303	—
Within/Overall R^2	0.684	—	0.661	—	—	—
Wald χ^2	—	—	—	—	248.73	< .001
Arellano–Bond AR(1)	—	—	—	—	-3.14	.002
Arellano–Bond AR(2)	—	—	—	—	-0.81	.418
Hansen J test	—	—	—	—	21.76	.352

Table 3 presents the principal econometric estimates of the determinants of competitive advantage. The results were highly consistent across Fixed Effects, Random Effects, and System GMM specifications, although the Hausman test reported previously indicated that the Fixed Effects model should be preferred among the two static estimators. In the Fixed Effects model, market orientation exerted the largest positive strategic effect on competitive advantage ($\beta = 0.283$, $SE = 0.049$, $p < .001$). Thus, increases in a bank's capacity to generate, disseminate, interpret, and respond to market intelligence were associated with substantial within-bank improvements in competitive advantage even after controlling for other strategic factors, macroeconomic conditions, persistent bank characteristics, and common time effects. Customer satisfaction was also positively associated with competitive

advantage ($\beta = 0.176$, $p < .001$), as was customer loyalty ($\beta = 0.152$, $p < .001$), indicating that customer-related outcomes constituted significant components of the mechanism through which banks could build a stronger competitive position. Digital engagement had a smaller but still statistically significant direct coefficient ($\beta = 0.118$, $p = .002$), demonstrating that greater use and integration of digital channels independently contributed to competitive differentiation. Operational efficiency represented the second-largest organizational predictor after market orientation ($\beta = 0.224$, $p < .001$), showing that an externally oriented strategy generated greater competitive benefits when supported by efficient internal processes. The Fixed Effects model explained 68.4% of the within-bank variation in competitive advantage, indicating substantial explanatory power.

The System GMM results provided additional support for these relationships after accounting for persistence in competitive advantage and potential endogeneity among the bank-level explanatory variables. Lagged competitive advantage was positive and significant ($\beta = 0.286$, $p < .001$), demonstrating a meaningful degree of temporal persistence whereby competitive capabilities accumulated across periods rather than being fully recreated each year. Nevertheless, market orientation remained strongly significant after this dynamic effect was incorporated ($\beta = 0.241$, $p < .001$), substantially reducing the likelihood that its relationship with competitive advantage was attributable only to stable unobserved bank quality or reverse causality. Customer satisfaction ($\beta = 0.149$, $p = .003$), customer loyalty ($\beta = 0.131$, $p = .005$), digital engagement ($\beta = 0.109$, $p = .012$), and operational efficiency ($\beta = 0.193$, $p < .001$) likewise retained significant positive coefficients. Macroeconomic conditions also influenced competitive outcomes. GDP growth and oil-price changes had positive effects, whereas inflation and exchange-rate volatility exerted significant negative effects, indicating that market-oriented banks remained exposed to wider economic conditions despite possessing stronger internal capabilities. The GMM diagnostic statistics supported the validity of the dynamic specification. First-order serial correlation was significant, as expected for first-differenced residuals ($AR(1) = -3.14$, $p = .002$), whereas the critical $AR(2)$ test was nonsignificant ($p = .418$), providing no evidence of problematic second-order serial correlation. The Hansen J test was also nonsignificant ($\chi^2 = 21.76$, $p = .352$), supporting the joint validity of the instrument set. The consistency of the substantive coefficients across the three estimators therefore provided strong evidence that market orientation, customer-related capabilities, digital engagement, and operational efficiency were robust determinants of competitive advantage in the Iraqi banking sector.

Table 4. Mediation and Moderation Effects in the Data-Driven Market Orientation Framework

Effect	Standardized Effect	SE	95% CI	p-value	Interpretation
MO $\rightarrow$ CS	0.491	0.052	[0.389, 0.593]	< .001	Significant
CS $\rightarrow$ CL	0.437	0.049	[0.341, 0.533]	< .001	Significant
CL $\rightarrow$ CA	0.146	0.044	[0.060, 0.232]	.001	Significant
MO $\rightarrow$ OE	0.364	0.054	[0.258, 0.470]	< .001	Significant
OE $\rightarrow$ CA	0.209	0.049	[0.113, 0.305]	< .001	Significant
MO $\rightarrow$ DE	0.318	0.057	[0.206, 0.430]	< .001	Significant
DE $\rightarrow$ CA	0.114	0.042	[0.032, 0.196]	.007	Significant
MO $\rightarrow$ CS $\rightarrow$ CA	0.081	0.024	[0.040, 0.134]	< .001	Significant mediation

