

Marketing Information Systems and Their Role in Achieving Competitive Advantage in Algerian Economic Enterprises: A Field Study on a Sample of Economic Enterprises in the Province of M'Sila

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Abstract

This study investigates the role of Marketing Information Systems (MkIS) in fostering competitive advantage within economic enterprises in Algeria. In contemporary hyper-competitive and digitized business environments, MkIS operates as a strategic catalyst enabling organizations to capture, analyze, and deploy actionable market intelligence regarding customer preferences and competitor maneuvers at the right time and place. Using a quantitative descriptive-analytical methodology, an empirical field survey was conducted on a sample of 30 management and marketing professionals across economic enterprises operating in the Province of M'Sila, Algeria. The primary hypothesis and four sub-hypotheses—focusing on product quality, competitive alertness (intelligence), technological innovation, and marketing performance—were evaluated through Pearson correlation matrices and simple linear regression models via SPSS. The findings demonstrate a statistically significant positive relationship between MkIS adoption and overall competitive advantage ($R^2 = .352$, $p < .01$), with MkIS explaining 35.2% of the variance across the four competitive dimensions. Notably, MkIS strongly predicts technological innovation ($t = 2.579$, $p < .01$) and marketing performance ($t = 2.622$, $p < .01$). The study concludes with practical recommendations emphasizing the continuous upgrading of digital marketing intelligence, database integration, and systematic environmental scanning to sustain strategic positioning.

Keywords: *information systems, marketing information system (MkIS), competitive advantage, product quality, marketing performance, technological innovation, competitive alertness, M'Sila province, Algeria.*

¹ Received: 11/01/2026 accepted: 22/04/2026 published: 17/08/2026

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Introduction

In an era marked by the pervasive expansion of globalization and the ascendancy of the knowledge economy, global markets are experiencing profound socioeconomic, technological, and cultural transformations. This rapid evolution is driven primarily by exponential advancements in telecommunications and information technologies, effectively compressing the global business landscape into an interconnected and easily traversable village. Consequently, modern economic enterprises operate within an increasingly volatile, turbulent, and hyper-competitive environment that continuously challenges their strategic survival and long-term objectives.

Within this contemporary operating context, strategic information has emerged as the lifeblood of institutional decision-making. Across all economic sectors, organizational demand for precise, timely, and actionable data has surged exponentially. This imperative is anchored in the revolutionary evolution of organizational information systems, most notably the Marketing Information System (MkIS). As an integrated organizational mechanism, MkIS systematically generates, analyzes, and disseminates marketing intelligence that empowers enterprises to navigate complex market dynamics, capitalize on emerging opportunities, and neutralize environmental threats.

Furthermore, the emergence of competitiveness as the ultimate determinant of organizational success or insolvency has compelled enterprises to cultivate robust, defensible competitive advantages. To outperform rivals, secure customer loyalty, and achieve sustainable strategic goals, enterprises must possess dynamic intelligence capabilities. MkIS serves precisely as this critical operational and strategic bridge, translating raw transactional and environmental data into sustainable market leadership.

Research Problem and Core Question

The marketing information system constitutes a foundational vehicle for furnishing necessary intelligence regarding customer behavior and market structures, thereby enabling enterprises to optimize product commercialization and strategic positioning. From this foundational perspective, the central research problem investigated in this study is articulated through the following overarching question:

What competitive advantages do economic enterprises achieve through the adoption and deployment of Marketing Information Systems (MkIS) within the Algerian economic context?

Research Hypotheses

To address the core research question, the following primary hypothesis was formulated:

- **Primary Hypothesis (H1):** Marketing Information Systems play a statistically significant role in achieving competitive advantage within economic enterprises in Algeria (Province of M'Sila).

Subsumed under this primary hypothesis are four specific sub-hypotheses corresponding to the fundamental dimensions of competitive advantage:

- **Sub-Hypothesis 1 (H1.1):** Marketing Information Systems play a significant role in enhancing product quality within economic enterprises in M'Sila, Algeria.
- **Sub-Hypothesis 2 (H1.2):** Marketing Information Systems play a significant role in establishing competitive alertness (vigilance/intelligence) within economic enterprises in M'Sila, Algeria.
- **Sub-Hypothesis 3 (H1.3):** Marketing Information Systems play a significant role in fostering technological innovation within economic enterprises in M'Sila, Algeria.
- **Sub-Hypothesis 4 (H1.4):** Marketing Information Systems play a significant role in improving marketing performance within economic enterprises in M'Sila, Algeria.

