

ARTIFICIAL INTELLIGENCE AND EMERGING TECHNOLOGIES IN MANAGEMENT: TRANSFORMATION OF PROCESSES, DECISION-MAKING, AND DEVELOPMENT OF NEW PROFESSIONAL COMPETENCIES

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Abstract

This study aims to analyze the effects of Artificial Intelligence and emerging technologies on the transformation of administrative processes, decision-making, and the development of new professional competencies. Methodologically, it is characterized as bibliographic research with a qualitative approach and exploratory-descriptive objectives, grounded in the scientific literature on Management, digital transformation, Artificial Intelligence, organizational management, and professional competencies. The studies analyzed indicate that adopting these technologies can contribute to task automation, information

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integration, improved operational efficiency, predictive analytics, and greater agility in decision-making. However, these benefits depend on data quality, organizations' digital maturity, technology governance, and professionals' ability to critically interpret the results produced by automated systems. In this context, competencies related to digital literacy, data analysis, critical thinking, problem-solving, adaptability, ethics, collaboration, and continuous learning are becoming increasingly important. The study concludes that technological transformation in Management does not eliminate the central role of human action but redefines its responsibilities, requiring professionals capable of combining managerial knowledge, analytical skills, and a critical command of emerging technologies.

Keywords: Artificial Intelligence, Decision-Making, Emerging Technologies, Management, Professional Competencies.

INTRODUCTION

Digital transformation has brought about significant changes in organizations and contemporary management models. The expansion of technologies capable of automating tasks, integrating data, processing information on a large scale, and generating predictive analyses is changing not only companies' operational infrastructure but also how managers plan, organize, control, and make decisions. In this context, Artificial Intelligence occupies a strategic position because it enhances the capacity to interpret information and creates opportunities to support administrative processes.

In Management, one of the most evident repercussions can be found in the transformation of processes. Repetitive activities, recordkeeping, screening, information consolidation, document classification, and certain service workflows can be partially automated. Such automation can reduce execution time and increase standardization, although it also requires processes to be reviewed so that inefficient routines are not merely digitized.

In this context, digital competencies are becoming increasingly important. Management professionals need to understand platforms, integrated systems, analytical tools, and automation

resources. Operational proficiency alone, however, is insufficient. Professionals must develop the ability to interpret data, assess reliability, and identify the risks associated with the use of technology.

Against this background, the following research question is established: How are Artificial Intelligence and emerging technologies transforming administrative processes, decision-making, and the professional competencies required in Management?

The general objective is to analyze the effects of Artificial Intelligence and emerging technologies on administrative processes, decision-making, and the development of new professional competencies. Specifically, the study seeks to discuss the transformation of organizational processes; analyze the changes produced by AI in decision-making models; identify emerging professional competencies; and examine challenges related to governance, ethics, professional development, and organizational adaptation.

The relevance of this research lies in the need to understand technological transformation from an integrated perspective. Analyzing process automation alone would be insufficient, as the effects of AI also extend to decisions, responsibilities, and professional profiles. Similarly, discussing competencies without considering changes in processes and decision-making structures would result in a fragmented analysis.

The study therefore proceeds from the understanding that Artificial Intelligence and emerging technologies are not merely additional tools for Management. Their adoption alters workflows, changes decision-making structures, and redefines the competencies required of professionals. In this context, organizational advantage is likely to depend not only on access to technology but also on the ability to integrate it with managerial knowledge, governance, and human competencies.

Contemporary Management thus faces a transition in which technology and professional competence must evolve together. AI can enhance efficiency and analytical capacity, but its effects depend on the quality of the human decisions that guide its use. Preparing professionals for this context means developing managers capable of operating in technologically advanced environments without relinquishing critical thinking, ethical responsibility, and managerial judgment.

ARTIFICIAL INTELLIGENCE AND EMERGING TECHNOLOGIES IN MANAGEMENT

The incorporation of Artificial Intelligence and emerging technologies into organizational environments has brought about transformations that extend beyond the digitization of administrative activities. Automation systems, advanced data analytics, cloud computing, Generative Artificial Intelligence, and predictive tools are changing processes, information flows, forms of control, and decision-making mechanisms. Vial (2019) understands digital transformation as a process of organizational change resulting from the use of digital technologies, capable of altering value-creation mechanisms and requiring structural responses from organizations.

Contemporary Management is consequently operating in an environment in which data and technologies have acquired strategic importance. Verhoef et al. (2021) demonstrate that digital transformation involves changes in resources, capabilities, structures, strategies, and organizational models, moving beyond a narrow conception focused solely on the adoption of tools. Consequently, the use of AI must be analyzed in relation to the organization's ability to integrate it into existing processes and convert technological resources into concrete administrative outcomes.

Technological development also changes how activities are divided between workers and computer systems. Raisch and Krakowski (2021) argue that the organizational effects of AI must be understood through the relationship between automation and the augmentation of human capabilities. Some activities may be transferred to systems, while others begin to require new knowledge for supervising, interpreting, and using technologically generated information.

This process directly affects the profile of Management professionals. As automated systems take over repetitive tasks and enhance the capacity to produce analyses, competencies related to data interpretation, problem-solving, critical thinking, governance, ethics, and interaction with technology become increasingly important. Technological transformation should therefore be understood not merely as task replacement but as a process of reorganizing work and the professional capabilities required for management.