MO → CS → CL → CA	0.031	0.011	[0.014, 0.058]	.001	Significant sequential mediation
MO → OE → CA	0.076	0.022	[0.038, 0.124]	< .001	Significant mediation
MO → DE → CA	0.036	0.014	[0.013, 0.068]	.004	Significant mediation
Total indirect effect of MO on CA	0.224	0.039	[0.153, 0.305]	< .001	Significant
Direct effect of MO on CA after mediators	0.207	0.051	[0.107, 0.307]	< .001	Significant
Total effect of MO on CA	0.431	0.057	[0.319, 0.543]	< .001	Significant
MO × DE → CA	0.137	0.041	[0.057, 0.217]	.001	Positive moderation
MO → CA at low DE (-1 SD)	0.168	0.054	[0.062, 0.274]	.002	Significant
MO → CA at mean DE	0.276	0.047	[0.184, 0.368]	< .001	Significant
MO → CA at high DE (+1 SD)	0.384	0.059	[0.268, 0.500]	< .001	Significant

The mechanism analysis reported in Table 4 showed that the competitive effect of market orientation operated through several mutually reinforcing transmission channels rather than through a single direct pathway. Market orientation had a strong positive effect on customer satisfaction ($\beta = 0.491$, $p < .001$), and customer satisfaction subsequently predicted customer loyalty ($\beta = 0.437$, $p < .001$). Customer loyalty, in turn, was positively associated with competitive advantage ($\beta = 0.146$, $p = .001$). The indirect effect from market orientation to competitive advantage through customer satisfaction alone was statistically significant ($\beta = 0.081$, 95% CI [0.040, 0.134], $p < .001$), while the more elaborate sequential pathway from market orientation through customer satisfaction and customer loyalty to competitive advantage was also significant ($\beta = 0.031$, 95% CI [0.014, 0.058], $p = .001$). These results indicated that collecting and responding to market intelligence contributed to competitive advantage partly because it improved customers' evaluations of banking services, which subsequently strengthened the continuity and stability of customer relationships. Market orientation also positively predicted operational efficiency ($\beta = 0.364$, $p < .001$), producing a significant indirect effect on competitive advantage through operational efficiency ($\beta = 0.076$, $p < .001$). Similarly, market orientation promoted digital engagement ($\beta = 0.318$, $p < .001$), and the indirect MO → DE → CA pathway was significant ($\beta = 0.036$, $p = .004$). The aggregate indirect effect of market orientation was 0.224 ($p < .001$), while the direct effect remained significant after the mediators were entered ($\beta = 0.207$, $p < .001$). The total effect reached $\beta = 0.431$ ($p < .001$). The persistence of both the direct and indirect components supported a pattern of partial rather than complete mediation, indicating that market orientation strengthened competitive advantage both directly and through improvements in customer, digital, and operational capabilities.

Digital engagement additionally functioned as a significant moderator rather than solely as a mediator. The interaction between market orientation and digital engagement was positive and statistically significant ($\beta = 0.137$, 95% CI [0.057, 0.217], $p = .001$). Conditional-effect analysis demonstrated that the positive influence of market orientation became progressively stronger as digital engagement increased. At one standard deviation below the mean level of digital engagement, the effect of market orientation on competitive advantage was $\beta = 0.168$ ($p = .002$). At the mean level of digital engagement, this coefficient increased to $\beta = 0.276$ ($p < .001$), and at one standard deviation above the mean, it reached $\beta = 0.384$ ($p < .001$). Thus, market knowledge by itself was beneficial, but its competitive value was considerably greater when banks possessed stronger digital capabilities through which customer and market information could be converted into responsive services, personalized interactions, faster

delivery mechanisms, and digitally enabled customer relationships. This result was especially relevant to the proposed data-driven framework because it indicated that market orientation and digital transformation should not be treated as independent strategic initiatives. Instead, digital engagement amplified the return generated by market-oriented capabilities.

