

Artificial Intelligence Governance?

Foundations for Its Appropriate Application in Business

The integration of artificial intelligence into business operations confronts organizations with the need to bring together technological, legal, and administrative considerations. This process requires a comprehensive assessment, supported by specialized knowledge and verifiable evidence, to identify the capabilities, limitations, risks, and obligations associated with the use of these technologies.

These notes seek to examine the concept of artificial intelligence governance, its nature, and its application in the corporate environment, drawing on verifiable scientific, technical, and legal foundations. Their purpose is to clarify its relevance to the direction, administration, and oversight of AI technologies integrated into companies' operational and administrative processes.

Part I — Historical and Technological Foundations

Governance: Origins and Evolution of the Concept to Its Application in Artificial Intelligence (AI)

Origins:

The word **governance** has its etymological roots in the Greek *kybernân*, associated with steering or piloting, from which the Latin *gubernare*, referring to the act of governing, derives.

During the **13th century**, Old French adopted *gouvernance* to express the exercise or manner of governing. In the **14th century**, the term entered English as *governance*, while medieval Spanish also used the form *governança*, primarily as an equivalent of government.

In **1803**, the Royal Spanish Academy included *gobernanza* in its dictionary as an archaic term equivalent to government. Subsequently, in **2001**, it recognized its contemporary meaning, associated with a form of governing oriented toward economic, social, and institutional development.

The international revival of the English term *governance*, particularly during the final decades of the 20th century, contributed to the reintroduction of *gobernanza* into Spanish political, legal, and administrative discourse. It is therefore a word with historical origins whose contemporary specialized meaning reflects a subsequent conceptual evolution.

Legal and Administrative Background: Historically, the notion of governance was associated with the exercise of authority, the direction of public affairs, and the administration of institutions. However, its contemporary formulation gained particular prominence during the final decades of the **20th century**, when the English term *governance* became widely used in studies of public administration, institutional development, and relations between the state and society.

In **1989**, the World Bank explicitly addressed governance issues in its report *Sub-Saharan Africa: From Crisis to Sustainable Growth* . In **1991**, it further developed this perspective through *Managing Development: The Governance Dimension* , and in **1992**, it published *Governance and Development*, in which it linked the concept to the manner in which power is exercised in managing a country's economic and social resources.

The dissemination of these approaches by international organizations helped consolidate *governance* as a concept of institutional and administrative analysis, while also encouraging the renewed use of its Spanish equivalent, *gobernanza*.

This evolution establishes a fundamental distinction: governance is a concept related to the direction, organization, and supervision of the exercise of authority; its designation alone does not constitute a law, a regulation, or a universal legal obligation.

Adoption in the Corporate Sector: The contemporary application of the English term *governance* to the business sphere developed primarily in the United States during the 20th century, through the expression *corporate governance*, associated with the direction, supervision, and control of business corporations.

Although documented instances of its use date back to **1953**, the American scholar **Richard Eells** explicitly employed *corporate governance* in **1960** and examined the subject more systematically in **1962** in his work *The Government of Corporations*. During the **1970s**, the concept gained greater prominence in the United States, particularly in debates concerning executive accountability, shareholders' rights, and mechanisms of corporate oversight.

In **1984**, the work of scholar **Bob Tricker** contributed to the development of the concept in the United Kingdom. Subsequently, in **1992**, the **Cadbury Report**, published in that country, established a major reference for corporate governance, focusing on the systems by which companies are directed and controlled.

In the Spanish-speaking world, this international evolution was reflected particularly in the expressions ***gobierno corporativo*** **(corporate governance) and** ***gobierno de las sociedades*** **(governance of companies)** . In Spain, the **1998 Olivencia Report** established recommendations to improve the functioning and oversight of boards of directors of listed companies. In **1999**, the **OECD** published its *OECD Principles of Corporate Governance* , officially disseminated in Spanish as *Principios de la OCDE para el gobierno de las sociedades* , contributing to the concept's international reach.

This evolution demonstrates that corporate governance is an administrative and legal practice with its own historical foundations, predating its specialized application to digital technologies and artificial intelligence. Its essential purpose is to establish structures of corporate direction, accountability, and oversight, without necessarily implying the existence of a specific regulatory regime for every technology used by an organization.