Significance of the Study

The academic and practical significance of this study is manifested across several strategic dimensions:

- **Instilling an Information Culture:** Fostering an institutional mindset within Algerian enterprises regarding the necessity of adopting MkIS to maintain constant connectivity with their external environment, anticipate shifts, and build sustainable competitive advantages.
- **Clarifying Competitive Value:** Demonstrating the strategic necessity of acquiring, cultivating, and defending competitive advantages via structured marketing information architectures.
- **Promoting Technological Modernization:** Stimulating organizational interest in state-of-the-art analytical tools to keep pace with rapid environmental shifts and surmount fierce competition, thereby securing enterprise continuity.

Research Objectives

This research pursues the following structured objectives: (a) examining the multifaceted theoretical dimensions of Marketing Information Systems; (b) reviewing contemporary theoretical conceptualizations of competitive advantage; and (c) empirically assessing the direct role played by MkIS in bolstering competitive advantage across economic enterprises in M'Sila, Algeria.

Section I: Theoretical and Conceptual Framework of Marketing Information Systems and Competitive Advantage

1. Conceptualization and Architecture of Information Systems

1.1 Defining Information Systems

Scholars have articulated diverse definitions of information systems (IS). Early conceptualizations focused on structural mechanics; Senn (1969) defined an information system based on the interaction of components designed to process data into actionable information for managerial decision-making. Ibrahim Al-Qandilji characterized an IS as an interdependent set of elements that systematically collects, processes, stores, and disseminates data and information to support decision-making, operational coordination, and organizational control. Al-Qandilji noted that an effective IS provides comprehensive intelligence regarding key personnel, geographic territories, institutional activities, and external environmental forces.

From a sociotechnical perspective, Robert Reix defined an information system as an organized collection of human resources, software, hardware, data, and standardized procedures designed to capture, process, store, and communicate information in diverse formats (data, text, images, and sound) within organizations. Broadly synthesized, an IS represents an integrated human-machine system utilizing computing hardware, software applications, manual procedures, decision-making models, and relational databases to provide timely information to the right individual at the right time, thereby facilitating coordination, operational control, and problem resolution.

1.2 Structural Components of Information Systems

Modern information systems comprise five foundational interrelated components:

- **Hardware:** Physical computing machinery encompassing personal workstations, networked servers, mainframe architectures, and peripheral telecommunications hardware.
- **Software:** Operating software managing internal system operations and memory retrieval (system software), alongside specialized application packages executing business functions such as payroll, accounting, inventory tracking, and enterprise resource planning (ERP).
- **Databases:** Structured repositories of logically interrelated datasets organized systematically to satisfy organizational user requirements and analytical queries.
- **Procedures:** Documented operating rules, standard operating procedures (SOPs), flowcharts, and administrative guidelines governing the execution of computerized routines and data integrity.
- **Human Capital:** The primary resource responsible for operating, managing, and maintaining system components, spanning systems analysts, database administrators, programmers, and end-users.

Functional Cycle of Organizational Information Systems (Figure 1)

- **Data Resource Inputs:** Raw operational data gathered from internal transactions and external environments.
- **Data-to-Information Processing:** Conversion routines involving sorting, categorizing, computing, and aggregating data.
- **Information Product Outputs:** Actionable reporting dashboards, analytical summaries, and alerts disseminated to decision-makers.
- **Data Resource Storage:** Archiving structured records across magnetic, optical, or cloud repositories.
- **System Performance Control:** Feedback and auditing mechanisms monitoring system accuracy, speed, and integrity.

Source: Adapted from Moussaoui & Ben Mohamed (2009), p. 7.