Table 5. Machine-Learning Prediction, Variable Importance, and Robustness Results

Analysis/Indicator	Random Forest	Gradient Boosting	Econometric/Robustness Result
Training R ²	0.884	0.912	—
Test R ²	0.741	0.779	FE model = 0.684
Test RMSE	0.311	0.287	—
Test MAE	0.238	0.219	—
Market Orientation Importance	0.231	0.246	Positive and significant in all panel models
Operational Efficiency Importance	0.187	0.181	Positive and significant in all panel models
Digital Engagement Importance	0.166	0.174	Positive and significant in all panel models
Customer Satisfaction Importance	0.151	0.148	Positive and significant in all panel models
Customer Loyalty Importance	0.113	0.109	Positive and significant in all panel models
GDP Growth Importance	0.058	0.052	Positive control effect
Inflation Importance	0.039	0.034	Negative control effect
Exchange-Rate Volatility Importance	0.031	0.030	Negative control effect
Oil-Price Change Importance	0.024	0.026	Positive control effect
Alternative outcome: ROA, MO coefficient	—	—	$\beta = 0.174, p < .001$
Alternative outcome: ROE, MO coefficient	—	—	$\beta = 0.161, p = .002$
Alternative outcome: Financial Performance Index, MO coefficient	—	—	$\beta = 0.229, p < .001$
Excluding extreme macroeconomic years, MO → CA	—	—	$\beta = 0.267, p < .001$
Winsorized continuous variables, MO → CA	—	—	$\beta = 0.274, p < .001$
Al-Rasheed Bank predicted-versus-observed correlation	0.811	0.846	$r = 0.846, p < .001$ for best-performing model

The machine-learning and robustness results in Table 5 reinforced the econometric evidence while demonstrating that the relationship between market-oriented capabilities and banking performance contained meaningful nonlinear and interactive information. Gradient Boosting produced the strongest out-of-sample predictive performance, with a test R² of 0.779, RMSE of 0.287, and MAE of 0.219, compared with a test R² of 0.741, RMSE of 0.311, and MAE of 0.238 for Random Forest. The relatively moderate differences between training and testing performance also indicated that the predictive results were not driven solely by overfitting. Market orientation emerged as the most influential predictor in both algorithms, accounting for relative importance scores of 0.231 in Random Forest and 0.246 in Gradient Boosting. Operational efficiency ranked second in Random Forest and remained among the most important variables in Gradient Boosting, while digital engagement also made a substantial contribution to predictive accuracy. Customer satisfaction and customer loyalty exhibited meaningful but comparatively smaller importance scores. Macroeconomic variables contributed less to prediction than the organizational constructs, although GDP growth, inflation, exchange-rate volatility, and oil-price changes continued to provide incremental information about bank performance. The convergence between the machine-learning rankings and the regression coefficients was noteworthy: the variables receiving the greatest predictive importance

were also the variables that demonstrated the strongest and most stable positive econometric relationships with competitive advantage.

The sensitivity analyses further demonstrated that the central effect of market orientation was not dependent on a particular definition of bank performance or a narrow set of observations. When return on assets was used as the dependent variable, market orientation remained positive and significant ($\beta = 0.174$, $p < .001$). The corresponding effect was also significant for return on equity ($\beta = 0.161$, $p = .002$) and for the broader financial performance index ($\beta = 0.229$, $p < .001$). Excluding observations associated with the most extreme macroeconomic disturbances did not materially alter the principal conclusion, as the coefficient of market orientation on competitive advantage remained $\beta = 0.267$ ($p < .001$). Similarly, winsorization of continuous variables to reduce the influence of extreme observations produced a coefficient of $\beta = 0.274$ ($p < .001$), which was very close to the primary Fixed Effects estimate of 0.283. Historical validation for Al-Rasheed Bank showed a strong association between observed and predicted competitive-performance trajectories. The best-performing Gradient Boosting specification generated a predicted-versus-observed correlation of $r = 0.846$ ($p < .001$), compared with 0.811 for Random Forest. Inspection of the temporal pattern indicated that the model reproduced both periods of relative performance improvement and periods of deterioration with acceptable accuracy, supporting its usefulness for institution-specific strategic interpretation rather than merely sector-wide explanation.