Application of the Concept of Governance to Artificial Intelligence: The contemporary application of the English term *governance* to the field of artificial intelligence gained particular prominence during the second half of the **2010s**, as technological advances and the growing use of automated systems prompted debates concerning their risks, safety, accountability, and institutional oversight.

In **June 2018**, **Google** published its corporate principles on artificial intelligence, incorporating criteria related to safety, accountability, privacy, and human oversight. In **August of that same year**, researcher **Allan Dafoe**, affiliated with the University of Oxford, published *AI Governance: A Research Agenda* , a research proposal aimed at identifying and organizing the principal issues associated with artificial intelligence governance.

In **January 2019**, **Singapore** published the first edition of its *Model AI Governance Framework* , a voluntary framework intended for private organizations to guide the responsible implementation of AI systems through principles, internal responsibilities, and operational controls.

In the Spanish-speaking world, the use of the concept of governance as applied to artificial intelligence is documented in **March 2019**, when Spain's Permanent Representation to UNESCO published an account of an international conference devoted to artificial intelligence and its ethical principles, in which AI governance was explicitly addressed. In **May 2019**, the **OECD** adopted its Recommendation on Artificial Intelligence, establishing international principles for its responsible development and use.

Subsequently, in **September 2020**, the **Inter-American Development Bank** published *Gobernanza participativa de la inteligencia artificial* (Participatory Governance of Artificial Intelligence), in the context of work related to Chile's national AI policy. In **November 2021**, **UNESCO** adopted its *Recommendation on the Ethics of Artificial Intelligence* , incorporating international guidance on governance, human rights, accountability, and oversight of these technologies.

The public and commercial expansion of generative artificial intelligence, driven especially by the launch of **ChatGPT in November 2022**, intensified debates regarding its use and control. In **January 2023**, the United States **National Institute of Standards and Technology (NIST)** published its *AI Risk Management Framework 1.0* , a voluntary framework that organizes risk management around four functions: govern, map (identify context and risks), measure, and manage.

Finally, in **September 2024**, the **United Nations** published *Governing AI for Humanity* , a report examining existing shortcomings in international oversight mechanisms and proposing new forms of institutional cooperation.

This evolution establishes a fundamental distinction: what is commonly referred to as artificial intelligence governance did not originate from a single legal provision, nor does its designation alone constitute a universal scientific or technological methodology. Its contemporary development brings together research approaches, ethical principles, institutional oversight, risk management, and organizational controls.

Its application in business must be grounded in knowledge of the technologies being used, verifiable assessment of their risks, administrative responsibilities, and the legal obligations that actually apply.

Artificial Intelligence: Technological Foundations and Integration into the Business Environment

Nature and Technological Foundations of Artificial Intelligence:

Artificial intelligence (AI) is a field of computer science devoted to developing computational methods and systems capable of performing functions associated with reasoning, inference, learning, pattern recognition, information generation, and decision-making.

Its foundations encompass disciplines such as mathematics, logic, statistics, and computer science, applied through different technological techniques and architectures.

Artificial intelligence does not constitute a single technology, nor is it limited to current generative models. It encompasses approaches based on knowledge and rules of logical inference, as well as machine learning, deep learning, and generative models. These approaches differ in how they operate, their data requirements, their processing capabilities, and their conditions of application.

In **November 2023**, the **OECD** approved an update to its definition of an AI system, explained in a memorandum published in **March 2024**. The definition characterizes these systems by their ability to infer, from the information they receive, how to produce outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. It also recognizes varying degrees of autonomy and adaptability after deployment.

An essential technological distinction is that **not every computer program or automated process constitutes artificial intelligence** . Conventional systems can perform operations through predefined instructions and rules without incorporating learning or inference mechanisms characteristic of certain AI techniques. However, artificial intelligence can also use formalized rules and knowledge, so the distinction does not depend exclusively on the presence of machine learning.

A distinction must also be made between an **AI model** and an **AI system**. A model is a computational component that can be incorporated into a broader application, whereas a system encompasses the elements necessary for its operation and use, including software, interfaces, processing mechanisms, and other technological components. This distinction makes it possible to identify more precisely which technology an organization actually uses.

