



## THE ROLE OF INFORMATION SYSTEMS IN ACTIVATING STRATEGIC INTELLIGENCE: EVIDENCE FROM THE AGRICULTURAL EQUIPMENT COMPLEX (CMA) IN SIDI BEL ABBÈS, ALGERIA

**Kaouther Fatima MEHDAOUI \***

University of Algeria 3, Algeria

mehdaoui.kaoutherfatima@univ-alger3.dz

Laboratory of globalization and economic policies

**Abdelkader HADIR**

University of Algeria 3, Algeria

hadirwata@gmail.fr

Send Article Date: 03-12-2025

Date of acceptance of the article: 16-12-2025

### Abstract:

This study examines the role of information systems in activating strategic intelligence within Algerian industrial enterprises, focusing on a field investigation at the Agricultural Equipment Complex (CMA) in Sidi Bel Abbès. In an environment marked by rapid technological change and intense competition, organizations increasingly rely on information systems not only as operational tools but as strategic enablers of foresight and adaptability. The research combines theoretical analysis with empirical evidence gathered through a structured questionnaire administered to 72 managers and executives. Statistical analysis using SPSS revealed a strong organizational awareness of the importance of information systems (mean = 2.52) but a relatively weak implementation of strategic intelligence practices (mean=1.72). The findings highlight that while the technological infrastructure for effective information management exists, strategic intelligence remains underdeveloped due to limited training, insufficient managerial awareness, and weak institutionalization. The study concludes that bridging this gap requires aligning information systems with strategic objectives, fostering a culture of vigilance, and integrating advanced decision-support tools.

**Keywords:** Information Systems; Strategic Intelligence; Industrial Enterprises; Decision Support; Algeria.

\* Kaouther Fatima MEHDAOUI

## Introduction:

Today's organizations are undergoing a profound transformation as they stand on the threshold of a new era governed by technology and modern science, marked by the information revolution, rapid change, and economic and social evolution. These shifts have impacted organizations in all their dimensions from work methods to decision-making processes. The contemporary environment is now characterized by intense competition, complexity, instability, uncertainty, and dynamism. It can even be described as a highly competitive and challenging environment., which compels organizations to effectively manage their environmental relationships and adapt to these transformations to mitigate their potential effects.

These changes have brought about qualitative and fundamental shifts in the business and competitive landscape, affecting the global market in all its components. The growing complexity of technological, economic, social, and political variables has created new and ongoing challenges for organizations, regardless of their size, resources, geographic location, or market share. Consequently, new organizations have emerged while others have disappeared, making business management a vital process dependent on developing informational capabilities and generating knowledge at all levels since information has become the lifeblood of organizations and a key factor in their survival and growth.

Information systems have thus become one of the most critical tools organizations rely on to achieve their objectives and keep pace with changes in their environment. To achieve excellence, leadership, and sustainable operations, an organization must establish an integrated system based on studying, analyzing, monitoring, and tracking all environmental changes and fully understanding the various variables that may affect it. It must also work to identify appropriate solutions and mechanisms to adapt to these transformations.

This reality has led organizations to adopt a new strategic approach to face competition and ensure market survival namely, strategic intelligence (strategic vigilance) as a key tool for observation, analysis, and foresight. Relying on strategic intelligence has become an inevitable necessity for Algerian economic enterprises,



as it represents an effective means of achieving sustainability and competitiveness in an environment marked by instability and constant change.

### **- Research Problem**

Over the past few decades, the world has witnessed profound transformations marked by a transition from industrial societies to knowledge- and information-based societies. This shift has been accompanied by increasing economic competition under globalization and major structural changes in the business environment. This new reality has driven organizations, including industrial enterprises, to seek more efficient tools and mechanisms to respond effectively to these accelerating changes and challenges.

In this context, information systems are no longer merely tools for storing and processing data; they have become essential strategic instruments for anticipating the future and predicting events by detecting weak signals and early warning indicators in both the internal and external environments of the organization. This new role enables information systems to provide a knowledge base that supports decision-makers in seizing opportunities and avoiding threats before they occur.

This topic is particularly relevant to Algerian industrial organizations, such as the Agricultural Equipment Complex (CMA) in Sidi Bel Abbès, which faces increasing competitive and technological challenges. These challenges require the adoption of effective information systems that support strategic intelligence as a proactive mechanism to ensure survival and continuity. Hence, this study raises the following research question:

What role do information systems play in activating strategic intelligence within Algerian industrial enterprises?