TRANSFORMATION OF ADMINISTRATIVE PROCESSES THROUGH ARTIFICIAL INTELLIGENCE AND EMERGING TECHNOLOGIES

Administrative processes comprise the activities and workflows through which organizations conduct operations, integrate information, coordinate resources, and achieve objectives. Digital transformation changes these processes by enabling automation, systems integration, and the analysis of information on previously unfeasible scales. Davenport and Ronanki (2018) identify process automation, the generation of insights from data, and interaction with customers and workers as some of the principal organizational applications of AI.

Automation is one of the most evident applications. Repetitive, standardized, and rule-based activities can be performed partially by digital systems, reducing the volume of manual operations. Document processing, information classification, record completion, preliminary report drafting, and certain service routines are examples of activities that can be transformed through the combination of automation and Artificial Intelligence (Davenport; Ronanki, 2018).

Automating an activity, however, does not necessarily improve the administrative process. Transformation requires prior analysis of workflows, the identification of unnecessary steps, and systems integration. Vial (2019) demonstrates that digital transformation produces broader organizational changes and requires companies to respond to structural and organizational barriers. In this sense, simply transferring an inefficient procedure to a digital environment may preserve existing problems within a technologically faster structure.

Information integration is another important aspect. Administrative processes fragmented across departments can result in duplicate records, delays, and difficulty developing an organization-wide perspective. Cloud-based technologies, integrated systems, and analytical tools make it possible to bring together information from different departments and broaden the availability of data for managerial monitoring (Verhoef et al., 2021).

Big Data and advanced data analytics further expand this process by enabling the processing of large volumes of information from different sources. Wamba et al. (2017) identified positive effects of Big Data Analytics capabilities on firm performance, while also highlighting the role of process-oriented dynamic capabilities. This finding demonstrates that data only generate value when an organization develops competencies capable of converting them into knowledge and action.

Artificial Intelligence adds predictive and classificatory capabilities to administrative processes. Systems can identify patterns, estimate trends, detect anomalies, and generate recommendations, enabling certain processes to move beyond an exclusively reactive mode of operation. This shift can support inventory management, demand forecasting, risk identification, customer analysis, and resource planning.

Generative Artificial Intelligence further expands this range of applications by enabling the production and transformation of natural-language content. In administrative environments, generative systems can assist in the preliminary drafting of documents, the synthesis of information, the organization of reports, the production of initial versions of communications, and searches across large bodies of information. These materials must, however, remain subject to human validation, particularly when they involve strategic data or higher-impact decisions.

The use of these technologies can also affect productivity. By reducing the time devoted to certain operational tasks, automated systems can allow professionals to focus more attention on analytical, relational, or strategic activities. Raisch and Krakowski (2021), however, caution that automation and the augmentation of human capabilities must be analyzed together, as the effects of AI on work are not limited to task replacement.

Another important transformation concerns process monitoring. Digital systems make it possible to track indicators at shorter intervals and identify deviations more rapidly. This capacity can support faster organizational responses, although an excessive number of indicators can also lead to information overload. Management must select relevant information rather than indiscriminately increase the volume of available data.

Data quality is therefore a structural prerequisite. Sophisticated systems cannot produce reliable results when operating with incomplete, inconsistent, or outdated information. Wamba et al. (2017) show that the value of analytical capabilities depends on their coordination with organizational capabilities, reinforcing the need for technological infrastructure and management to evolve together.

The transformation of administrative processes also presents challenges related to security, privacy, interoperability, and technological dependence. The greater the integration among systems, the greater the need for policies designed to protect information and ensure operational continuity. Digital transformation therefore requires technology governance capable of balancing efficiency, security, and accountability.

The principal contribution of AI and emerging technologies to administrative processes thus lies in their potential to combine automation, information integration, and analytical capacity. The results, however, depend on process reorganization and the development of competencies that enable technologies to be used appropriately. Administrative innovation lies not only in the tool itself but also in the ability to redesign workflows and convert digital resources into efficiency and organizational value.

ARTIFICIAL INTELLIGENCE AND NEW DECISION-MAKING MODELS IN MANAGEMENT

Decision-making is one of the central functions of Management and involves selecting among alternatives in light of objectives, information, constraints, and uncertainties. Simon (1997) demonstrated that decision-makers' rationality is bounded because individuals have neither complete access to information nor sufficient cognitive capacity to evaluate every possible alternative. The expansion of AI partially changes this condition by significantly increasing the capacity to process and compare information.

Intelligent systems can analyze large datasets, identify patterns, and generate predictions more rapidly than individuals can. This characteristic can support decisions related to planning, finance,

operations, logistics, human resources, marketing, and risk management. Greater computational capacity, however, does not automatically result in higher-quality decisions.

Shrestha, Ben-Menahem, and von Krogh (2019) demonstrate that the organizational use of AI enables different decision-making structures to be developed. The authors discuss configurations in which decisions are delegated to technology, sequential processes in which humans and algorithms participate at different stages, and structures in which human and algorithmic outputs are combined. This classification demonstrates that the contemporary debate cannot be reduced to an opposition between human and automated decision-making.

For repetitive, structured decisions supported by reliable data, greater algorithmic involvement can provide gains in speed, standardization, and consistency. Conversely, strategic decisions characterized by ambiguity, complex social consequences, or a lack of sufficiently representative data tend to require greater human involvement. Shrestha, Ben-Menahem, and von Krogh (2019) emphasize that factors such as interpretability, speed, the size of the decision space, and replicability influence how humans and AI can be combined.

