

How Management Information Systems Transform Decision Making and Organizational Performance: From Traditional Systems to AI Enhanced Management

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Abstract

This article analyses how Management Information Systems transform managerial decision making and organizational performance, from traditional systems to modern integrated and AI enhanced systems. The paper uses a qualitative conceptual methodology based on secondary sources, including specialized books, scientific articles, systematic literature reviews and institutional reports. The analysis shows that traditional information systems mainly supported recording and reporting activities, while modern systems such as ERP, CRM, BI and DSS improve coordination, customer management, performance evaluation and decision support. The integration of AI adds predictive, automation and recommendation capabilities, but also creates new challenges related to data quality, employee acceptance, ethics, privacy, security and managerial responsibility. The main contribution of the article is the conceptual distinction between three managerial roles: manager as controller of information, manager as coordinator of integrated data and manager as critical evaluator of AI supported decisions. The paper concludes that MIS strengthen management, but do not replace human judgement.

Keywords

Management Information Systems; decision making; organizational performance; Business Intelligence; Artificial Intelligence; managerial role

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Introduction

In contemporary organizations, information has become a central resource for managerial activity. Companies no longer rely only on physical assets, financial capital or human labour, but increasingly depend on their capacity to collect, process and use data in order to make faster and better decisions. In this context, Management Information Systems (MIS) have moved from a mainly administrative role to a strategic role in organizational management.

Management Information Systems (MIS) are now used for much more than data storage and routine reporting. In many organizations, they have become instruments through which managers coordinate departments, follow operational results, support planning activities and understand customers more clearly. This change shows that information systems are no longer only technical tools, but part of the way managerial work is organized.

In earlier stages, information systems were usually more limited and separated from one another. A company could have one system for accounting, another for sales, another for inventory and another for customer records. This made managerial decisions slower, because information was often incomplete, delayed or spread across different departments. Modern systems reduced this fragmentation by creating a common informational base for managerial work. Instead of looking at each department separately,

managers can now follow the organization as a connected system of activities, resources, customers and results. Enterprise Resource Planning (ERP) systems are relevant because they integrate internal processes such as finance, procurement, inventory, production and human resources. Customer Relationship Management (CRM) systems shift attention toward customer data, interactions and service quality. Business Intelligence (BI) systems give meaning to large volumes of organizational data, while Decision Support Systems (DSS) help managers analyse alternatives before choosing a course of action. In this way, information systems do not only show what happens inside the company; they also shape how managers understand problems, compare options and define priorities. Business Intelligence (BI), for instance, can strengthen performance evaluation and competitive advantage by transforming data into managerial knowledge (Wang et al., 2022). Customer Relationship Management (CRM) systems can also improve business performance when they support customer centric management, operational activities and service quality (Martinho et al., 2025).

The next step in this evolution is the integration of Artificial Intelligence (AI) into information systems. In this article, Artificial Intelligence (AI) is not treated as a separate substitute for Management Information Systems (MIS), but as an advanced layer that increases their analytical capacity. While traditional systems mainly recorded information and modern systems connected it, AI enhanced systems can identify patterns, estimate future outcomes and suggest possible actions. This changes the logic of managerial decision making. The manager is no longer limited to asking what happened or what is happening now, but can also ask what is likely to happen and what options could be considered. Still, this progress does not remove managerial responsibility. The use of Artificial Intelligence (AI) in information systems also raises practical and ethical questions related to data quality, privacy, cybersecurity, transparency and excessive trust in automated recommendations (Stoykova & Shakev, 2023).

The aim of this article is to analyse how Management Information Systems (MIS) transform managerial decision making and organizational performance, from traditional systems to modern integrated and AI enhanced systems. The article has four objectives: to examine the evolution of information systems in management; to identify the role of Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Business Intelligence (BI) and Decision Support Systems (DSS) in managerial decision making; to analyse their impact on organizational performance; and to discuss the changing role of managers, together with the limits and risks of technology based decision making.

The paper uses a conceptual and literature based approach. Its contribution consists in connecting the evolution of Management Information Systems (MIS) with decision making, organizational performance and the changing role of managers. The main argument is that information systems have evolved from administrative tools into strategic managerial instruments, but their value still depends on the ability of managers to combine data, technology and human judgement.