Taken together, the findings provided convergent evidence for the proposed data-driven market orientation framework. Across conventional panel estimators, dynamic GMM models, mediation analysis, moderation analysis, machine-learning algorithms, alternative performance indicators, and sensitivity specifications, market orientation consistently emerged as the central strategic driver of competitive advantage. However, the results also demonstrated that market orientation was not sufficient as an isolated managerial capability. Its effect was transmitted partly through customer satisfaction and loyalty, operational efficiency, and digital engagement, while digital engagement additionally amplified the competitive return to market orientation. Operational efficiency represented another particularly important pathway, suggesting that market information creates limited value if a bank lacks the internal capacity to convert such information into efficient processes and service delivery. The longitudinal results therefore support a layered framework in which market intelligence acquisition and responsiveness constitute the strategic foundation; customer satisfaction, customer loyalty, digital engagement, and operational efficiency operate as value-conversion mechanisms; and competitive advantage and improved financial performance represent the principal organizational outcomes. For Al-Rasheed Bank specifically, the historical-validation results further indicated that this integrated configuration provides a substantially stronger explanation of performance variation than reliance on financial or macroeconomic variables alone.

Discussion and Conclusion

The findings of this study provide substantial empirical support for the proposed data-driven market orientation framework and demonstrate that competitive advantage in the Iraqi banking sector is shaped by an interdependent configuration of market orientation, customer-related capabilities, digital engagement, operational efficiency, and macroeconomic conditions. Across Fixed Effects, Random Effects, and System GMM specifications, market orientation emerged as the strongest strategic predictor of competitive advantage, while operational efficiency, customer satisfaction, customer loyalty, and digital engagement also exerted significant positive effects. The robustness of these relationships across alternative estimators indicates that competitive advantage cannot be

explained solely by static differences among banks or by favorable macroeconomic conditions. Rather, banks that develop stronger capabilities for acquiring, interpreting, and responding to market information are better positioned to improve customer outcomes, operational processes, and ultimately their competitive standing. This result is consistent with previous evidence showing that market orientation contributes positively to competitive advantage by improving organizational responsiveness and aligning strategic decisions with market needs (14, 17). It also supports research emphasizing that strategic orientation generates superior performance when it is combined with complementary organizational and technological capabilities rather than treated as an isolated managerial philosophy (15, 19).

The positive direct effect of market orientation on competitive advantage is particularly important in the context of Iraqi banking. The Fixed Effects coefficient indicated that within-bank improvements in market orientation were associated with meaningful increases in competitive advantage even after controlling for bank-specific heterogeneity, macroeconomic fluctuations, and common time effects. This suggests that the ability of banks to systematically identify customer needs, monitor competitors, interpret market signals, and convert intelligence into strategic responses constitutes an independent source of competitive differentiation. This finding is consistent with the logic of data-driven marketing, in which organizations gain strategic value not merely from accumulating information but from transforming information into coordinated decisions and market actions (1). It also corresponds with the argument that data-supported decision-making increases the quality and responsiveness of organizational choices by reducing dependence on intuition alone (4). In banking, where customer expectations, regulatory conditions, service technologies, and competitive pressures change rapidly, such responsiveness is particularly important. However, the results also reinforce the caution raised in previous research that data-driven decision-making should complement rather than replace managerial experience and contextual judgment (3). The strong performance of the proposed framework therefore appears to stem from integrating analytical capability with institutional knowledge rather than from technological determinism.

Customer satisfaction was found to have a significant positive effect on competitive advantage, and market orientation strongly predicted customer satisfaction. This result indicates that market-oriented banks are more likely to generate competitive benefits because they better understand and respond to customer expectations. In service-intensive industries such as banking, customer evaluations are influenced by accessibility, reliability, convenience, speed, trust, personalization, and consistency of service delivery. When market intelligence is systematically incorporated into decisions, banks can refine their products and service processes in ways that more closely match customer preferences. This finding is consistent with studies of personalized and data-driven marketing that emphasize the importance of using customer information to improve the relevance of organizational offerings (6, 7). It also aligns with the broader argument that artificial intelligence and advanced analytics can improve customer experiences when they are used to support smarter and more personalized marketing decisions (5). The significance of customer satisfaction in the present study therefore suggests that data-driven market orientation creates competitive value partly by improving the quality of the customer-bank relationship.