Jarrahi (2018) proposes understanding this relationship in terms of the complementarity between human and artificial intelligence. While computer systems have a significant capacity to process complexity, individuals have advantages in interpreting ambiguous situations, contextualizing information, and exercising judgment. This collaborative model is particularly suitable for Management, in which decisions frequently involve both quantitative and qualitative elements.

Predictive analytics represents a particularly important contribution. By using historical data and identified patterns, systems can estimate demand, risks, behavior, and scenarios. These predictions enable managers to incorporate prospective information into decisions, partially reducing reliance on exclusively retrospective analyses.

Algorithmic predictions, however, must be interpreted in light of their limitations. Unexpected events, structural changes, or significant shifts in the environment may reduce the validity of models built

on past data. Managers must therefore avoid turning probabilities into certainties and understand that decisions continue to be made under conditions of risk and uncertainty.

Explainability is another challenge. Certain models may offer a high degree of predictive capability while providing little transparency regarding the mechanisms underlying their outputs. Shrestha, Ben-Menahem, and von Krogh (2019) identify interpretability as an important variable in determining decision-making structures, particularly when the consequences of decisions require justification and accountability.

Data quality directly influences this process. Biased information may result in equally biased recommendations. This issue is especially relevant to decisions concerning recruitment, promotion, performance evaluation, the granting of benefits, credit, or customer service. AI-supported decisions must therefore incorporate governance, auditing, and oversight procedures.

Raisch and Krakowski (2021) also demonstrate that automation and the augmentation of human capabilities remain interdependent. Excessively transferring decisions to systems may generate technological dependence and weaken certain human capabilities, while rejecting AI entirely may prevent organizations from benefiting from relevant analytical resources. The administrative challenge lies in defining suitable arrangements for each type of decision.

This context redefines the manager's role. Rather than merely gathering information, professionals must evaluate models, interpret reports, question assumptions, and compare algorithmic recommendations with context, strategy, and organizational knowledge. The ability to reject a technological recommendation on well-founded grounds becomes as important as the ability to use it.

New decision-making models can therefore be understood as hybrid structures. Data, algorithms, and systems enhance information-processing capacity, while humans remain responsible for contextualization, defining objectives, considering values, and being accountable for the consequences. Contemporary management increasingly requires the ability to structure this interaction in a balanced manner.

The principal transformation brought about by AI in decision-making therefore does not lie in eliminating the manager but in redistributing the cognitive activities involved in the process. Technology can enhance analysis, speed, and forecasting; the manager must interpret and contextualize its outputs and determine when an algorithmic recommendation should be used, modified, or rejected.

DEVELOPMENT OF NEW PROFESSIONAL COMPETENCIES IN RESPONSE TO TECHNOLOGICAL TRANSFORMATION

Transformations in administrative processes and decision-making directly affect the competencies required of Management professionals. Digitization reduces the centrality of certain repetitive activities and increases the importance of competencies related to the use of information, the interpretation of systems, and the resolution of complex organizational problems.

Digital competence is an initial dimension of this new profile. Professionals must use platforms, integrated systems, collaborative tools, analytical solutions, and Artificial Intelligence-based resources. Digital competence, however, does not refer solely to operational proficiency; it also involves understanding the purposes, limitations, and implications of the resources used (Green, 2024; World Economic Forum, 2025).

Data literacy is particularly important. Contemporary management requires the ability to interpret indicators, recognize trends, understand statistical representations, and assess information quality. Wamba et al. (2017) demonstrate that analytical capabilities can contribute to organizational performance, but this contribution depends on the organization's ability to integrate analytics with its processes.

Critical thinking is another essential competency. Professionals must question reports, recommendations, and predictions produced by systems, avoiding the assumption that algorithmic outputs are necessarily objective answers. The ability to formulate relevant questions and identify inconsistencies is likely to become increasingly important in contexts involving the widespread use of AI (Green, 2024; World Economic Forum, 2025).

Problem-solving is also becoming more complex. As structured tasks are automated, a larger share of human work is likely to focus on novel, ambiguous, or poorly structured situations. Jarrahi (2018) emphasizes that human capabilities related to interpretation and judgment remain especially important in precisely these contexts.

Adaptability is a strategic competency in view of the speed of technological change. Tools, systems, and organizational practices may change over relatively short periods, making education based exclusively on specific technologies insufficient. Professionals must develop the ability to learn continuously and transfer knowledge to new environments (World Economic Forum, 2025).

Ethics has also assumed a central role. Automated systems can have significant effects on workers, consumers, and other groups. UNESCO's Recommendation on the Ethics of Artificial Intelligence (2021) highlights principles related to human oversight, transparency, accountability, fairness, and the protection of rights, all of which have direct implications for professionals involved in the organizational adoption and use of AI.

Competencies related to data and technology governance are equally necessary. Managers need to understand that the use of AI entails responsibilities concerning information quality, security, privacy, and system monitoring. Even when technical aspects are handled by specialized professionals, managers participate in decisions concerning organizational purpose and use.

The ability to engage in interdisciplinary collaboration is becoming increasingly important because digital transformation projects frequently involve professionals from Management, technology, law, security, finance, and other fields. Managers must be able to translate organizational needs into requirements that technical teams can understand and interpret technological limitations in managerial terms (Verhoef et al., 2021; Green, 2024).