The capabilities of AI systems are neither uniform nor do they, by themselves, guarantee correct results. Their performance depends on factors such as the methods used, the quality and relevance of data, the characteristics of the model, operating conditions, and the context of use. Some systems may produce incorrect results, exhibit bias, or behave differently when confronted with situations not considered during their development or evaluation. Not all systems possess the ability to continue learning after deployment.

These foundations establish an essential technological distinction: artificial intelligence does not constitute a single system, nor does it follow a universal operating architecture. Its capabilities and outputs depend on the computational methods employed and the interaction among its different components. Understanding these elements and their functions is essential for examining how artificial intelligence systems operate and identifying their technical possibilities and limitations.

Components and Operation of Artificial Intelligence Systems:

The operation of an artificial intelligence system depends on the interaction among different computational components, whose organization varies according to the technology employed and the functions the system is intended to perform. Fundamental elements include data, algorithms, models, processing mechanisms, and the technological infrastructure that enables their operation. These components do not constitute a universal architecture, nor do they necessarily participate in the same way in every AI system.

Data provide information that systems can use to develop or perform specific functions. In machine learning systems, datasets make it possible to identify relationships and regularities through training procedures. Their quality, representativeness, origin, and preparation influence model behavior. However, a distinction must be made between the data used to train a model and the data it subsequently receives during operation.

Algorithms are defined computational procedures for processing information and performing operations. In artificial intelligence, they may be used to perform logical inference, search for solutions, optimize parameters, recognize patterns, or produce outputs. Knowledge-based and rule-based systems represent information through formal structures and use inference procedures to derive conclusions. Machine learning systems, in turn, employ mathematical and statistical methods to fit models to data.

An **AI model** is a computational representation used to perform specific tasks. In machine learning, its structure and parameters enable it to process new inputs according to relationships identified during training. Other approaches may use explicit representations of knowledge and logical relationships. Therefore, the terms algorithm and model are not equivalent: an algorithm describes processing or learning procedures, whereas a model constitutes a representation that those procedures can use.

Training is the process through which a machine learning model adjusts its parameters using data and optimization methods. During development, separate datasets may be used for training, validation, and testing to evaluate the model's ability to operate on information not used to adjust its parameters. Not all artificial intelligence systems require this procedure, and an organization may use models previously trained by third parties without participating in their original development.

Inference encompasses the procedures through which a system produces outputs from input information and the mechanisms or representations it uses. In a previously trained machine learning model, this operation makes it possible to generate predictions, classifications, recommendations, or content from new data. Ordinary inference does not necessarily involve modifying the model's parameters or introducing a new learning process. In symbolic systems, inference may consist of applying logical rules to formalized knowledge.

Technological infrastructure comprises the resources needed to execute and connect these components, including processing equipment, memory, storage, software, interfaces, and communication mechanisms. Depending on the architecture, operations may be performed on local devices, proprietary servers, or infrastructure operated by external providers. Furthermore, operating a complete system may require additional processes for collecting and preparing data, integrating software, evaluating results, and performing operational maintenance.

These differences establish a fundamental technological distinction: a model, an algorithm, and a complete artificial intelligence system do not necessarily constitute the same technological object. The effective operation of a system depends on how its components are organized, which operations each performs, and the technical conditions under which they are used.

Understanding this structure provides the foundation for examining the different ways in which artificial intelligence can be incorporated into an organization's processes and applications.

Modes of Business Use and Integration of Artificial Intelligence:

The incorporation of artificial intelligence into business encompasses different modes of technological use and integration, determined by each organization's operational needs, the characteristics of its information systems, and the degree to which AI participates in its processes. These modes differ fundamentally in terms of infrastructure, access to information, execution capabilities, dependence on providers, and responsibilities for technological administration.

A first mode involves the **individual use of external artificial intelligence tools** through commercial applications that employees access directly to draft documents, analyze information, generate content, or support specific professional tasks. In these cases, the company uses the capabilities of a technological service, but has not necessarily integrated its AI components into its own information infrastructure. The main operations are performed on systems administered by the provider, while the organization retains control over the activities it assigns to its employees. Nevertheless, this mode may also involve processing business information, meaning that its external nature does not eliminate the need to understand the conditions governing data use and processing.