1. Literature Review

MIS are usually discussed as systems that connect technology, data, people and organizational processes in order to support managerial activity. Their importance does not come only from the fact that they store information. A database or a report has limited value if it does not help managers understand what is happening in the organization and act on it. The real value of MIS appears when information becomes usable for coordination, control, planning and decision making. Laudon & Laudon (2022) present MIS as important tools for managing the digital firm, while Bourgeois et al. (2019) underline that information systems include hardware, software, data, people and processes. This broader view is useful because it places information systems inside the organization, not outside managerial practice.

The development of information systems also reflects the way companies themselves have changed. In the beginning, many systems were created for narrow and separate tasks. Accounting, payroll, inventory or sales records could function independently, but this also meant that managers often saw only pieces of the organization. Information existed, but it was not always connected. As a result, decisions could be slow, partial or based on outdated reports. Modern information systems tried to solve this problem by creating a more integrated view of organizational activity. ERP systems are a good example, because they connect internal activities such as finance, procurement, production, inventory and human resources. Martins & Belfo (2024) show that ERP systems support process optimization and business performance, but they also underline that ERP involves more than technology, including leadership, people, processes and enterprise architecture.

The literature also shows that the success of ERP systems is not automatic after implementation. Butarbutar et al., (2023) argue that many difficulties appear in the post implementation phase, especially when training

is insufficient, users do not actively participate or the organization does not maintain continuous system integration. This confirms that ERP systems should be treated as managerial change projects, not only as software projects. In other words, the performance of an information system depends not only on its technical design, but also on the way it is introduced, accepted and used inside the organization.

CRM systems represent another important category of modern information systems. While ERP systems focus mainly on internal integration, CRM systems focus on the relationship between the company and its customers. They help organizations collect, organize and use information about customer behaviour, preferences, complaints and interactions. Martinho et al., (2025) show that CRM is based on the connection between technologies, processes and people, and that CRM organization has the strongest positive influence on business performance, followed by customer service quality and operational CRM. This is relevant because it proves that customer information becomes valuable when it is connected with organizational structure, service processes and managerial priorities.

BI systems add a different function: they help managers make sense of data that would otherwise remain too large, too dispersed or too difficult to interpret. Through dashboards, indicators, reports and visual tools, BI systems turn operational data into a form that can be used in managerial discussions and decisions. Sharda et al. (2024) connect BI with analytics, data science and AI, showing that contemporary management increasingly depends on the ability to interpret data rather than simply possess it. Wang et al. (2022) also link BI capabilities with performance evaluation and competitive advantage, suggesting that BI can improve organizational performance by transforming data into actionable managerial knowledge. In a similar direction, Malawani et al., (2025) show that BI supports organizational agility by helping firms identify opportunities, respond to uncertainty and strengthen strategic decision making.

DSS are closer to the actual moment of choice. If MIS organizes information and BI makes it more understandable, DSS helps managers work with possible alternatives. Such systems can be used to compare scenarios, evaluate constraints, estimate consequences and support decisions in situations where the answer is not obvious. Gupta et al., (2024) show that DSS have moved from computer based tools for numerical analysis toward more advanced systems that can function in complex and uncertain environments. This is important because many managerial problems are no longer simple or stable. When AI capabilities are included in DSS, managers can also use prediction, learning and optimization tools in contexts where information changes quickly or remains incomplete.

A more recent stage is represented by AI enhanced information systems. AI should not be presented as a replacement for MIS, because it usually works inside or alongside existing information systems. Its role is to increase what these systems can do. Instead of only recording transactions or presenting reports, AI enhanced systems can detect patterns, automate repetitive activities, predict possible outcomes and generate recommendations. Stoykova & Shakev, (2023) identify intelligent process automation, predictive analytics and natural language processing as important AI applications in MIS. At the same time, they point to challenges related to ethics, data privacy, security and user engagement. This means that AI can make information systems more powerful, but also more demanding from a managerial point of view.

Finally, the literature suggests that information systems should not be evaluated only by their technical sophistication. DeLone & McLean, (2003) propose a well-known model of information systems success based on system quality, information quality, service quality, use, user satisfaction and net benefits. This model is useful for the present article because it confirms that an information system creates value only when it is effectively used and when it produces real benefits for individuals and organizations. Overall, the literature shows that ERP, CRM, BI, DSS and AI enhanced systems have transformed management by improving coordination, customer knowledge, performance evaluation and decision support. However, their value still depends on data quality, user acceptance, organizational alignment and the ability of managers to interpret information responsibly.