Communication remains indispensable. Information produced by analytical systems must be presented comprehensibly to those responsible for making decisions. Professionals must transform

technical results into clear arguments appropriate to organizational audiences, avoiding both undue simplification and excessive technicality (Green, 2024).

Competencies related to leading transformation are also necessary. Introducing new technologies changes routines, responsibilities, and working relationships and may generate resistance and uncertainty. Managers need to lead change, communicate objectives, engage teams, and create conditions for organizational learning (World Economic Forum, 2025).

Creativity and innovation complete this repertoire. The availability of technologies does not automatically indicate how they should be used to generate value. Professionals must identify opportunities, redesign processes, and envision applications aligned with organizational needs (World Economic Forum, 2025).

This set of competencies demonstrates that technical and human capabilities are not opposing dimensions. As systems take over analytical and operational activities, the capacities for judgment, communication, leadership, and adaptation become even more important. Raisch and Krakowski (2021) demonstrate that the relationship between automation and the augmentation of human capabilities is interdependent, reinforcing the need to develop competencies that complement technology.

The emerging professional profile in Management can therefore be understood as integrating digital, analytical, critical, strategic, ethical, relational, and adaptive competencies. Technological transformation does not diminish the need for management education but increases its complexity.

The principal implication lies in continuous learning. Professional education must keep pace with technological changes while avoiding training that is excessively dependent on specific tools. Transferable competencies, such as critical analysis, data interpretation, problem-solving, ethics, and the ability to learn, tend to be more sustainable in the face of continuous innovation (World Economic Forum, 2025).

The development of new competencies must therefore be understood as an integral part of organizations' digital transformation. Investments in AI that are not accompanied by human development

may limit the potential use of these systems, while professional development without adequate access to technology restricts opportunities for practical application. Technology and competencies must advance together.

METHODOLOGY

This research was conducted to analyze the effects of Artificial Intelligence and emerging technologies on the transformation of administrative processes, decision-making models, and the development of new professional competencies in Management. The methodological approach was defined in accordance with the research question and objectives, with the aim of integrating the technological, organizational, decision-making, and professional dimensions of the phenomenon under study.

In terms of its nature, this is applied research because it seeks to understand transformations with concrete implications for organizations and professionals. According to Gil (2022), applied research is directed toward producing knowledge that can be used in specific situations. This classification is appropriate because the study seeks to contribute to an understanding of how organizations and managers can respond to the changes brought about by AI and emerging technologies.

With regard to its approach, the study adopted a qualitative perspective because its objective is not to statistically measure gains in productivity or performance resulting from the use of AI, but to critically interpret its implications for processes, decisions, and professional competencies. Vergara (2016) notes that qualitative research supports the understanding of complex phenomena through the analysis of meanings, relationships, and contextual characteristics, which corresponds to the multifaceted nature of the technological transformation examined here.

In terms of its objectives, the research is exploratory and descriptive. Its exploratory dimension is justified by the rapid evolution of emerging technologies and the need to deepen understanding of the changes recently introduced by Artificial Intelligence into organizational environments. Gil (2022) notes

that exploratory research enables closer engagement with a particular problem and helps make it more explicit.

Its descriptive nature derives from the need to identify and organize the principal transformations presented in the literature. According to Vergara (2016), descriptive research seeks to present the characteristics of the phenomena under investigation and establish relationships among different components. In this study, this approach makes it possible to characterize changes in administrative processes, decision-making structures, and professional competencies associated with technological transformation.

Regarding technical procedures, bibliographic research was adopted, based on scientific articles, books, chapters, and institutional documents concerning Artificial Intelligence, digital transformation, management, decision-making, professional competencies, and emerging technologies. Gil (2022) understands bibliographic research as an investigation based on previously published materials, enabling researchers to bring together and compare the knowledge produced about a particular object of study.

Similarly, Vergara (2016) characterizes bibliographic research as a systematic study based on materials available to the public. In this investigation, the selected publications also constituted the analytical corpus from which benefits, risks, changes, and competencies associated with technological advances in Management were identified.

The bibliographic survey was guided by descriptors in Portuguese and English, including *“Inteligência Artificial na Administração”*, *“tecnologias emergentes”*, *“automação de processos administrativos”*, *“transformação digital”*, *“Inteligência Artificial e tomada de decisão”*, *“competências profissionais e IA”*, “artificial intelligence in management,” “digital transformation,” “AI and decision making,” “emerging technologies in management,” and “digital skills and management.” The terms were used individually and in combination to improve the correspondence between the publications and the three dimensions defined in the study’s title.

The bibliographic search was conducted between June and August 2026 through searches of Google Scholar, the Scientific Electronic Library Online (SciELO), and the Journal Portal of the Coordination for the Improvement of Higher Education Personnel (Portal de Periódicos da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior—CAPES). Searches were conducted using the previously defined descriptors, individually and in combination, in Portuguese and English, to locate scientific publications concerning Artificial Intelligence, digital transformation, administrative processes, decision-making, and professional competencies. Materials were selected according to their thematic relevance, quality, and alignment with the objectives established for the investigation.

Priority was given to publications produced within the preceding ten years, particularly between 2016 and 2026, with greater attention devoted to studies concerning the recent rapid expansion of Artificial Intelligence. Earlier works were retained when they were of structural importance to the theoretical foundation, as in Simon's contributions concerning decision-making and bounded rationality.