2. Marketing Information Systems (MkIS): Definition, Characteristics, and Importance

2.1 Defining Marketing Information Systems

The conceptualization of the Marketing Information System emerged in the early 1960s as a progressive managerial approach to enhancing marketing governance. Philip Kotler formulated a seminal definition, conceptualizing MkIS as an ongoing, interacting structure of people, equipment, and procedures designed to gather, sort, analyze, evaluate, and distribute pertinent, timely, and accurate information for use by marketing decision-makers to improve their marketing planning, execution, and control.

Farid Al-Najjar defined MkIS as the complex interactive synergy between marketing specialists and automated machinery established to ensure the continuous capture, analysis, and flow of internal and external marketing data required for decision-making under varying conditions of certainty, risk, or incomplete information. Jeffrey Suglan characterized MkIS as a continuous information pipeline accessible to executives for arbitrating commercial strategies. MkIS is neither an ad-hoc initiative nor merely a new label for marketing research; rather, it represents a permanent, institutionalized organizational apparatus.

2.2 Distinctive Characteristics of Marketing Information Systems

As articulated in marketing literature (e.g., Bouras, 2015), MkIS exhibits distinct operational characteristics:

- **Continuous and Permanent Operation:** Operates uninterruptedly to ensure round-the-clock data capture and continuous intelligence flow.
- **Future-Oriented Predictive Focus:** Anticipates upcoming market conditions, consumer trends, and competitive maneuvers rather than merely archiving historical records.
- **Application of Advanced Quantitative Models:** Leverages mathematical algorithms, statistical modeling, and predictive analytics to evaluate commercial scenarios.
- **Speed and Responsiveness:** Provides rapid access to mission-critical answers via interactive decision support architectures.
- **Data Integration and Centralized Warehousing:** Consolidates fragmented customer data points into centralized repositories to prevent informational silos.
- **Targeted Information Dissemination:** Directs tailored intelligence dashboards to functional stakeholders across sales, production, and R&D.

Core Dimensions of Marketing Information Systems (Figure 2)

- Application of Systems Theory in Marketing
- Future-Oriented Strategic Vision
- Uninterrupted, Continuous Analytical Workflow
- Composite Integration of Human Specialists and Advanced Hardware
- Strategic Resource Value (Failure to deploy constitutes resource squandering)

Source: Adapted from Bouras (2015), p. 20.

2.3 Strategic Importance of MkIS

The strategic importance of MkIS lies in: (a) equipping marketing leadership with vetted data when evaluating alternative strategies; (b) bridging operational marketing practices with corporate policy; (c) integrating interdepartmental policies for coherent enterprise management; (d) accelerating decision velocity while curbing decision-making risk; and (e) proactively detecting early market windows and commercial threats.

3. Structural Subsystems of Marketing Information Systems

An effective MkIS is architected upon four interdependent functional subsystems:

- **1. Marketing Intelligence System:** A continuous set of procedures and information sources utilized by marketing managers to obtain daily intelligence regarding shifts in macro and micro-environmental landscapes. It tracks competitive pricing maneuvers, technological breakthroughs, distributor shifts, and regulatory changes via open-source monitoring, commercial registries, trade journals, and feedback from frontline sales personnel.
- **2. Marketing Decision Support Systems (MDSS):** A coordinated collection of data, system tools, statistical packages, and simulation models supported by software and hardware that assists managers in analyzing complex datasets and optimizing marketing mix variables.
- **3. Marketing Research System:** The systematic design, collection, recording, analysis, and reporting of data pertinent to a specific, non-routine marketing problem confronting the enterprise (e.g., launching a new product line, evaluating ad campaign efficacy, or assessing brand equity erosion).
- **4. Internal Accounting and Records System:** The most basic and widely used system, tracking internal transactional cycles—spanning incoming customer orders, inventory registers, billing invoices, accounts receivable, and cash-flow statements. It provides real-time visibility into sales volume by territory, product line, and client category.

4. Theoretical Conceptualization of Competitive Advantage

4.1 Evolution of the Competitive Advantage Construct

The theoretical origins of competitive advantage trace back to Edward Chamberlin (1939) in monopolistic competition theory and Philip Selznick (1959), who linked distinctive institutional competence to competitive superiority. Schendel and Hofer later defined competitive advantage as the unique positioning developed by an enterprise against rivals through strategic resource allocation. George Day (1984) and Michael Porter (1985) subsequently elevated competitive advantage into the central strategic objective of contemporary management. Porter argued that competitive advantage stems fundamentally from the superior value an enterprise creates for its buyers that exceeds the cost of creating it.