To what extent do information systems contribute to enhancing the Agricultural Equipment Complex's (CMA) ability to anticipate environmental changes and improve its strategic performance?

### **- Research Questions and Hypotheses**

Based on the problem statement, the following questions are formulated:

1. What is the current state of strategic intelligence implementation at the Agricultural Equipment Complex (CMA) in Sidi Bel Abbès?
2. How do the information systems used in the complex contribute to supporting and activating strategic intelligence?
3. What are the main determinants and factors influencing the effectiveness of strategic intelligence within the complex?

To address these questions, the following hypotheses are proposed:

**- General Hypothesis:**

Information systems contribute to activating strategic intelligence in industrial enterprises by providing decision-makers with accurate and timely information that helps them respond to environmental changes and anticipate future events.

**- Specific Hypotheses:**

1. The Agricultural Equipment Complex (CMA) has a clear understanding of the importance of strategic intelligence in predicting and anticipating environmental changes.
2. Information systems play a pivotal role in activating strategic intelligence through the collection, processing, and dissemination of anticipatory information.
3. The effectiveness of strategic intelligence is influenced by a number of organizational, technological, and managerial determinants within the enterprise.

**- Objectives and Significance of the Study**

**1. Objectives of the Study**

This study aims to analyze the role of information systems in activating strategic intelligence within Algerian industrial enterprises through an applied field study at the Agricultural Equipment Complex (CMA) in Sidi Bel Abbès.

Specifically, it seeks to:

- Identify the current state and efficiency of the information systems used in the complex.
- Determine how these systems contribute to enhancing the organization's predictive and anticipatory capabilities.
- Analyze the impact of organizational and technological factors on the effectiveness of the strategic intelligence system.



## **2. Significance of the Study**

The importance of this research stems from the following considerations:

1. The accelerating pace of technological development has led to an explosion in the volume of information, necessitating the adoption of integrated information systems capable of efficiently filtering and analyzing it.
2. The increasing complexity of industrial and economic environments, characterized by instability and intense competition, requires organizations to move beyond traditional methods of information management and decision-making.
3. Strategic intelligence plays a crucial role in enabling organizations to anticipate change, detect early warning signs of crises or opportunities, and avoid delayed reactions that could threaten their survival.
4. This study seeks to highlight the experience of the Agricultural Equipment Complex (CMA) in Sidi Bel Abbès as an applied model from which other Algerian industrial enterprises can benefit.

### **Part one: Theoretical Framework of the Study**

#### **1. The Nature of Information Systems and the Factors Determining Their Effectiveness**

##### **1.1. Definition of Information Systems**

Research in the field of information systems is a relatively recent specialization within management sciences. Many scholars trace the beginning of organized academic interest in this field to the late 1970s with the publication of the first issue of Management Information Systems Quarterly in 1977, and the organization of the first international conference on information systems in 1980 (Avison & Elliot, 2006 pp. 1–20).

The literature offers several definitions of this concept. According to the British Academy for Information Systems, it is defined as “the means by which individuals and organizations use technology to collect, process, store, utilize, and disseminate information” (Ward & Peppard, 2002 pp. 202-203).

Khashaba (1987) defines it as “a system that collects, transforms, and transmits information within the organization using various data-

processing techniques, in order to provide users with the information they need.”

Laudon and Laudon (2012) describe an information system as “an interrelated set of components that aim to support decision-making and control within the organization.” Similarly, O’Brien and Marakas (2010) view it as “an organized combination of people, hardware, software, communication networks, policies, and procedures that work together to store, retrieve, transform, and disseminate information throughout the organization.”

It is essential to distinguish between the concepts of information systems and computerization. The former represents a comprehensive framework that encompasses people, processes, and informational content, while the latter refers to the technological dimension related to information technology. According to Deyrieux (2003), an information system consists of all the formal and informal information available to employees, whereas computerization refers to the tools and technologies that enable access to such information.

## 1.2. Factors Determining the Effectiveness of Information Systems

Information systems hold strategic importance in modern organizations due to their role in achieving operational excellence and supporting strategic decision-making. Ward and Peppard (2002) emphasize that the effectiveness of information systems depends on several key factors, including:

- The organization’s technological capabilities.
- The alignment of applications with business requirements.
- Environmental pressures and competitive dynamics affecting the organization.