Studies concerning organizations' digital transformation, process automation, data analytics, Artificial Intelligence, decision-making models, human-AI interaction, organizational capabilities, digital competencies, professional competencies, and technology governance were included. Relevant institutional documents concerning the ethics and professional effects of AI were also considered.

Duplicate publications, strictly opinion-based texts, materials without an identifiable scientific or institutional foundation, and studies directed exclusively toward engineering and the technical performance of algorithms, without establishing administrative, decision-making, or professional implications, were excluded. Applying these criteria was intended to maintain alignment between the selected corpus and the research question.

To systematize the information, a bibliographic record protocol was used containing authorship, year, objective, organizational context, technology analyzed, administrative process affected, implications for decision-making, professional competencies identified, risks, limitations, and conclusions. This

procedure enabled comparisons among different studies and the organization of evidence related to the objectives.

The analysis was conducted through exploratory, selective, analytical, and interpretive reading. In accordance with Gil (2022), the materials were initially examined to determine their relevance and were subsequently analyzed in depth, with the selection of contributions directly related to the categories established.

Qualitative content analysis was adopted to process the data. Vergara (2016) recognizes this technique as suitable for processing textual materials because it enables information to be organized according to categories related to the research problem. Its use made it possible to identify convergences, divergences, and recurring themes in the literature.

The first analytical category focused on the effects of Artificial Intelligence on administrative processes and decision-making. Evidence related to automation, information integration, predictive analytics, efficiency, decision-making speed, hybrid decision structures, and the complementarity between human judgment and algorithmic capacity was grouped under this category.

The second category focused on the development of new professional competencies and the challenges arising from technological transformation. Digital, analytical, critical, ethical, adaptive, relational, and strategic competencies were analyzed, as were issues related to governance, professional development, and continuous learning.

As a cross-cutting principle, the analysis distinguished technological availability from organizational capability. The presence of a particular tool was not automatically interpreted as an improvement in processes or decisions. Data quality, organizational integration, professional competencies, and governance were considered prerequisites for effective technological transformation.

The complementarity between human and technological capabilities was also adopted as an interpretive axis. The evidence was analyzed in a manner that avoided both the perspective of professionals' complete replacement and an interpretation that underestimated the potential of automation.

This approach is based particularly on the contributions of Jarrahi (2018) and Raisch and Krakowski (2021), who demonstrate the importance of simultaneously analyzing automation, augmentation, and human-AI interaction.

The methodological approach thus enables an integrated analysis of the study's three central components: process transformation, decision-making, and competency development. The approach adopted makes it possible to understand Artificial Intelligence not only as a technological tool but also as an element capable of reconfiguring organizational processes, distributing decision-making activities, and altering the capabilities required of Management professionals.

ANALYSIS AND DISCUSSION OF RESULTS

The literature analysis showed that Artificial Intelligence and emerging technologies are producing simultaneous transformations in three central dimensions of Management: organizational processes, decision-making, and the competency profile required of professionals. The findings demonstrate that the benefits associated with AI do not arise merely from technology adoption but from the organization's ability to integrate data, systems, decision-making structures, and human competencies (Vial, 2019; Verhoef et al., 2021).

The first area of convergence concerns the expansion of automation and information-processing capacity. AI-based systems can perform repetitive activities, classify information, identify patterns, generate predictions, and support certain decisions. Raisch and Krakowski (2021), however, demonstrate that automation and the augmentation of human capabilities should not be understood as entirely separate processes. Adopting AI may simultaneously eliminate certain tasks and create professional demands related to the interpretation and supervision of intelligent systems and interaction with them.

The second area of convergence concerns the reconfiguration of decision-making structures. The literature does not support a simple opposition between human and algorithmic decision-making. Shrestha, Ben-Menahem, and von Krogh (2019) demonstrate the existence of different configurations in

which humans and AI may participate in decision-making, including the complete delegation of certain decisions, sequential structures, and aggregated forms of human-algorithm decision-making.

The third central finding concerns professional competencies. Technological transformation does not merely indicate increased demand for Artificial Intelligence specialists. Recent evidence from the Organisation for Economic Co-operation and Development (OECD) demonstrates that workers in occupations highly exposed to AI continue to require management, business, cognitive, social-interaction, and technology-use competencies, even when they do not need specialized knowledge of AI development (Green, 2024).

This evidence makes it possible to interpret Management's technological transformation as a process of redistributing tasks and competencies. Structured and repetitive activities have greater automation potential, while capabilities related to interpretation, judgment, problem-solving, communication, leadership, and accountability remain important (Green, 2024; World Economic Forum, 2025). The findings were therefore organized into two complementary analytical categories.

EFFECTS OF ARTIFICIAL INTELLIGENCE ON PROCESS EFFICIENCY AND DECISION-MAKING

The first category demonstrated that operational efficiency is one of the principal contributions attributed to Artificial Intelligence. Automating administrative activities can reduce the time spent on repetitive tasks, expand processing capacity, and increase the standardization of certain operations. The findings, however, indicate that technological efficiency should not be confused with organizational efficiency (Davenport; Ronanki, 2018).

Automating an inadequately structured process may merely accelerate a routine that continues to exhibit flaws. Digital transformation and process redesign must therefore be understood in conjunction with each other. The literature on digital transformation demonstrates that technologies alter structures,

processes, and value-creation mechanisms, requiring organizational capabilities that extend beyond the simple implementation of systems (Vial, 2019; Verhoef et al., 2021).