Customer loyalty also had a positive and statistically significant relationship with competitive advantage, and the sequential mediation pathway from market orientation through customer satisfaction and customer loyalty was supported. This is an important result because it indicates that the competitive value of market orientation develops over time through relational mechanisms. Market-oriented banks first improve the alignment between services and customer expectations; this increases satisfaction, and sustained satisfaction strengthens loyalty and continuity of

the banking relationship. The result is consistent with evidence showing that data-driven marketing strategies can increase customer loyalty by optimizing the fit between market offerings and customer behavior (8). It also corresponds with relational perspectives emphasizing the strategic importance of transforming consumer information into knowledge that supports stronger and more enduring relationships (21). In banking, this pathway is especially important because long-term customer relationships affect deposit stability, repeat service utilization, cross-selling opportunities, and the lifetime economic value of customers. The observed sequential mediation therefore strengthens the argument that competitive advantage is generated not only through immediate transactional gains, but also through cumulative relational outcomes.

Operational efficiency emerged as one of the most influential organizational determinants of competitive advantage and also significantly mediated the effect of market orientation. This finding demonstrates that possessing market knowledge does not automatically produce superior performance. Banks must also possess the internal capacity to convert market information into efficient processes, timely decisions, and cost-effective service delivery. A bank may correctly identify customer preferences but still fail to create competitive value if slow procedures, fragmented systems, excessive bureaucracy, or inefficient resource allocation prevent implementation. The strong role of operational efficiency is consistent with research showing that strategic orientations become more valuable when organizations possess complementary capabilities and readiness to transform strategy into action (19). It also supports work emphasizing the importance of managerial commitment and organizational structures in translating market orientation into competitive advantage (18). From this perspective, operational efficiency should not be treated merely as a financial outcome; it is a strategic conversion mechanism through which external market knowledge becomes internal execution capability.

Digital engagement exerted both a direct positive effect on competitive advantage and a significant mediating effect between market orientation and competitive advantage. This suggests that digitally engaged banks are better able to transform market intelligence into customer-facing value through mobile banking, online services, electronic payments, automated communication, and other digital channels. The result is consistent with research in emerging-market banking showing that data-driven dynamic capabilities can support digital transformation and strategic renewal (9). It also aligns with studies demonstrating that digital marketing and innovation contribute to competitive advantage and marketing performance (16). For Iraqi banks, the result is particularly meaningful because digital maturity varies considerably across institutions. Banks with stronger digital infrastructures can respond to market intelligence more rapidly, monitor customer behavior more continuously, and deliver services with greater convenience. Thus, digital engagement should be regarded as a central component of contemporary market orientation rather than merely as an alternative distribution channel.

The significant interaction between market orientation and digital engagement further strengthens this interpretation. The effect of market orientation on competitive advantage increased substantially at higher levels of digital engagement, indicating that digital capability amplifies the strategic return generated by market orientation. In other words, customer and competitor knowledge becomes more valuable when a bank possesses the technological infrastructure needed to translate that knowledge into rapid and scalable market responses. This result is theoretically consistent with evidence showing that digital capabilities and organizational agility determine how effectively firms transform information into competitive outcomes (23). It is also compatible with the argument that management information systems and predictive analytics generate the greatest value when integrated with strategic decision processes rather than used in isolation (2). The observed interaction therefore supports a

complementary-capabilities perspective: market orientation and digital engagement reinforce one another, and their joint effect is greater than the effect of either capability independently.

The results of the dynamic System GMM model also showed significant persistence in competitive advantage, as indicated by the positive coefficient of lagged competitive advantage. This finding suggests that competitive capabilities accumulate over time. Banks that establish strong customer relationships, digital infrastructures, efficient operational routines, and effective market intelligence systems are more likely to retain part of these advantages in subsequent periods. At the same time, the continued significance of market orientation after the lagged dependent variable and endogenous relationships were controlled indicates that market orientation contributes to future competitive advantage beyond the persistence of past performance. This supports a dynamic-capability interpretation in which organizations continuously reconfigure information, resources, and processes in response to changing market conditions (9). The result also helps distinguish the proposed framework from purely static models, demonstrating that competitive advantage in banking is path-dependent but still responsive to strategic changes.

Macroeconomic controls also displayed meaningful effects. GDP growth and oil-price changes positively influenced competitive advantage, whereas inflation and exchange-rate volatility had negative effects. These relationships confirm that bank-level strategy operates within broader economic conditions and that organizational capabilities cannot entirely insulate banks from systemic shocks. Nevertheless, the persistence of significant strategic coefficients after these controls were introduced indicates that internal capabilities remain consequential even during periods of economic instability. The relevance of external volatility is consistent with data-driven research showing that behavioral and financial outcomes are affected by changing market dynamics, uncertainty, and sentiment (12, 13). For Iraqi banks, dependence on oil-related macroeconomic conditions makes this especially important. A robust market orientation framework must therefore be capable not only of identifying customer and competitor changes but also of incorporating macroeconomic signals into strategic decision-making.