Laudon and Laudon (2012) also identify several objectives by which the effectiveness of information systems can be measured:

- **Operational excellence** through improved efficiency in production and administrative processes.
- **Product and service innovation** by creating new business models.
- **Enhanced relationships** with customers and suppliers to ensure satisfaction and loyalty.
- **Improved decision quality** by providing accurate and up-to-date information.



- **Business continuity** in an environment characterized by instability and rapid change.

### **1.3. The Importance of Information Systems in the Organization**

Amid economic transformations and globalization, information systems have become the backbone of any organization striving for survival and competitiveness. They contribute to cost reduction, task automation, and error minimization — which in turn enhances organizational productivity (Bohnke, 2010 pp. 60-61).

Deyrieux (2003) describes the information system as “the vital nerve of the organization that ensures its reactivity and ability to communicate effectively with its internal and external environments.” It represents one of the essential components supporting the achievement of strategic objectives (Turban & Volonino, 2011 pp. 87).

Since the 1990s, the perception of information systems has evolved — they are no longer seen merely as operational tools, but as strategic resources that help build a competitive advantage. Information and information technology have become integral elements of the corporate value chain and key enablers of organizational infrastructure (Rivard & Talbot, 2001 pp. 10).

## **2. Strategic Intelligence and the Role of Information Systems in Its Activation**

### **2.1. The Nature and Importance of Strategic Intelligence**

The concept of strategic intelligence (or strategic vigilance) is closely linked to the use of information to explore and analyze the organization’s external environment, with the goal of anticipating changes and addressing opportunities and threats before they occur (Kamoun-Chouk, 2005 pp. 20-26).

Aguiar (1967) defines environmental scanning as “the process of gathering and using information related to the external environment.” Jakobiak (1988) describes it as “the monitoring and analysis of the environment to identify threats and development opportunities.”

Lesca and Lesca (2011) view it as “a proactive listening process aimed at capturing opportunities and reducing risks.” They liken it to a strategic radar that enables the organization to foresee the future and control its trajectory.

Strategic intelligence is particularly important for Algerian industrial enterprises — including the Agricultural Equipment Complex (CMA) in Sidi Bel Abbès — due to the specific nature of their competitive environment and the challenges posed by technological change and global competition. It enables these enterprises to adapt quickly, improve strategic decision-making, and ensure business continuity in a dynamic market environment.

## 2.2. Determinants of Strategic Intelligence

Strategic intelligence is a complex process influenced by various internal and external factors. According to Sekhar (2009), its effectiveness depends on four main dimensions:

- **Contextual dimensions:** the degree of environmental complexity and frequency of change.
- **Organizational strategies:** the nature of the organization's interaction with its environment.
- **Managerial characteristics:** the skills and experience of managers and administrative levels.
- **Information behavior:** the type, sources, and processing methods of information required.

Calof and Skinner (1998) argue that many organizations focus on collecting information without giving due attention to its analysis and dissemination, making them “data-rich but information-poor.” This imbalance weakens the effectiveness of their strategic intelligence systems.

## 2.3. The Role of Information Systems in Activating Strategic Intelligence

Information systems represent one of the fundamental pillars for activating strategic intelligence within an organization. According to Ansoff (1980), weak signals are the earliest indicators that enable organizations to detect change before it occurs. The primary role of the information system is to identify, analyze, and transform these weak signals into early warnings that can be leveraged in decision-making (Choo, 2002 pp. 95).

The anticipatory information provided by information systems reflects environmental shifts that may significantly influence the organization's strategic orientation (Rouibah, 1998). Such information



is crucial because it enables early detection of risks and opportunities within a time frame that allows for proactive action.

Lesca and Blanco (2003) note that anticipatory information is characterized by several essential features:

- **Probabilistic:** related to uncertain future events.
- **Fragmentary:** composed of scattered data that gain meaning only when interconnected.
- **Predictive:** helps guide strategic decisions at the right time.

Accordingly, an information system functions as a strategic monitoring mechanism that allows the organization to obtain the right information, at the right time, and for the right person (Vidal & Planeix, 2005 pp. 145). This capability strengthens its resilience against environmental turbulence and enhances its ability to act proactively in response to change.