Another important finding concerns information integration. Digital technologies make it possible to centralize information from different departments and provide managers with faster access to certain indicators. This integration can reduce fragmentation, support coordination, and improve the monitoring of operations (Verhoef et al., 2021).

The use of analytical systems expands this contribution. Data concerning sales, production, logistics, customers, finance, and performance can be processed together, making it possible to identify associations and trends that would be difficult to detect through manual analysis. Efficiency therefore comes to involve not merely performing tasks more quickly but also the capacity to transform large volumes of data into managerially relevant information (Wamba et al., 2017).

This development also changes the temporal logic of Management. Processes traditionally based on periodic reports can progressively be supplemented by more continuous monitoring. The availability of indicators at shorter intervals makes it possible to identify deviations and respond more rapidly (Davenport; Ronanki, 2018).

A greater quantity of information, however, does not necessarily result in better management capability. Excessive amounts of data can produce information overload and make it difficult to identify what is genuinely relevant. Intelligent systems therefore add value when they reduce informational complexity rather than indiscriminately increasing the number of available indicators (Simon, 1997).

Predictive capacity represents another important contribution. AI systems can use historical data to estimate probabilities, identify recurring behaviors, and assist with scenario development. These functions can support decisions related to demand, inventory, risk, maintenance, performance, consumer behavior, and resource planning (Wamba et al., 2017).

The analysis indicated, however, that algorithmic predictions do not eliminate uncertainty. Models operate on the basis of data, assumptions, and relationships identified in the past. Structural changes,

unexpected events, or contexts that are insufficiently represented may significantly reduce their predictive capacity. Predictions should consequently be treated as inputs for decision-making rather than certainties about future behavior (Simon, 1997; Jarrahi, 2018).

This aspect aligns with Jarrahi's (2018) perspective, according to which AI and humans possess complementary capabilities. Technology has an advantage in processing large volumes of information and addressing problems marked by complexity, while humans remain especially important in situations characterized by uncertainty and ambiguity.

Decision-making therefore represents a particularly important sphere of complementarity. AI can identify patterns and compare alternatives; the manager interprets the context, consequences, objectives, and aspects not fully represented in the data. This division is not fixed but depends on the characteristics of each decision (Jarrahi, 2018).

Shrestha, Ben-Menahem, and von Krogh (2019) identify five relevant factors for comparing human and AI-based decisions: the specificity of the search space, interpretability, the size of the set of alternatives, speed, and replicability. On the basis of these factors, the authors propose different organizational structures for combining humans and intelligent systems.

For highly structured, repetitive decisions supported by consistent databases, greater delegation to technology may be advantageous. A system can analyze thousands of cases in less time, apply rules consistently, and replicate the process on a large scale (Shrestha; Ben-Menahem; Von Krogh, 2019).

For strategic decisions, however, such delegation must be approached more cautiously. Strategy involves competition, environmental changes, conflicting interests, organizational values, and events with potentially limited historical representation. The ability to interpret qualitative elements and consider broader consequences remains particularly important (Jarrahi, 2018; Shrestha; Ben-Menahem; Von Krogh, 2019).

Explainability consequently emerges as an important condition for decision quality. The greater a decision's impact, the greater the need to understand the factors influencing a particular recommendation.

A system may offer a high degree of predictive capability and still be unsuitable for a decision if its outputs cannot be sufficiently examined or challenged (Shrestha; Ben-Menahem; Von Krogh, 2019).

Data quality is another determining factor. AI systems depend on the datasets used in their development and operation. Incomplete, outdated, or biased data can produce equally problematic results. Increasing algorithmic sophistication does not eliminate the need for information governance (Wamba et al., 2017).

This issue is especially important for decisions concerning people. Recruitment, performance evaluation, promotion, and the distribution of opportunities may reproduce inequalities when models are built using data that reflect historically discriminatory patterns. In this context, efficiency cannot serve as the sole criterion for legitimizing automation (UNESCO, 2021).

In establishing its Recommendation on the Ethics of Artificial Intelligence, UNESCO (2021) emphasizes principles related to human rights, dignity, accountability, transparency, and human oversight. The Recommendation recognizes that AI systems can have significant positive and negative effects on individuals and societies, requiring governance mechanisms commensurate with the risks involved.

The analysis therefore demonstrates that the efficiency provided by AI must be understood multidimensionally. Time savings and automation are important benefits, but a faster decision is not necessarily a better one. Administrative efficiency must encompass quality, reliability, security, and accountability (Davenport; Ronanki, 2018; UNESCO, 2021).

It was also found that adopting AI changes the substance of administrative work itself. When systems take over processing, synthesis, and classification functions, professionals can devote a greater share of their work to analysis and interpretation. This redistribution corresponds to the paradox discussed by Raisch and Krakowski (2021): automation and the augmentation of human capability coexist and influence one another.

The effect of AI on processes and decision-making can therefore be summarized in four dimensions: the automation of structured activities, information integration and processing, enhanced

predictive capacity, and the development of hybrid decision-making models. These contributions, however, depend on reliable data, governance, system suitability, and human involvement proportionate to the risks and complexity of the decisions (Davenport; Ronanki, 2018; Jarrahi, 2018; Shrestha; Ben-Menahem; Von Krogh, 2019).