The machine-learning findings complemented the econometric results and showed that Gradient Boosting and Random Forest achieved strong out-of-sample predictive performance. Market orientation was the most influential predictor in both algorithms, followed by operational efficiency, digital engagement, customer satisfaction, and customer loyalty. This convergence between econometric significance and machine-learning importance strengthens the credibility of the framework because the variables that explained causal variation also contributed materially to prediction. The result is consistent with literature emphasizing the strategic value of predictive analytics in marketing decision-making (2). It also reflects broader developments in data-driven personalization, where advanced computational methods improve the identification of complex customer patterns and enhance the precision of strategic actions (5, 6). The superior predictive performance of Gradient Boosting also suggests that nonlinear relationships and interaction effects exist within the banking data, reinforcing the value of combining econometric explanation with computational prediction.

The relevance of advanced analytics extends beyond marketing outcomes. Data-driven financial systems increasingly support fraud detection, behavioral analysis, risk assessment, and governance, all of which can indirectly strengthen competitive performance by improving trust and institutional resilience. The importance of analytical capability in financial fraud detection illustrates how data infrastructure can simultaneously support customer strategy and risk management (11). Similarly, digital governance research highlights the need for appropriate privacy, accountability, and governance mechanisms when organizations intensify data use (10). These

issues are particularly important for banks because customer trust is closely linked to the secure and responsible handling of personal and financial information. Accordingly, the proposed framework should be interpreted as a broader organizational data capability rather than a narrow marketing technology.

The findings also support the role of internal organizational alignment. Market intelligence is unlikely to generate sustainable advantage when knowledge remains confined to marketing departments or data-analysis units. Effective implementation requires information sharing across management, operations, technology, risk, and customer-facing functions. Previous research on internal marketing and entrepreneurial orientation has similarly emphasized the importance of aligning internal organizational processes with externally oriented strategic objectives (20). Decision-intelligence research also indicates that value is created when multiple information streams are integrated into coordinated organizational decisions (22). In Al-Rasheed Bank and similar large banking institutions, this implies that data-driven market orientation should be supported by cross-functional communication and shared access to relevant intelligence rather than fragmented information systems.

The robustness analyses further showed that the positive effect of market orientation remained significant when alternative outcomes such as return on assets, return on equity, and the broader financial performance index were used. The relationship also remained stable after excluding extreme macroeconomic years and after winsorizing continuous variables. These findings indicate that the central conclusion is not dependent on a specific performance measure or a small number of unusual observations. The result corresponds with previous studies showing that market-oriented and innovation-related capabilities contribute to both competitive advantage and broader organizational performance (14, 17). It also reinforces research demonstrating that strategic orientation can improve sustainable competitive advantage when supported by appropriate technological and organizational readiness (19).

Finally, the strong correlation between predicted and observed outcomes for Al-Rasheed Bank provides institution-specific validation of the framework. This indicates that the integrated model is not only statistically meaningful at the sector level but also capable of representing the performance trajectory of the focal bank. The practical significance of this result lies in the possibility of using the framework as a decision-support architecture. Rather than relying exclusively on lagging financial indicators, Al-Rasheed Bank could monitor market orientation, customer satisfaction, loyalty, digital engagement, and operational efficiency as leading indicators of future competitive performance. The findings therefore extend prior research on data-driven marketing, market orientation, and competitive advantage by showing that their integration within a longitudinal and predictive framework provides a more comprehensive explanation of banking competitiveness in an emerging-market setting (1, 23).

The study has several limitations that should be considered when interpreting the findings. First, although the panel covered a relatively long period and multiple Iraqi commercial banks, the availability and consistency of customer-related and digital indicators varied across institutions and years, resulting in an unbalanced panel. Second, some multidimensional concepts, particularly market orientation, customer satisfaction, loyalty, and digital engagement, had to be constructed from available institutional indicators rather than from fully standardized annual survey instruments. Third, the analysis focused on Iraqi commercial banking and therefore may not be directly generalizable to Islamic banks, specialized financial institutions, or banking systems operating under substantially different regulatory and macroeconomic conditions. Fourth, although System GMM and multiple robustness procedures were employed to reduce endogeneity concerns, observational panel data cannot establish causality with the same certainty as controlled experimental designs. Fifth, machine-learning models provided strong predictive performance, but variable-importance measures should not be interpreted as causal effects. Finally, the

qualitative validation component involved a relatively small purposive expert group and was primarily designed to improve contextual interpretation rather than to generate independently generalizable qualitative conclusions.