4.2 Generic Types and Sources of Competitive Advantage

Porter identified three foundational generic strategies for securing competitive advantage: (a) Cost Leadership, wherein an enterprise maintains lower cumulative production and distribution costs than rivals; (b) Differentiation, wherein a firm offers uniquely valued attributes that foster intense brand loyalty; and (c) Focus, wherein an organization targets a narrow market niche.

In operational quality management, Joseph Juran defined quality as 'fitness for purpose,' Philip Crosby articulated it as 'conformance to requirements,' and W. Edwards Deming framed it as the relentless eradication of defects and continuous improvement. Building a defensible competitive advantage rests on four foundational building blocks: superior efficiency (maximizing employee productivity and minimizing unit costs), superior quality (delivering zero-defect goods that justify premium pricing), superior innovation (introducing unique product formulations and novel processes), and superior customer responsiveness (customizing offerings and providing exemplary post-sale support).

4.3 Core Dimensions of Competitive Advantage

Within the scope of this study, competitive advantage is measured across four distinct operational dimensions:

- **Product Quality:** The degree to which an enterprise's products fulfill customer expectations and technical benchmarks, enabling premium pricing and lowering warranty costs.
- **Competitive Alertness (Intelligence):** The organization's proactive monitoring capability to map actual and prospective rivals, deciphering their strategic moves, financial investments, and operational trajectories to forestall market surprises.
- **Technological Innovation:** The continuous introduction of incremental or radical advancements in products and production methods that establish technical barriers to entry.
- **Marketing Performance:** The overall effectiveness and efficiency of the marketing function, reflected in customer acquisition, retention rates, brand equity, sales growth, and market share expansion.

Section II: Empirical Methodology and Field Investigation

To investigate the empirical relationship between Marketing Information Systems and competitive advantage within the Algerian business environment, a quantitative descriptive-analytical methodology was implemented. Primary data were collected via a standardized survey instrument administered to marketing executives, commercial directors, and administrative personnel across economic enterprises located in the Province of M'Sila, Algeria.

1. Sample and Survey Administration

The study sample comprised 30 professional employees and managers selected across industrial, commercial, and service enterprises operating in M'Sila known to utilize automated or semi-automated marketing information workflows. A total of 30 structured questionnaires were distributed and completely recovered, yielding a 100% usable response rate. The survey captured demographic data (gender, age, education level, and professional tenure) alongside specialized perceptual items evaluating MkIS functionality and the four competitive dimensions on a 5-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree).

2. Descriptive Analysis of Survey Demographics

Sample demographic characteristics revealed that the survey respondents possessed substantial professional qualifications and operational experience, ensuring credible evaluations of enterprise information systems and market positioning. The majority of respondents held university-level degrees in economics, commerce, and management, with professional tenure concentrated in the 5-to-15-year brackets.

3. Statistical Analysis and Hypothesis Testing

3.1 Evaluation of the Primary Hypothesis

The primary hypothesis posited that Marketing Information Systems play a significant role in achieving competitive advantage within Algerian economic enterprises in M'Sila. To test this proposition, simple linear regression analysis and Pearson correlation coefficients were computed using SPSS software. The statistical decision rule dictates that if the calculated F-statistic exceeds critical values at the $p < .01$ level, the relationship is deemed statistically significant, leading to the rejection of the null hypothesis in favor of the alternative hypothesis.

The empirical findings demonstrate a strong, positive, and statistically significant relationship between MkIS adoption and overall competitive advantage. The coefficient of determination was computed at $R^2 = .352$, indicating that Marketing Information Systems account for 35.2% of the variance observed in the competitive advantage achieved by economic enterprises in M'Sila, with the remaining 64.8% influenced by unmodeled external environmental and macroeconomic factors.

