

From Machine to Network: Evolution of the Administrative Structure in 7 Key Paradigms

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ABSTRACT

The objective of this study is to explore the evolution of the administrative structure through a comparative analysis of its main paradigms. Unlike reviews that are limited to a linear description of theories, this work addresses a knowledge gap by offering a structural analysis that deconstructs each model into its essential components. A qualitative methodology with an interpretive paradigm was used, along with the technique of documentary and bibliographic review, which allowed for a deep comparative analysis. The main finding is that the evolution of paradigms is not a simple succession, but a process of adaptation and accumulation of complexity, where each model integrates and redefines the structural elements of its predecessors. In conclusion, modern management has transcended the rigidity of a single model to become an epistemology of hybridization, where successful leaders eclectically synthesize the components of each paradigm to design dynamic and adaptable organizations for uncertainty.

Keywords: Administration, Evolution, Paradigms, Structure.

INTRODUCTION

The way we manage organizations is not a static science; it is a dynamic field that has evolved radically throughout history. Each era has generated a dominant administrative paradigm, a mental model that not only defines best practices but also dictates what is valued, how work is done, and what roles managers and employees assume.

This analysis seeks to go beyond simply listing theories to provide a comparative overview of the internal structure of these paradigms. We will explore the evolution of management from the rigidity of the "machine" of

the classical paradigm to the interconnected fluidity of the "network" of the digital age. By breaking down each model into its essential components—its principles, tools, beliefs, and the roles it shapes—we can understand how the ideas of a few theorists fundamentally changed the way businesses are run around the world.

In this sense, this paper fills a knowledge gap by offering a structural and comparative analysis of the evolution of administrative paradigms, a perspective that goes beyond the linear description of theories. The relevance of this approach lies in its ability to reveal the roots of current management practices and understand how organizational structures have adapted to historical and technological changes. The contribution of this review is significant, as it allows academics and professionals to understand the underlying logic of each administrative model and, by extension, anticipate future transformations in the field.

Thus, the research question that guides this work is: How have administrative paradigms evolved, from the rigidity of the classical model to the fluidity of the digital age, and what key structural elements defined their operating logic in each period? To answer this question, the objective of this study is to understand the theoretical and historical evolution of the main paradigms of administration in order to identify changes in their structural components and demonstrate how this transformation has redefined organizational logic, the roles of managers, and employee dynamics over time.

In order to answer this question, this paper is structured around three main themes that follow the evolution of management paradigms. In the first axis, the reader will find an analysis of classical views, where the organization is conceived as a "machine" that prioritizes efficiency and standardization. The second axis, in contrast, explores the tension between the formal structure of bureaucracy and the humanistic approach, which places the individual and their social relationships at the center of management. Finally, the third axis reveals the shift towards more complex thinking, addressing models that conceive of the organization as an open, adaptable, and constantly evolving system, culminating in the network paradigm, which is based on the fluidity and innovation of the digital age.

LITERATURE REVIEW

In this literature review, we propose an approach that goes beyond the mere exposition of theoretical postulates to delve into the deconstruction of administrative paradigms, examining the essence of each through its key structural components. Over time, the way in which an organization is conceived and managed has mutated from a rigid and mechanical model to a fluid and adaptable structure. Below, we first present a detailed table of the structural aspects of administrative paradigms, highlighting historical and theoretical transitions.

Table 1. Key structural aspects of administrative paradigms.

Paradigm	Main Representatives	Principles and Theories	Tools and Techniques	Values and Beliefs	Role of the Manager and Employee
Classic	Frederick W. Taylor, Henry Fayol, Henry Gantt, Frank and Lillian Gilbreth.	Division of labor and authority. Based on the scientific organization of work (Taylor) and the principles of management (Fayol): planning, organization, direction, and control.	Study of time and motion, standardization of tools, flowcharts, and Gantt charts for planning.	The worker is seen as an economic being who responds primarily to wage incentives. Efficiency and control are the primary objectives.	Manager: Centralized authority and supervisor. Employee: A cog in the machine, a mere executor of repetitive tasks.
Bureaucratic	Max Weber.	Theory of bureaucracy. Focuses on rationality, formal hierarchy, and control through rules.	Written procedures, detailed regulations, job manuals, and rigid organizational charts.	Objectivity, impartiality, and formality are the means to achieve maximum efficiency. Structure is more important than the individual.	Manager: Holds the position based on merit and knowledge. Employee: Follows the rules strictly and is promoted based on merit or seniority.
Humanist	Elton Mayo, Abraham Maslow,	Human Relations Theory. Based on	Work climate surveys,	Workers are social beings whose	Manager: A leader and mediator,