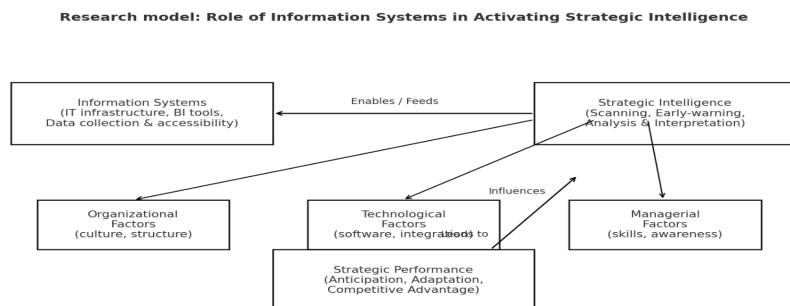
## 2.4. Conceptual Research Model

Based on the reviewed literature, the proposed research model (Figure 1) illustrates the hypothesized relationships between information systems and the activation of strategic intelligence within Algerian industrial enterprises.

The model posits that information systems constitute a key driver of strategic intelligence by providing the technological and informational infrastructure necessary for environmental scanning, analysis, and foresight.

Furthermore, the effectiveness of strategic intelligence is influenced by organizational, technological, and managerial determinants, which together shape the enterprise's ability to translate information into strategic performance and competitiveness.

**Figure 1. Research Model: The Role of Information Systems in Activating Strategic Intelligence**



## Part Two: The Empirical Fieldwork

### 1. Fieldwork Procedures (Summary)

The empirical component of this research was conducted within the Agricultural Equipment Complex (CMA) located in Sidi Bel Abbès, which represents one of the leading industrial structures in the Algerian mechanical and agricultural equipment sector. The study targeted managers and administrative executives, who are the most directly involved in decision-making and information management processes.

The data collection period extended from April to July 2016, ensuring adequate time for distribution, completion, and retrieval of questionnaires.

A total of 80 questionnaires were distributed, of which 80 were returned (100% response rate). However, 8 forms were excluded due to incomplete or inconsistent responses, leaving 72 valid questionnaires ( $n = 72$ ) for statistical analysis.

The research instrument was a structured questionnaire composed of five thematic sections, each designed to explore a key dimension of the relationship between information systems and strategic intelligence. Responses were measured using a three-point Likert scale (1 = Low, 2 = Moderate, 3 = High). The hypothetical mean was therefore 2.00, serving as the benchmark for comparison.

To ensure internal consistency and measurement reliability, the questionnaire was subjected to Cronbach's Alpha test, which yielded a very high reliability coefficient ( $\alpha = 0.98$ ), indicating excellent internal consistency across items.

Data analysis was carried out using SPSS software, employing both descriptive and inferential statistical techniques. Specifically, frequencies, percentages, means, and standard deviations were calculated for descriptive purposes, while One-Sample T-tests and Multiple Regression analyses were conducted to test the research hypotheses and measure the strength of relationships between variables.

### 2. Sample Description (Summary)

The sample ( $n = 72$ ) was carefully selected to represent the managerial and professional composition of the CMA's workforce.



Demographic and professional characteristics are summarized as follows:

### Gender Distribution

| Gender       | Frequency | Percentage  |
|--------------|-----------|-------------|
| Male         | 71        | 98.6%       |
| Female       | 1         | 1.4%        |
| <b>Total</b> | <b>72</b> | <b>100%</b> |

The sample is predominantly male, which reflects the gender composition of industrial institutions in Algeria, particularly in the mechanical and agricultural machinery sector.

### Age Distribution

| Age Group      | Frequency | Percentage  |
|----------------|-----------|-------------|
| Under 30 years | 0         | 0.0%        |
| 30–40 years    | 8         | 11.1%       |
| 40–50 years    | 36        | 50.0%       |
| Over 50 years  | 28        | 38.9%       |
| <b>Total</b>   | <b>72</b> | <b>100%</b> |

The majority of respondents are middle-aged professionals (40–50 years), which supports the representativeness of experienced staff in the managerial structure of the organization.

### Educational Level

| Education Level            | Frequency | Percentage  |
|----------------------------|-----------|-------------|
| Below university level     | 34        | 47.2%       |
| University level or higher | 38        | 52.8%       |
| <b>Total</b>               | <b>72</b> | <b>100%</b> |

The data indicate a balanced educational composition, with slightly more than half of the respondents holding university degrees.