Future research should extend the proposed framework by incorporating additional banks, longer time periods, and cross-country comparisons involving other Middle Eastern and emerging banking systems. Comparative studies could determine whether the relative importance of market orientation, digital engagement, and operational efficiency changes across different regulatory environments or levels of financial development. Future studies could also develop standardized longitudinal instruments for measuring market orientation and customer experience directly at the bank level, thereby allowing stronger comparison between archival and perceptual indicators. Additional research should investigate potentially nonlinear threshold effects in greater depth and evaluate whether digital engagement produces diminishing or accelerating returns after specific levels of technological maturity. Researchers could also incorporate artificial intelligence readiness, cybersecurity capability, data-governance maturity, organizational agility, innovation capability, and employee digital competence into the framework. More sophisticated causal methods, including natural experiments, instrumental-variable strategies, difference-in-differences designs, or quasi-experimental regulatory shocks, could further strengthen causal interpretation. Finally, future research should examine heterogeneous effects across state-owned and private banks, large and small institutions, and customer segments to identify whether the pathways identified in this study vary systematically across organizational and market contexts.

From a practical perspective, Iraqi banks should treat data-driven market orientation as an enterprise-wide strategic capability rather than a marketing-department initiative. Senior management should establish integrated systems that combine customer, transaction, service, digital-channel, operational, and macroeconomic data into a unified decision architecture. Particular attention should be given to improving digital engagement because the findings indicate that digital capability not only contributes directly to competitive advantage but also strengthens the effectiveness of market orientation. Banks should develop real-time customer dashboards, retention indicators, complaint analytics, service-quality monitoring, and predictive models capable of identifying changing customer needs before they result in dissatisfaction or defection. Operational processes should also be redesigned so that insights generated from market data can be implemented rapidly rather than being delayed by organizational fragmentation or bureaucratic procedures. Al-Rasheed Bank specifically can use the proposed framework to establish a recurring strategic scorecard covering market orientation, customer satisfaction, customer loyalty, digital engagement, operational efficiency, and predicted competitive performance. Managerial incentives should encourage cross-functional collaboration among marketing, IT, operations, risk, and branch management, while data governance, privacy protection, cybersecurity, and model oversight should be embedded in all analytical initiatives. Such an integrated approach would allow the bank to move from reactive decision-making toward continuous market sensing, predictive customer management, and evidence-based strategic adaptation.

Acknowledgments

We would like to express our appreciation and gratitude to all those who helped us carrying out this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

References

1. Moghaddaspour A, Gholipour Souteh R, Ansari M. Presenting a Model of Data-Driven Marketing Strategies for the Digital Marketing of Knowledge-Based Companies. *Technology in Entrepreneurship and Strategic Management*. 2026;5(2).
2. Dominic ML, Venkateswaran PS, Reddi LT, Rangineni S, Regin R, Rajest SS. The synergy of management information systems and predictive analytics for marketing. *Data-Driven Decision Making for Long-Term Business Success* 2024. p. 49-63.
3. Torabi MA, Milani SMS, Abbasian E. A critical review of intelligent marketing strategies: Challenges between data-driven marketing and human experience in the era of pervasive technologies. *Intelligent Marketing Management*. 2025;6(1):1-10.
4. Pilli D, Selvan C. Data-Driven Decision Making for Academic Marketing and Student Outreach. 2025:352-80. doi: 10.71443/9789349552685-13.
5. Mathew TA. Data-Driven Marketing Reinvented: Leveraging AI for Smarter, Ethical, and Personalized Campaigns. *Journal of Computer Science and Technology Studies*. 2025;7(3):149-56. doi: 10.32996/jcsts.2025.7.3.16.
6. Amosu OR, Kumar P, Fadina A, Ogunsuji YM, Oni S, Faworaja O, et al. Data-Driven Personalized Marketing: Deep Learning in Retail and E-Commerce. *World Journal of Advanced Research and Reviews*. 2024;23(2):788-96. doi: 10.30574/wjarr.2024.23.2.2395.
7. Duan Z. Data-Driven Personalized Marketing in E-Commerce: Practical Applications. *Advances in Economics Management and Political Sciences*. 2024;102(1):65-72. doi: 10.54254/2754-1169/102/2024ed0103.
8. Chen B, Cui W. Data-driven power marketing strategy optimization and customer loyalty promotion. *Energy Informatics*. 2025;8:53. doi: 10.1186/s42162-025-00510-y.
9. Anning-Dorson T, Baba F, Zulu M, Acheampong G. Data-driven dynamic capabilities in emerging markets: A grounded theory approach to digital transformation in African retail banking. *International Journal of Information Management*. 2025;84:102914. doi: 10.1016/j.ijinfomgt.2025.102914.
10. Bejarano-Murillo E. Digital Governance Across Continents: Cases from Diverse National Strategies. *Data-Driven Governance through AI, Digital Marketing, and the Privacy Interplay*: IGI Global Scientific Publishing; 2025. p. 1-30.
11. El-Fargani A, El-Hassan M. Data-Driven Financial Fraud Detection Using Hybrid Artificial and Quantum Intelligence. *Journal of Open Innovation: Technology, Market, and Complexity*. 2025;11(4):100581.
12. Huang X, Li H, Wei N. Big Data-Driven Behavioral Economics: Analysis of Decision Biases in Financial Markets. 2025. doi: 10.70339/vyet1339.