2. Research Methodology

This article uses a qualitative conceptual methodology based on secondary sources and comparative analysis. The purpose is not to collect primary data from companies, but to build an analytical view of how MIS evolved and how they influence managerial decision making and organizational performance.

The research is based on books, e-books, scientific articles and institutional reports. The books and e-books were used to define the main concepts related to MIS, information systems, BI and analytics (Bourgeois et al., 2019; Laudon & Laudon, 2022; Sharda et al., 2024). The scientific articles were selected from academic publishers and databases such as ScienceDirect, Taylor & Francis, Springer and MDPI. They cover ERP,

CRM, BI, DSS, AI enhanced MIS and information systems success. The selected sources include quantitative studies, conceptual papers and systematic literature reviews.

The method combines literature review, conceptual synthesis and comparative interpretation. The literature review identifies the main types of information systems used in management. The conceptual synthesis connects these systems with decision making, performance and managerial roles. The comparative interpretation is used to distinguish between traditional systems, modern integrated systems and AI enhanced systems. Based on this approach, the article develops analytical tables that summarize the evolution, roles, benefits and limits of MIS in management.

The main limitation is that the article does not provide new survey or case study data. However, its contribution lies in organizing existing research into a clear managerial framework focused on decision making, organizational performance and the changing role of managers.

3. Research Findings and Discussion

The analysis of the literature shows that MIS have not only changed the tools used by managers, but also the way managerial work is organized. In their traditional form, information systems mainly helped companies record activities and prepare reports. This was useful for control, but the information often arrived after the event had already taken place. In modern organizations, MIS connect departments, centralize data and allow managers to follow activities with greater speed and accuracy. More recently, AI enhanced systems have added prediction, automation and recommendation capabilities. This evolution changes the role of the manager from a simple reader of reports into a coordinator of information flows and an evaluator of digital recommendations.

Table no. 1. Evolution of MIS and the Changing Managerial Role

Stage	Main informational logic	Managerial role	Decision making style	Main risk
Traditional systems	Information is recorded after activities take place	Controller of reports and operations	Reactive and experience based	Delayed and fragmented information
Modern integrated systems	Information is connected across departments	Coordinator of processes and data flows	Real time and evidence based	Information overload and system dependence
AI enhanced systems	Information is analysed, predicted and partly recommended	Evaluator of predictions and digital recommendations	Predictive and data assisted	Excessive trust in automated outputs

This comparison shows that the transformation of MIS is not only technological. The deeper change is managerial. Traditional systems supported control after activities had already happened. Modern integrated systems, especially ERP, CRM and BI, allow managers to see the organization as a connected whole. ERP supports internal coordination, CRM improves the use of customer related information, while BI transforms organizational data into indicators and managerial knowledge. AI enhanced systems go further by helping managers anticipate future scenarios, but they also increase the need for critical interpretation.

The second important finding concerns the decision-making process itself. MIS changed the type of questions that managers can ask. In traditional systems, the main question was usually “What happened?”. With modern MIS, the question becomes “What is happening now?”. With AI enhanced systems, managers can increasingly ask “What is likely to happen next?”. This shift is important because it moves management from a mainly corrective logic toward a more anticipative one.

Table 2 shows that the transformation produced by MIS is not limited to faster access to information. The deeper change concerns the logic of managerial decision making. In a traditional information environment, decisions are mainly reactive, because managers often receive information after problems have already appeared. In a modern MIS environment, managers can monitor indicators, compare departmental data and intervene earlier. In an AI enhanced MIS environment, the decision process becomes more anticipative, because systems can identify patterns, estimate possible future outcomes and generate recommendations.

However, this does not mean that managerial judgement becomes less important. On the contrary, the manager’s role becomes more complex. In traditional systems, managers interpret reports mainly through experience. In modern systems, they must connect operational indicators, customer data and performance metrics. In AI enhanced systems, they must also evaluate whether a recommendation is reliable, useful and

appropriate in the specific organizational context. Therefore, MIS improve the informational basis of decisions, but they do not remove the responsibility of managers for the final decision.

Although MIS improve the informational basis of decisions, their role should not be confused with the replacement of managerial judgement. Information systems can collect data, structure it, compare it and present it in a form that is easier to use. They can show performance deviations, customer complaints, operational delays, resource constraints or possible risks. In this sense, MIS reduce uncertainty and help managers see the organization more clearly. However, seeing a problem is not the same as deciding how it should be solved.