### Professional Experience

| Years of Experience | Frequency | Percentage  |
|---------------------|-----------|-------------|
| Less than 5 years   | 0         | 0.0%        |
| 5–15 years          | 23        | 31.9%       |
| More than 15 years  | 49        | 68.1%       |
| <b>Total</b>        | <b>72</b> | <b>100%</b> |

A significant proportion (68.1%) of respondents have more than 15 years of professional experience, which provides a solid basis for informed responses and reliable evaluation of institutional practices.

## 3. Importance and Role of the Information System

(Table 5 – Hypothetical Mean = 2.00)

The following results illustrate respondents' perceptions regarding the importance and operational role of the information system within the CMA institutions.

| Statement                                                                       | High (%)    | Moderate (%) | Low (%)     | Mean        | Std. Dev.    | OverallLevel |
|---------------------------------------------------------------------------------|-------------|--------------|-------------|-------------|--------------|--------------|
| 1. The information system enjoys a high degree of importance.                   | 83.3        | 16.7         | 0.0         | 2.83        | 0.375        | High         |
| 2. The information system is not viewed merely as an automation tool.           | 70.8        | 18.1         | 11.1        | 2.60        | 0.685        | High         |
| 3. All employees are aware of the importance of information resources.          | 77.8        | 22.2         | 0.0         | 2.78        | 0.419        | High         |
| 4. Information system specialists interact with their counterparts.             | 59.7        | 18.1         | 22.2        | 2.38        | 0.830        | High         |
| 5. Lack of awareness of the system's importance affects performance negatively. | 40.3        | 36.1         | 23.6        | 2.17        | 0.787        | Moderate     |
| 6. The system includes modern software and applications.                        | 50.0        | 50.0         | 0.0         | 2.50        | 0.504        | High         |
| 7. The information generated by the system is easily accessible.                | 63.9        | 26.4         | 9.7         | 2.54        | 0.670        | High         |
| 8. The enterprise allocates resources to develop its information systems.       | 54.2        | 27.8         | 18.1        | 2.36        | 0.775        | High         |
| <b>AggregateMean</b>                                                            | <b>62.5</b> | <b>26.4</b>  | <b>11.1</b> | <b>2.52</b> | <b>0.576</b> | <b>High</b>  |

### Interpretation:



The overall mean of 2.52, higher than the hypothetical mean of 2, confirms a generally strong perception of the importance of information systems within the surveyed organizations. These systems are not seen merely as operational tools but as vital infrastructures that support management and operational excellence.

#### 4. Current State of Strategic Intelligence

(Table 6 – Hypothetical Mean = 2.00)

| Statement                                                                | High (%)    | Moderate (%) | Low (%)     | Mean        | Std. Dev.    | Overall Level       |
|--------------------------------------------------------------------------|-------------|--------------|-------------|-------------|--------------|---------------------|
| 9. The enterprise anticipates external events.                           | 18.1        | 26.4         | 55.6        | 1.63        | 0.777        | Low                 |
| 10. Strategic intelligence is a major area of concern.                   | 0.0         | 23.6         | 76.4        | 1.24        | 0.428        | Low                 |
| 11. The enterprise seeks to change employees' mindsets toward vigilance. | 15.3        | 20.8         | 63.9        | 1.51        | 0.750        | Low                 |
| 12. Strategic vigilance actors receive specific training.                | 0.0         | 12.5         | 87.5        | 1.13        | 0.333        | Low                 |
| 13. Management's lack of awareness slows reaction speed.                 | 84.7        | 15.3         | 0.0         | 2.85        | 0.362        | High                |
| 14. Vigilance actors possess the required skills.                        | 6.9         | 19.4         | 73.6        | 1.33        | 0.605        | Low                 |
| 15. Strategic intelligence helps adapt to environmental surprises.       | 80.6        | 19.4         | 0.0         | 2.81        | 0.399        | High                |
| 16. Strategic intelligence is an independent function.                   | 0.0         | 13.9         | 86.1        | 1.14        | 0.348        | Low                 |
| 17. All employees are involved in vigilance activities.                  | 22.2        | 37.5         | 40.3        | 1.82        | 0.775        | Moderate            |
| 18. Strategic vigilance contributes to major organizational changes.     | 16.7        | 40.3         | 43.1        | 1.74        | 0.731        | Moderate            |
| <b>Aggregate Mean</b>                                                    | <b>25.0</b> | <b>23.6</b>  | <b>51.4</b> | <b>1.72</b> | <b>0.466</b> | <b>Moderate-Low</b> |

**Interpretation:**

The average mean of 1.72 (below the benchmark of 2) reveals a weak overall implementation of strategic intelligence practices within the organization. Despite isolated awareness of its importance (as reflected in statements 13 and 15), the results highlight deficiencies in structural organization, training, and systematic anticipation of external changes.