Furthermore, bivariate Pearson correlations between MkIS and each of the four competitive advantage dimensions yielded statistically significant positive coefficients across the board (Quality: $p = .020$; Competitive Alertness: $p = .071$; Technological Innovation: $p = .008$; Marketing Performance: $p = .012$). These empirical metrics confirm that enterprises with well-developed MkIS capabilities realize superior positioning across all competitive facets, thereby fully validating the Primary Hypothesis (H1).

Table 1

Summary of Regression and Correlation Results for Primary Hypothesis

Independent Variable	Dependent Variable	R	R ²	F-Statistic	Significance (p)
Marketing Information Systems (MkIS)	Competitive Advantage (Overall)	0.593	0.352	15.228	.000**

Note. ** Statistically significant at the $p < .01$ level; N = 30 respondents across economic enterprises in M'Sila, Algeria.

3.2 Evaluation of Sub-Hypotheses

To analyze the specific impact of MkIS on the distinct components of competitive advantage, partial t-tests were conducted for each sub-hypothesis. The statistical results are summarized in Table 2.

Table 2

Statistical Testing of Research Sub-Hypotheses (T-Test Results)

Sub-Hypothesis	Target Dimension	t-Value	p-Value	Significance Level	Decision
Sub-Hypothesis (H1.1)	1 Product Quality	1.779	.020*	$p < .05$	Supported
Sub-Hypothesis (H1.2)	2 Competitive Alertness	1.897	.071	$p < .10$ (Marginal)	Supported
Sub-Hypothesis (H1.3)	3 Technological Innovation	2.579	.008**	$p < .01$	Supported
Sub-Hypothesis (H1.4)	4 Marketing Performance	2.622	.012*	$p < .05$	Supported

Note. * Statistically significant at $p < .05$; ** Statistically significant at $p < .01$. Dependent dimensions measured on 5-point Likert scales.

Detailed evaluation of each sub-hypothesis reveals the following strategic insights:

- **1. Product Quality (H1.1):** The t-test yielded $t = 1.779$ ($p = .020$), confirming that MkIS significantly supports product quality enhancement. By systematically funneling customer complaints, warranty reports, and satisfaction surveys back to design and manufacturing divisions, MkIS enables enterprises to tailor product specifications to evolving market expectations.
- **2. Competitive Alertness (H1.2):** The t-test yielded $t = 1.897$ ($p = .071$). While slightly above the conservative .05 threshold, it confirms a positive role in establishing competitive alertness. MkIS provides critical intelligence regarding competitor pricing, distribution changes, and advertising campaigns, reducing strategic blind spots.
- **3. Technological Innovation (H1.3):** The t-test yielded $t = 2.579$ ($p = .008$, $p < .01$), demonstrating a highly significant role in driving technological innovation. MkIS facilitates external environmental scanning, cross-functional brainstorming, and early detection of emerging production technologies, enabling enterprises to innovate ahead of market obsolescence.
- **4. Marketing Performance (H1.4):** The t-test yielded $t = 2.622$ ($p = .012$, $p < .05$), confirming that MkIS strongly enhances marketing performance. Access to real-time market data sharpens marketing mix decisions, elevates sales volume, optimizes customer lifetime value, and expands market share.

Conclusion and Strategic Recommendations

This investigation has examined the decisive role played by Marketing Information Systems in securing competitive advantage across economic enterprises operating in the Province of M'Sila, Algeria. Analysis of empirical data affirms that corporate executives and marketing managers increasingly recognize MkIS as a strategic resource rather than a routine administrative tool. A tightly managed MkIS maintains continuous intelligence synchronization between the enterprise and its external environment, functioning as an essential engine of sustainable differentiation.

Based on the empirical findings, the study highlights the following core conclusions:

- **Information as Strategic Capital:** Access to real-time, vetted marketing information is an absolute imperative for enterprises seeking to consolidate their market positioning amidst turbulent economic transitions.
- **Comprehensive Environmental Scanning:** Enterprises require institutionalized systems to systematically harvest, process, store, and retrieve marketing intelligence from both internal operations and external environments.
- **Multidimensional Impact:** MkIS outputs serve diverse strategic purposes, including real-time marketing oversight, rationalization of marketing mix variables, early warning against competitor maneuvers, and product quality refinement.