Table no. 2 Transformation of Decision Making Through MIS

Decision making dimension	Traditional information environment	Modern MIS environment	AI enhanced MIS environment
Availability of information	Delayed, dispersed and prepared after activities occur	Integrated across functions and available through dashboards	Continuously processed for forecasts, alerts and recommendations
Nature of managerial analysis	Historical reports interpreted through experience	Operational indicators, customer data and performance metrics	Predictive outputs, scenarios and algorithmic recommendations
Speed of response	Reactive, after problems affect performance	Faster, because deviations can be monitored earlier	Anticipative, based on patterns and possible future outcomes
Type of managerial judgement	Based on experience, hierarchy and partial information	Supported by integrated data and cross departmental visibility	Focused on validating or adapting system recommendations
Main managerial risk	Incomplete or outdated information	Information overload and dashboard dependence	Overtrust in automated outputs and weak contextual judgement

Source: Authors' own processing based on the literature review (Sharda, Delen and Turban, 2024; Wang et al., 2022; Gupta et al., 2022; Stoykova and Shakev, 2023).

This distinction is especially important in performance control. A BI dashboard may show that sales have decreased, costs have increased or productivity has fallen, but the system cannot decide by itself what the real priority should be. A decline in performance may be caused by weak demand, poor service quality, employee dissatisfaction, inefficient processes or an unsuitable strategy. The manager must interpret the indicator, connect it with the wider organizational context and decide which tradeoffs are acceptable. This confirms that information systems support analysis, but the interpretation of consequences remains a managerial responsibility. DeLone & McLean (2003) also show that the value of an information system depends on its actual use and on the net benefits it generates, not only on its technical existence.

The same logic applies to customer management. CRM systems can organize customer data, preferences, complaints and segmentation, and this can improve customer related decisions. Martinho et al., (2025) show that CRM organization, customer service quality and operational CRM are connected with business performance. Still, customer data does not automatically create customer trust. Managers must decide how the company should communicate, how much personalization is appropriate, how service quality should be balanced with costs and how long-term relationships should be protected. A CRM system can identify valuable customers, but it cannot fully replace the human side of relationship building.

Operational planning also remains a mixed area between system support and human judgement. ERP systems can provide visibility over resources, inventory, procurement, production and internal processes. This helps managers coordinate activities and reduce fragmentation. However, ERP success depends on more than software. Martins & Belfo (2024) connect ERP with technology, leadership, people, processes and performance, while Butarbutar et al. (2023) emphasize the importance of training, user participation and continuous integration after implementation. Therefore, managers still have to organize people around the system, explain its value, reduce resistance and make sure that digital processes are actually used in daily work.

The human role becomes even more important when AI is integrated into MIS. AI enhanced systems can generate forecasts, alerts and recommendations, but these outputs must be evaluated carefully. A recommendation may be efficient from a numerical point of view, but inappropriate from an ethical, legal, social or strategic point of view. For example, an automated system may suggest reducing staff, rejecting a customer category or changing prices, but managers must decide whether such actions are fair, sustainable and aligned with the organization's long-term objectives. Stoykova & Shakev (2023) also highlight that AI adoption in MIS raises challenges related to ethics, data privacy, security and user engagement.

Therefore, the transformation produced by MIS does not reduce the importance of managers. It changes what managers are expected to do. Instead of only collecting information or waiting for reports, managers must now interpret dashboards, question data quality, understand system limits and evaluate automated recommendations. They also have to communicate decisions to employees, motivate teams, negotiate conflicts and preserve organizational culture. These are areas where technology can assist, but cannot fully replace human judgement.

Overall, MIS make management more informed, but not less human. Their strongest contribution is that they improve the conditions in which decisions are made. They make organizations more visible, measurable and comparable. At the same time, responsibility, ethical judgement, leadership, creativity and strategic direction remain mainly human functions. This is why MIS should be understood as strategic managerial instruments, not as substitutes for managers.

4. Managerial Implications: The Changing Role of Managers, Challenges and Limits

The evolution of MIS changes not only the tools used in organizations, but also the meaning of managerial work. In the traditional stage, the manager was mainly a supervisor and controller. Information usually arrived through reports, separate departmental records or direct communication with employees. Because this information was often delayed or incomplete, managers relied heavily on experience, hierarchy and personal observation. Their role was to understand what had already happened, identify deviations and correct them through instructions, control and supervision.