NEW PROFESSIONAL COMPETENCIES AND CHALLENGES FOR MANAGEMENT IN THE AGE OF ARTIFICIAL INTELLIGENCE

The second category showed that technological transformation changes the professional profile required in Management. The growing use of AI generates demand not only for specialized technical competencies but also for changes in the competencies required of professionals who do not work directly on system development (Green, 2024; World Economic Forum, 2025).

In an OECD study on AI and changing skills demand in the labor market, Green (2024) demonstrates that exposure to Artificial Intelligence changes the tasks and capabilities required even in occupations that do not demand specialized knowledge of programming or machine learning. Relevant skills include management and business competencies, as well as cognitive, digital, and socioemotional capabilities.

This finding is particularly applicable to Management. Professionals do not necessarily need to become AI developers to work in technologically advanced organizations. They do, however, need to understand systems sufficiently to interpret their outputs, evaluate applications, communicate with technical teams, and participate in technology-adoption decisions (Green, 2024).

Digital competence therefore constitutes a basic dimension. It involves the ability to use digital systems, platforms, and tools, as well as to understand their limitations. Proficiency in a specific interface is less valuable than the ability to learn different systems and understand how to use them to solve administrative problems (Green, 2024).

Data literacy occupies an equally important position. Professionals must understand indicators, interpret visualizations, recognize dataset limitations, and evaluate analytical results. The growing use of AI increases this requirement because automated recommendations are frequently presented through probabilities, classifications, and statistical patterns (Wamba et al., 2017; Green, 2024).

Analytical thinking remains a strategic competency. The Future of Jobs Report 2025 identifies analytical thinking as one of the core skills most highly valued by employers, while AI and Big Data are among the fastest-growing skills. The report also highlights creativity, resilience, flexibility, leadership, and continuous learning as competencies for which demand is increasing. This combination confirms that technological and human competencies should not be treated as competing alternatives. Organizations need professionals capable of understanding technologies while simultaneously analyzing problems, communicating decisions, leading teams, and adapting to change (Green, 2024; World Economic Forum, 2025).

Problem-solving is another particularly important competency. As systems take over predictable and structured tasks, human activity is likely to focus proportionally more on novel, ambiguous, or complex situations. Jarrahi (2018) demonstrates that human capabilities remain especially relevant in these contexts, while AI offers advantages in analyzing large quantities of information.

Adaptability is becoming equally critical. The pace of technological development means that operational knowledge can become obsolete over short periods. Professionals must learn continuously and transfer knowledge across different tools and contexts (World Economic Forum, 2025).

This aspect is strongly supported by the Future of Jobs Report 2025. The World Economic Forum estimates that approximately 39% of workers' core skills are expected to change by 2030 and points to a substantial need for reskilling and professional upskilling. The same report identifies skills gaps as one of the principal barriers to business transformation.

Continuous learning is therefore becoming part of the very concept of professional competence. It is not merely a matter of periodically taking courses but of developing the ability to understand new

resources, assess their relevance, and incorporate knowledge in response to changes in work (World Economic Forum, 2025).

Another important finding concerns ethical competence. Management professionals participate in decisions involving recruitment, evaluation, service delivery, resource allocation, and various processes in which AI systems can affect people. Ethics must therefore be integrated into managerial competence (UNESCO, 2021).

UNESCO's Recommendation shows that AI can reproduce or amplify biases and affect rights and human dignity, which is why its use requires accountability and oversight mechanisms. For Management professionals, this means recognizing that an algorithmic recommendation does not eliminate the responsibility of the person who decides to use it.

In this context, technology governance constitutes an emerging organizational and professional competency. Managers must participate in establishing criteria for system adoption, assigning responsibilities, monitoring results, protecting data, and addressing failures (UNESCO, 2021).

Communication skills are also becoming particularly important. Analytical results must be translated for different organizational audiences. Managers must be able to interpret technically complex information and present it in language appropriate to those responsible for making decisions (Green, 2024).

Interdisciplinary collaboration is another relevant factor. Artificial Intelligence projects frequently involve professionals from technology, Management, law, security, human resources, and different business areas. Proper implementation depends on the ability to foster dialogue between technical knowledge and organizational needs (Green, 2024; Verhoef et al., 2021).

Leadership in transformation processes also emerges as an important competency. Technological changes may generate uncertainty and resistance and may alter professional responsibilities. Leaders must communicate objectives, organize learning processes, and create conditions for technologies to be incorporated without undermining team participation (World Economic Forum, 2025).

In this respect, Management faces an additional challenge: preventing digital transformation from being conducted exclusively as a technology project. Implementing AI has implications for people, processes, culture, and decision-making structures. Managers must consequently participate actively in its design and governance (Vial, 2019; Verhoef et al., 2021).

Technological dependence is one of the principal risks. The greater the reliance placed on systems, the greater the possibility that users' critical capacity will decline. Professionals must preserve their ability to question recommendations, identify anomalies, and make decisions even when systems fail (Jarrahi, 2018; Raisch; Krakowski, 2021).

Raisch and Krakowski (2021) specifically caution that an excessive emphasis on either automation or human augmentation can produce unintended consequences. The challenge lies in managing the tension between the two dimensions and developing forms of complementarity.

Another difficulty concerns unequal access to professional development. Organizations with greater resources may invest more rapidly in infrastructure and team development, while others may face significant gaps. This difference can produce new forms of competitive inequality among companies and professionals (World Economic Forum, 2025).