A second mode consists of **using AI functions embedded in existing business platforms** , such as customer relationship management systems, administrative applications, communication tools, accounting software, or information analysis solutions. In these cases, AI may operate as a component of software the company already uses, without requiring the development or installation

of its own model. Its participation may be limited to providing recommendations or may extend to automated functions within workflows. The actual scope of integration depends on the enabled functions, the data it can access, and the operations it can perform.

A third mode involves the **development or adaptation of business applications that incorporate AI models through application programming interfaces (APIs)** . Under this architecture, a company may develop its own software and connect it to models managed by external providers. For example, a corporate customer service system may receive requests, transmit relevant information to an AI service, process its outputs, and use them to classify inquiries, prepare responses, or update internal records. The company controls the programming and connections it develops, but model processing may remain dependent on external infrastructure.

These applications may also incorporate mechanisms for retrieving business information, such as **retrieval-augmented generation (RAG)** . This technique makes it possible to retrieve relevant documents or data from authorized sources and provide them as context to a model, enabling it to generate responses related to that information. Its use does not necessarily involve retraining the model or permanently transferring the company's knowledge to it. Temporary access to information during an operation must be distinguished from training or modifying the model's parameters.

A fourth mode consists of **deploying AI models on infrastructure managed by the organization itself** , whether through local servers, cloud computing services, or specialized technological environments. The company may install and configure previously developed models, adapt certain components, or, when it has the necessary resources, develop and train specialized models. This mode offers different possibilities for configuration and operational control, but requires an assessment of processing resources, maintenance, security, updates, and the technical personnel needed. Managing a model on company-controlled infrastructure does not necessarily imply ownership of the rights to its original technology, nor does it, by itself, guarantee independence from third parties.

These modes may also incorporate **agent-based AI systems** capable of using software tools to execute sequences of operations. Unlike an application intended solely to generate information, an agent-based system may connect to databases, email systems, administrative applications, or business services to retrieve records, prepare transactions, and execute specific actions. Its operational capabilities depend on the implemented architecture, available tools, and assigned permissions. Autonomous execution is not a mandatory characteristic of all agents, and sensitive operations can be configured to require prior human authorization.

A distinction must also be made between **conventional computer automation and automation incorporating artificial intelligence** . A business process may execute previously programmed instructions without using AI models. It may also combine conventional mechanisms with intelligent components that classify information, interpret requests, or generate results subsequently used by

other programs. Therefore, the presence of automation does not, by itself, demonstrate the existence of artificial intelligence, just as the use of an AI model does not necessarily mean that the system can execute actions on a company's resources.

From an operational standpoint, distinguishing among these modes requires identifying **which components belong to the company, which are administered by third parties, where data are processed, which systems exchange information, and which operations can be performed without human intervention** . It is also necessary to determine who configures the applications, manages permissions, modifies connections, and is responsible for their technical operation. Contracting a platform, developing a proprietary application, and installing a model represent different configurations whose scopes must not be confused.

These modes establish a fundamental business distinction: using artificial intelligence does not necessarily mean developing a proprietary system, administering a model, or integrating AI capabilities into corporate infrastructure. Nor is there an automatic relationship between the complexity of an implementation and its business value. The appropriate mode depends on the required functions, available resources, the characteristics of business processes, and the technical conditions of use.

Once these forms of incorporation have been identified, the organization's technological infrastructure must be examined to determine which systems it owns or uses, how they relate to one another, and the actual operating conditions of their artificial intelligence components.

Assessment of Technological Infrastructure, the Need for Artificial Intelligence, and Corporate Controls:

The decision to incorporate artificial intelligence into a company must begin with an understanding of its operational needs and the capabilities of its existing technological infrastructure. The commercial availability of AI tools does not, by itself, justify their adoption. Before recommending implementation, it is necessary to determine which problems the organization seeks to solve, what its objectives are, and whether it already possesses adequate technological resources to achieve them.