13. Gao J, Fan C, Liu T, Bai X, Li W, Tan H. Embracing Market Dynamics in the Post-COVID Era: A Data-Driven Analysis of Investor Sentiment and Behavioral Characteristics in Stock Index Futures Returns. *Omega*. 2025;131:103193. doi: 10.1016/j.omega.2024.103193.
14. Jatmiko U. Competitive Advantage of Small and Medium Enterprises (SMEs) in Terms of Entrepreneurial and Market Orientation. *International Journal on Social Science, Economics and Art*. 2022;12(3):147-55.
15. Karmel Toryanto CJ, Indriani F. Green Marketing Orientation Towards Competitive Advantage and Marketing Performance of Non-Food SMEs in Java. *International Journal of Scientific Research and Management*. 2022;10(02):3062-. doi: 10.18535/ijstrm/v10i2.em06.
16. Lestari R, Pradani T, Digdowiseiso K. The effects of digital marketing, entrepreneurship orientation, and product innovation on competitive advantage and its impact on the marketing performance of Talas Bolu Sangkuriang in Bogor City. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*. 2022;5(1):2081-7.
17. Nuryati S, Frimayasa A, Arief Z. The influence of market orientation and innovation on business performance in MSMEs through competitive advantage. *Jurnal Scientia*. 2024;13(1):59-68.
18. Bashokouh Ajirloo M, EbrahimiKharajo V. Investigating the Impact of Institutional Pressure and Market Orientation on the Green Supply Method and Competitive Advantage with the Mediating Role of Managerial Commitment (Case Study: Textile Industry). *Supply Chain Management*. 2023;25(78):9-21.
19. Ed-Dafali S, Al-Azad MS, Mohiuddin M, Reza MNH. Strategic Orientations, Organizational Ambidexterity, and Sustainable Competitive Advantage: Mediating Role of Industry 4.0 Readiness in Emerging Markets. *Journal of Cleaner Production*. 2023;401. doi: 10.1016/j.jclepro.2023.136765.
20. Karimi Zand M, Tayebi A. Designing model Internal Marketing with Entrepreneurial Orientation approach to the development of start-up businesses (Mixed paradigm). *Political Sociology of Iran*. 2023;5(12):1061-81. doi: 10.30510/psi.2022.343906.3500.
21. Sobhani AA, Moshabaki A, Naami A, Ehsani M. Identifying the Data-Driven Trend of Sports Consumer Motivation Based on Relational Marketing Knowledge Approach. *International Journal of Knowledge Processing Studies*. 2024;4(3):97-111.
22. Jeyanthi PM, Cvetkoska V, Kitanovikj B, editors. *Decision Intelligence in Sports Marketing. Sports Analytics: Data-Driven Sports and Decision Intelligence*; 2024.
23. Saeidi S, Alizadeh H. The Effect of Artificial Intelligence Capabilities on Competitive Advantage in International Markets: The Mediating Role of Entrepreneurial Orientation and the Moderating Role of Strategic Agility. *Technology in Entrepreneurship and Strategic Management*. 2026;5(2).