**5. Testing the First Sub-Hypothesis: Current State of Strategic Intelligence**

A One-Sample T-test was conducted to compare the observed mean of strategic intelligence (1.72) with the hypothetical mean (2.00).

To statistically test the first sub-hypothesis regarding the current state of strategic intelligence, a One-Sample T-test was conducted. The test compared the observed aggregate mean against the neutral hypothetical mean of 2.00. The results are presented below.

| Statistic               | Value              |
|-------------------------|--------------------|
| Mean Difference         | -0.49722           |
| 95% Confidence Interval | [-0.6313, -0.3632] |
| T Value                 | -7.397 (df = 71)   |
| p-value                 | 0.000              |

The results were statistically significant ( $t(71) = -7.397$ ,  $p < .001$ ), indicating that the employees' perception of strategic intelligence implementation is significantly lower than the moderate level. This provides strong statistical support for rejecting the null hypothesis and confirms a weak state of strategic intelligence at CMA.

**General Conclusion of the Fieldwork**

The empirical investigation conducted at the Complexe du Matériel Agricole (CMA) in Sidi Bel Abbès provides a comprehensive picture of how information systems are perceived, utilized, and integrated into the strategic intelligence processes of Algerian industrial organizations. The study's findings reveal both promising strengths and notable deficiencies that together reflect the transitional stage of information management practices within these enterprises.

From a structural perspective, the research confirms that the information system occupies a central and well-recognized position in



the daily management and decision-making activities of the enterprise. With an overall mean score of 2.52 (above the hypothetical mean of 2.00), respondents demonstrated a high level of awareness regarding the importance of information systems. They perceive these systems not merely as operational tools for data storage and automation but as vital instruments that support coordination, efficiency, and managerial control. The high Cronbach's Alpha value (0.98) further validates the internal consistency and reliability of the research instrument, indicating that participants responded coherently and meaningfully across related items.

However, when attention shifts to the strategic intelligence dimension, the empirical evidence reveals a more complex and less favorable reality. The aggregate mean of 1.72 (below the benchmark of 2.00) and the statistically significant results of the One-Sample T-test ( $t = -7.397$ ,  $p < 0.001$ ) clearly indicate that strategic intelligence practices remain underdeveloped and insufficiently structured within the organization. Most respondents acknowledge the theoretical importance of vigilance and environmental scanning, yet the actual implementation of systematic intelligence mechanisms is weak.

Specifically, the data suggest that:

- The anticipation of external events and the formal organization of vigilance activities are limited.
- Training programs aimed at developing the competencies of strategic intelligence actors are almost nonexistent.
- Management awareness and cultural readiness remain insufficient to foster a proactive intelligence mindset across all organizational levels.
- Strategic intelligence is not yet perceived as an independent or strategic function, but rather as a loosely defined set of reactive practices, often triggered only when problems arise.

Nevertheless, some indicators point to emerging awareness and potential areas for improvement. For example, respondents strongly agreed that a lack of managerial awareness negatively affects performance (mean = 2.85) and that strategic intelligence can help organizations adapt to environmental shocks (mean = 2.81). These results reveal a latent understanding of the value of intelligence-based management, even if practical applications are still weak or sporadic.

From an analytical standpoint, the correlation between information systems and strategic intelligence appears evident, though uneven in practice. The information system provides the technological and informational infrastructure necessary for data collection, storage, and processing — all of which are foundational to the intelligence process. However, without a complementary cultural and organizational framework that promotes collaboration, knowledge sharing, and continuous learning, the potential of the information system cannot fully translate into strategic advantage.

This finding underscores a broader managerial implication: technological readiness does not automatically lead to strategic intelligence maturity. For Algerian enterprises, particularly those operating in industrial sectors, the real challenge lies in moving beyond technology acquisition toward institutionalizing information culture, where information is systematically transformed into actionable strategic insight.