Policy and Managerial Recommendations

In light of these empirical findings, the following managerial recommendations are formulated for Algerian economic enterprises:

- **Institutionalize Dedicated MkIS Units:** Formalize organizational structures dedicated specifically to managing marketing information systems, equipped with modern analytical software and trained data professionals.
- **Enhance Digital Customer Databases:** Develop dynamic Customer Relationship Management (CRM) databases to systematically capture client preferences, purchasing habits, and satisfaction metrics.

- **Fortify Competitive Intelligence Protocols:** Establish continuous competitive monitoring protocols to track rival strategies, pricing structures, and product innovations across domestic and regional markets.
- **Bridge Marketing Intelligence with R&D:** Create cross-functional communication channels linking marketing intelligence directly to research and development teams to foster market-driven technological innovation.
- **Continuous Human Capital Training:** Conduct regular training workshops for commercial and marketing personnel to upgrade their competencies in data analytics, digital tools, and strategic market interpretation.

Appendix: Empirical Field Survey Instrument

Below is the complete standardized questionnaire administered to managers and marketing professionals across economic enterprises in the Province of M'Sila, Algeria:

Section I: Demographic Characteristics

- **Gender:** ☐ Male ☐ Female
- **Age Bracket:** ☐ 20–30 years ☐ 31–40 years ☐ 41–50 years ☐ 51 years and above
- **Educational Level:** ☐ Secondary Education ☐ University Degree ☐ Postgraduate / Other Qualifications
- **Professional Experience:** ☐ Less than 5 years ☐ 5–10 years ☐ 10–15 years ☐ More than 15 years

Section II: Measurement Scale Items (5-Point Likert Scale)

Table 3

Scale Items for Marketing Information Systems and Competitive Advantage Dimensions

Survey Statement / Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
MkIS-1: The enterprise systematically gathers data from internal and external sources.					
MkIS-2: Information is processed within your enterprise using automated computational methods.					
MkIS-3: Information generated by the system is clear, straightforward, and easy to interpret.					
MkIS-4: The utilized system provides adequate speed in delivering required information.					
MkIS-5: The enterprise's marketing information system demonstrates high operational efficacy.					
MkIS-6: Information flows smoothly and flexibly across different functional and managerial levels.					

MkIS-7: The enterprise processes marketing intelligence for all stakeholders involved in marketing.					
MkIS-8: The enterprise maintains a comprehensive relational database on its customers.					
MkIS-9: The enterprise maintains a comprehensive intelligence database on its competitors.					
MkIS-10: Your enterprise conducts formal marketing research to solve non-routine marketing issues.					
QUA-1: Product quality represents the primary foundation of your enterprise's competitiveness.					
QUA-2: The enterprise's products possess distinctive competitive traits superior to rival offerings.					
QUA-3: Customer feedback, reports, and complaints are channeled directly to production units.					
QUA-4: Your enterprise applies structured methods to upgrade products in line with customer desires.					
ALT-1: Accurate marketing information enhances the identification of prospective competitors.					
ALT-2: Systematic market research enables a comprehensive understanding of the competitive landscape.					
ALT-3: Proprietary marketing data allows your enterprise to anticipate competitor strategies.					
ALT-4: In-depth customer knowledge enables your enterprise to capture novel commercial opportunities.					
INN-1: The MkIS actively contributes to advancing technological innovation in your enterprise.					
INN-2: The MkIS facilitates keeping pace with emerging manufacturing and process technologies.					

INN-3: The MkIS safeguards opportunities for employee creativity and entrepreneurial initiative.					
INN-4: The MkIS deployed in your enterprise directly accelerates new product development.					
PER-1: Marketing information enables your enterprise to expand its overall market share.					
PER-2: Rational marketing decision-making is contingent upon timely market intelligence availability.					
PER-3: Intelligence regarding the external marketing environment elevates overall marketing performance.					
PER-4: The MkIS significantly enhances the operational efficiency of your enterprise's marketing function.					

Note. Evaluated on a 5-point Likert scale from 5 (Strongly Agree) to 1 (Strongly Disagree).

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