With modern integrated systems, the manager becomes more of a coordinator of connected activities. ERP, CRM, BI and DSS allow information from different departments to be connected, so the company can be understood less as a set of isolated functions and more as a system of linked processes. A procurement decision, for example, may influence inventory, costs, production planning, cash flow and customer delivery. This is why ERP systems should not be treated only as software, but as organizational systems that involve technology, leadership, people, processes, performance and enterprise architecture (Martins and Belfo, 2024). In this stage, the manager's task is no longer only to check results, but to understand how decisions in one area affect the whole organization.

The same change appears in customer and performance management. CRM systems can store customer data, preferences and complaints, but their real value depends on how managers use that information to improve service quality and relationship strategy. Martinho et.al. (2025) found that CRM organization has the strongest positive influence on business performance, followed by customer service quality and operational CRM. BI systems also change managerial work because they make deviations, trends and performance indicators visible faster. Wang et al. (2022) connect BI with performance evaluation and competitive advantage, while Malawani et al., (2025) link BI with organizational agility. The benefit is clear: managers can see earlier, compare better and react faster.

The integration of AI creates a third role: the manager as evaluator of algorithmic recommendations. AI enhanced MIS can forecast demand, detect risks, automate repetitive tasks and suggest possible actions. This is no longer only a theoretical direction. Singla et al., (2024) reports that 65% of respondents said their organizations were regularly using generative AI in at least one business function in 2024, nearly double the level reported ten months earlier. At workplace level, the Using AI in the Workplace, (2024) reports that four in five workers surveyed said AI improved their performance, while three in five said it increased their enjoyment of work. The same report also notes that occupations at the highest risk of automation account for about 27% of employment in OECD countries. These figures show that AI can improve productivity, but it also changes work organization, skills and employee security.

The benefits of AI enhanced MIS are therefore accompanied by important challenges. AI can reduce repetitive work and support faster analysis, but it can also create anxiety, skill gaps and excessive dependence on automated outputs. Managers must decide where AI should be used, how employees should be trained, how recommendations should be checked and how human responsibility should be preserved. Stoykova & Shakev (2023) also emphasize that AI adoption in MIS raises challenges related to ethics, data privacy, security and user engagement.

The main limit is that advanced systems do not automatically create better management. A dashboard may show that performance decreased, but it cannot decide whether the cause is weak demand, high costs, employee dissatisfaction or poor service quality. A CRM system may identify valuable customers, but it cannot build trust or define the relationship strategy by itself. An AI enhanced system may recommend an efficient action, but the manager must judge whether it is ethical, realistic and aligned with long term

objectives. For this reason, MIS improve the informational basis of management, while judgement, leadership, negotiation, motivation and responsibility remain human functions.

Conclusions

This article analysed how MIS transform managerial decision making and organizational performance, from traditional systems to modern integrated and AI enhanced systems. The analysis shows that MIS have evolved from administrative tools used mainly for recording and reporting information into strategic instruments that support coordination, performance evaluation, customer management and decision support.

The main contribution of the paper is the conceptual distinction between three stages of MIS development. Traditional systems supported a reactive form of management, based mainly on past information and managerial experience. Modern integrated systems, such as ERP, CRM, BI and DSS, created a more connected organizational view and allowed managers to make faster and more evidence based decisions. AI enhanced systems add a new layer by supporting prediction, automation and recommendations, but they also increase the need for managerial interpretation and responsibility.

The article also shows that the role of managers has changed together with these systems. Managers evolved from controllers of information, to coordinators of integrated data, and finally to critical evaluators of AI supported decisions. However, MIS do not replace management. They improve the informational conditions in which decisions are made, but ethical judgement, leadership, motivation, negotiation, creativity and strategic direction remain mainly human responsibilities.

The main limitation of the article is that it is based on secondary sources and conceptual analysis, without primary empirical research. Future studies could test the proposed framework through surveys, interviews or case studies in specific industries or countries. This would make it possible to examine how different organizations actually use MIS and how these systems influence managerial roles, decision quality and performance outcomes.

Generative Artificial Intelligence (GenAI) usage statement:

No GenAI tool was used in the development of this paper.

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