To achieve this transition, several conditions must be met:

- Developing specialized training programs to enhance the analytical, interpretive, and decision-support capacities of managers and information system users.
- Establishing dedicated strategic intelligence units or committees responsible for environmental scanning, competitor analysis, and opportunity monitoring.
- Encouraging inter-departmental communication and data sharing, ensuring that information circulates efficiently between technical, managerial, and strategic levels.
- Integrating information systems with decision-support tools, such as business intelligence software, to automate and structure the collection and analysis of external data.
- Promoting a culture of vigilance that values information as a strategic resource and rewards anticipatory decision-making.

Ultimately, the study demonstrates that while Algerian industrial institutions like the CMA possess the technological foundations of effective information management, they still lack the strategic integration and cultural commitment necessary to transform data into competitive intelligence. The findings, therefore, call for a progressive



managerial reform, where digital transformation and strategic intelligence development evolve in parallel.

In conclusion, this field study contributes to a deeper understanding of how information systems can serve as a catalyst for strategic intelligence in developing economies. By highlighting the gap between technical capability and strategic application, it provides actionable insights for managers, policymakers, and researchers seeking to enhance organizational adaptability, competitiveness, and long-term sustainability.

### **- Recommendations**

Based on the empirical findings and analytical insights presented in this study, several managerial recommendations can be proposed to enhance the effectiveness of information systems and strengthen their integration within strategic intelligence processes:

- **Institutionalize Strategic Intelligence Functions** Management should establish a dedicated Strategic Intelligence Unit or assign clear responsibilities within existing departments for environmental scanning, competitor analysis, and opportunity monitoring. This institutionalization ensures that intelligence activities become systematic rather than ad hoc or reactive.
- **Enhance Managerial and Analytical Skills** Continuous training programs should be developed for managers and staff involved in information handling. Emphasis should be placed on data interpretation, predictive analysis, and decision-support techniques to enable personnel to transform information into actionable intelligence.
- **Promote a Culture of Information Sharing and Vigilance** Encourage open communication channels and cross-departmental collaboration to facilitate the flow of relevant data. Organizations should recognize and reward proactive behaviors that contribute to early detection of risks or emerging opportunities.
- **Integrate Advanced Information Technologies** Beyond traditional information systems, enterprises should invest in Business Intelligence (BI) tools, data analytics platforms, and knowledge management software that can automate data collection, support real-time analysis, and generate early-warning indicators.

- **Align Information Systems with Strategic Objectives**  
Information systems should not function as isolated technical infrastructures. Instead, their design, objectives, and performance indicators must align with the broader corporate strategy to ensure that all information flows directly support competitive advantage and strategic decision-making.

## References list

### Books

- Aguilar, F. J. (1967). *Scanning the business environment*. Macmillan.
- Ansoff, H. I. (1980). *Strategic management*. Palgrave Macmillan.
- Bohnke, S. (2010). *Moderniser son système d'information*. Éditions Eyrolles.
- Choo, C. W. (2002). *Information management for the intelligent organization: The art of scanning the environment* (3rd ed.). Information Today.
- Deyrieux, A. (2003). *Le système d'information, nouvel outil de stratégie: Direction d'entreprise et DSI*. Éditions Maxima.
- Jakobiak, F. (1988). *La veille technologique et concurrentielle: Concepts et pratiques*. Éditions d'Organisation.
- Khashaba, M. S. (1987). *Information systems: Concepts and technology*. Al-Azhar University.
- Laudon, K. C., & Laudon, J. P. (2012). *Management information systems: Managing the digital firm* (12th ed.). Pearson Education.

### Journal Articles

- Calof, J. L., & Skinner, W. (1998). La veille concurrentielle: Le meilleur des mondes pour les gestionnaires. *Optimum, La revue de gestion du secteur public*, 28(2), 43–50.
- Lesca, H., & Blanco, S. (2003). Les informations anticipatives et la veille stratégique. *Revue Française de Gestion*, 29(146), 135–152.

### Book Chapters & Dissertations

- Chapter: Avison, D., & Elliot, S. (2006). Scoping the discipline of information systems. In *Information systems: The state of the field* (pp. 1–20). Wiley.
- Dissertation: Kamoun-Chouk, S. (2005). *Veille anticipative stratégique: Processus d'attention à l'environnement. Application à des PMI tunisiennes* [doctoral dissertation]. Université Pierre Mendès-France de Grenoble.