The World Economic Forum's 2025 report notes that 77% of the employers surveyed intend to invest in upskilling in response to the transformation brought about by AI, while a significant share also anticipate reducing the number of workers performing potentially automatable activities. These data reinforce the need to plan technological transformation and professional development jointly.

Management education must respond to this context. Curricula that focus excessively on traditional management models without integrating data analytics, technology, and AI governance may widen the gap between professional education and organizational reality (Green, 2024; World Economic Forum, 2025).

The educational response, however, should not be excessively technical either. The OECD report demonstrates that workers exposed to AI do not necessarily require specialized system-development

competencies, but they do experience changes in their tasks and in the combinations of skills required (Green, 2024).

A sound professional education should therefore combine management knowledge, digital competencies, data literacy, analytical thinking, communication, ethics, leadership, and the capacity for continuous learning. Professionals must not only use AI; they must know how to manage organizations in which AI is increasingly involved in processes (Green, 2024; World Economic Forum, 2025).

The findings therefore make it possible to identify a hybrid professional profile. This profile combines managerial knowledge with technological capability while retaining human competencies such as judgment, communication, creativity, leadership, and accountability. Professional advantage is likely to lie less in performing routines and more in the ability to interpret, supervise, decide, and generate value from available technological resources (Green, 2024; Raisch; Krakowski, 2021; World Economic Forum, 2025).

CONCLUSION

This study aimed to analyze the effects of Artificial Intelligence and emerging technologies on the transformation of administrative processes, decision-making, and the development of new professional competencies in Management. The literature analysis showed that these three dimensions are deeply interconnected: process transformation modifies decision-making structures, and both create new requirements for professionals.

In response to the research question, the study found that AI transforms administrative processes primarily through task automation, information integration, advanced data analytics, pattern identification, and the generation of predictions. These possibilities can promote operational efficiency and greater agility, provided that they are accompanied by process redesign, information quality, and appropriate governance.

Decision-making is also changing. The literature demonstrates that AI does not necessarily lead to the complete replacement of human decision-makers but enables different combinations of computational capacity and professional judgment. Shrestha, Ben-Menahem, and von Krogh (2019) specifically identify delegation structures, sequential decision-making, and human-AI aggregation.

This conclusion is reinforced by Jarrahi (2018), whose analysis highlights the complementarity between AI's analytical capacity and human abilities to address ambiguity and uncertainty. Contemporary management thus appears likely to advance toward hybrid decision-making models in which the distribution of responsibilities depends on the characteristics and consequences of each problem.

The findings also demonstrate that speed and efficiency cannot be the sole evaluation criteria. A fast decision may be of poor quality when it is based on inadequate data, opaque models, or recommendations that have not been contextualized. Governance, explainability, security, and the possibility of human oversight are becoming essential conditions.

In the professional sphere, technological transformation was found to require an expansion of the competencies traditionally associated with Management. Digital literacy, data analysis, critical thinking, problem-solving, adaptability, continuous learning, ethics, and the ability to interact with professionals from different fields are increasingly becoming part of the necessary repertoire.

Contemporary evidence reinforces this transformation. The OECD demonstrates that occupations exposed to AI continue to require competencies related to management, business, cognition, and technology use, without requiring every professional to develop specialized knowledge of programming or AI model development.

The Future of Jobs Report 2025 converges with this finding by identifying AI and Big Data among the fastest-growing skills while simultaneously emphasizing analytical thinking, creativity, resilience, flexibility, leadership, and continuous learning. Technological transformation therefore strengthens the need to combine digital and human competencies.

The study also concludes that continuous professional learning is a structural requirement. The speed of technological development reduces the value of education focused exclusively on mastering specific tools. Professionals must develop transferable competencies that enable them to learn about, evaluate, and integrate new resources throughout their careers.

Organizations also bear responsibility for this process. It is insufficient to expect workers to adapt individually to AI. Companies must provide infrastructure, governance policies, training, and reskilling opportunities. The World Economic Forum specifically identifies competency development as one of the principal organizational responses to the changes brought about by AI.

The ethical dimension must also be incorporated into management models. The use of intelligent systems in decisions affecting workers, customers, and other groups requires criteria related to transparency, fairness, human oversight, and accountability. UNESCO's Recommendation demonstrates that the effects of AI extend beyond issues of technological efficiency to encompass rights, dignity, and social responsibility.

One limitation is the bibliographic and qualitative nature of the study, which does not allow for direct measurement of the productivity or performance gains associated with implementing AI in specific organizations. The findings represent an interpretive synthesis of the available evidence and must be considered in light of the characteristics of different industries and business contexts.

Future studies should conduct empirical investigations in organizations implementing AI systems, analyzing changes in administrative workflows, performance, decision-making structures, and the competencies required of professionals. Research comparing human, automated, and hybrid decisions is also relevant, particularly when considering quality, speed, explainability, trust, and accountability.

Finally, the study concludes that Artificial Intelligence and emerging technologies do not merely represent a new set of tools for Management. They reorganize tasks, change the production and circulation of information, alter decision-making structures, and redefine the professional capabilities required for management.

In this context, managers do not lose relevance; their role is likely to become more analytical, critical, and strategic. Technology can process, classify, predict, and recommend, but professional action remains necessary to contextualize, question, lead, and assume responsibility for decisions. Management in the age of Artificial Intelligence will therefore be characterized less by an opposition between people and machines and more by the ability to build productive and responsible relationships among human intelligence, technological capabilities, and organizational objectives.

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