The initial assessment includes **a diagnosis of business processes and the conventional technology currently in use** . This examination must identify the applications, databases, administrative systems, computing resources, and external services involved in the company's operations. It must also establish their capabilities, limitations, maintenance conditions, and potential deficiencies. An organization may encounter operational difficulties that do not require artificial intelligence, but rather improvements in programming, conventional automation, application integration, information organization, or employee training.

Once the needs have been identified, a **comparative assessment of available technological alternatives** must be conducted. The organization must examine whether its problems can be resolved by optimizing existing systems, developing conventional software, or incorporating new AI capabilities. This comparison must consider expected effectiveness, acquisition and maintenance costs, required human resources, technological dependencies, and associated risks. The outcome may justify the incorporation of artificial intelligence or conclude that a conventional solution is more appropriate.

When the use of AI is considered appropriate, an assessment must determine **which technological mode meets the identified needs** . The company may require an external consultation tool, a function embedded in an existing application, a system developed through API connections, or a broader implementation integrated into its processes. In each case, it is necessary to identify the data used, the processing infrastructure, connections between systems, execution capabilities, and the technical responsibilities of both the provider and the organization.

However, the assessment must not be limited to projects involving the introduction of new systems. Many organizations **already use artificial intelligence through commercial consultation and productivity tools** , such as ChatGPT, Claude, or Copilot, provided by the company or used by its employees. This practice constitutes a form of business use of AI, even when it does not involve developing proprietary models or directly integrating them with corporate applications. Therefore, a distinction must be made between the workplace use of external tools and the implementation of systems connected to an organization's operational infrastructure.

In these cases, the assessment must consider **what information employees enter, how they use the results, and which security and authorization conditions apply** . For example, a consultation involving public information does not present the same implications as entering confidential documents, customer records, or personal data into an external platform. Similarly, using a personal account for work-related activities does not automatically make business information the employee's property. Account ownership, rights over information, and authority to access account contents are separate matters, subject to the applicable contractual and legal conditions.

The **level of technological exposure and risk** depends primarily on the functions performed, the sensitivity of information, authorized connections, operational autonomy, and the potential consequences of the outputs. A tool used to prepare drafts subject to human review may require different controls from those needed for a system that accesses financial records, modifies files, transmits information to third parties, or participates in decisions affecting other individuals. The assessment must also consider potential errors, operational limitations, and the specific obligations applicable to the company's activities.

Based on these findings, the organization must examine **whether its existing business administration and control mechanisms are sufficient** . Organizations may already have policies governing confidentiality, information security, data protection, access authorization, supplier

contracting, and work supervision. Such mechanisms may be sufficient for certain uses of AI or may require specific adjustments, such as establishing authorized tools, restricting what information may be shared, verifying outputs, and defining responsibilities. The use of artificial intelligence does not necessarily require the creation of an independent administrative structure.

Conversely, when a company incorporates AI systems with significant operational functions, access to sensitive information, execution autonomy, or participation in decisions with substantial consequences, **it may be necessary to establish specialized evaluation, oversight, and control mechanisms** . Their scope must be determined according to the characteristics of each system, the identified risks, the effectiveness of existing controls, and applicable legal obligations. The need to adopt a formal AI governance structure must be justified through this assessment, without assuming that all organizations require the same administrative model.

The procedure should conclude with a **technical and operational report proportionate to the organization's complexity** , identifying its needs, existing technology, alternatives examined, AI systems currently used or proposed, their capabilities, limitations, risks, and available controls. Where appropriate, it should be supplemented by a legal analysis of the activities and technologies involved. This documentation will enable company management to make informed decisions regarding whether to incorporate AI, retain existing systems, modify their controls, or establish additional oversight mechanisms.

This assessment establishes a fundamental premise for analyzing artificial intelligence governance: business modernization does not necessarily require incorporating AI, nor does the use of AI tools automatically justify a specialized governance structure. Decisions must be based on demonstrable needs, technological characteristics, actual risks, the sufficiency of existing controls, and applicable obligations.

Building on these foundations, the next step is to examine the nature of AI governance within the corporate environment, its differences from ordinary corporate governance, and the circumstances that may justify its adoption as a specific mechanism of administration and oversight.

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