	Douglas McGregor.	motivation, communication, and participatory leadership.	interpersonal skills training programs, and the formation of work groups to improve morale.	emotions and relationships directly influence productivity. Belonging and job satisfaction are valued.	focused on the well-being of their team. Employee: An active member of a group, with emotional and social needs.
Systemic	Ludwig von Bertalanffy, Norbert Wiener, Russell L. Ackoff.	Systems Theory. Conceives of the company as an open system with interconnected subsystems that interact with the environment.	Feedback analysis, simulation models, and the study of information and resource flows.	Everything in the organization is interconnected with its environment. A change in one part of the system affects all the others.	Manager: Analyst and strategist who balances the interactions of the subsystems. Employee: A key cog in the wheel, whose role impacts the entire system.
Contingency	Joan Woodward, Paul Lawrence, Jay Lorsch, Tom Burns, and G. M. Stalker.	Contingency Theory. There is no single best way to manage; the way to manage depends on environmental variables (technology, market, culture).	Situational analysis, contingency plans, and flexible organizational structures.	Adaptability is the key to survival. The best management practice is the one that adapts to the circumstances.	Manager: Diagnoses the environment to choose the most appropriate leadership style and structure. Employee: Their role is flexible and adapts to the demands of the environment.
Total Quality	W. Edwards Deming, Joseph M. Juran, Philip B. Crosby, Armand Feigenbaum, Kaoru Ishikawa.	Principles of continuous improvement (Kaizen) and customer satisfaction as the top priority.	Quality circles, statistical process control (SPC), benchmarking, and the use of tools such as 5S.	The customer is the center of everything, and quality is the responsibility of every member of the organization.	Manager: A leader and facilitator who empowers teams. Employee: An agent of change who actively participates in process improvement.
Digital	Eric Schmidt (former Google CEO), Peter Drucker (for his ideas on the "knowledge worker"), contemporary authors such as Marc Andreessen.	Agile and networked management. Based on speed, disruption, and intensive use of information technology.	Big data analysis, artificial intelligence, collaborative platforms, and agile methodologies such as Scrum and Kanban.	Information is the most valuable asset. Constant innovation, agility, and horizontal structures are the basis of competitiveness.	Manager: A technological leader who encourages experimentation. Employee: A knowledge worker who uses digital tools for decision-making and collaboration.

Note: Intertextual research.

The grouping of administrative paradigms, as presented below, is not a random choice, but rather follows an evolutionary logic that allows us to understand the most significant turning points and transitions in the history of the discipline.

The Classical Paradigm: From the Workshop to Management.

First, the union of the Classical Paradigm of Frederick W. Taylor and Henry Fayol is fundamental because both are the foundational pillars of administration as a science. Their complementarity is undeniable: while Taylor focused on the rationalization of work at a micro level—the efficiency of the workshop and the task—Fayol raised his gaze to the macro level, focusing on management and the overall structure of the organization. Together, they represent the conception of the company as a "machine" designed for maximum efficiency, a vision that privileges control, hierarchy, and authority, and which constitutes the origin of administrative thinking.

This thematic axis focuses on the genesis of administration as a scientific discipline, conceived to maximize efficiency and productivity (Hernández Palma, 2011; Vargas and Benavides, 2011). The structure of this paradigm

is mechanistic and based on a rigid hierarchy and extreme division of labor.

On the one hand, Frederick W. Taylor founded Scientific Management, focused on rationalizing work at the operational level to eliminate empiricism. Its principles revolve around standardization, control, and specialization, seeking a "mental revolution" in which cooperation between management and workers would be based on science (Taylor, 1997). The tools and techniques of this approach, such as time and motion studies, piecework wage systems, and Henry Gantt charts, are geared toward precise control and performance prediction. The core belief and value is that workers are purely economic beings who respond to wage incentives, and that the organization is a machine where efficiency is the primary objective (Agámez, Gúzman, & Hernandez, 2015).

The role of the manager is that of a centralized planner and authoritarian supervisor who dictates work methods, while the role of the employee is that of a passive cog who performs repetitive tasks. Frank and Lillian Gilbreth complemented this approach by studying the economics of human movements to reduce fatigue, which refined the vision of the organization as a technical system (Torres, 2024).

On the other hand, Henry Fayol broadened the view to general management by demonstrating that administration is a universal function that can be taught (Fayol, 1916). His fundamental contribution was the creation of a vertical structure through fourteen principles that laid the foundations for planning, organization, direction, and control, which opposed Taylor's centralization in the workshop. As Taylor and Fayol (2003; 1987) state, the influence of both thinkers complemented each other and permeated modern management techniques, shaping organizational structures throughout much of the 20th century.

Bureaucratic and Humanistic Paradigm: The Tension between Structure and Human Beings.

The next turning point is justified by the grouping of the Bureaucratic and Humanistic Paradigms. This union of opposing forces marks the first major break in theory. Max Weber's model took classical logic to the extreme, perfecting an impersonal, formal, rule-governed organization in an attempt to eliminate inefficiency and favoritism. In contrast, the humanism of Elton Mayo and Douglas McGregor emerged as a direct reaction, arguing that productivity does not depend solely on structure or economic incentives, but on social relationships, emotions, and employee motivation. This grouping, therefore, allows us to explore the central tension between structure-based and people-centered management.

This section examines the dichotomy that arose in management as it shifted from a purely technical view to one that recognized the social complexity of the organization. Structure is defined by the tension between formalization and informality. Max Weber's bureaucratic paradigm (Reyes & Carrasco, 2025) has a structure based on formal hierarchy, formalization, and impersonality. Its principles revolve around written rules and legal rationality to avoid subjectivity and favoritism. The tools and techniques of this model are job manuals, detailed regulations, and rigid organizational charts, which reflect a belief and value in objectivity and merit as the basis of efficiency. The role of the manager is that of a bureaucrat who occupies their position on merit and strictly follows the rules, while the role of the employee is that of a rule-follower who seeks promotion on merit or seniority. The criticism, however, is that this rigidity can lead to slow decision-making and an inability to adapt to changing environments, an aspect highlighted by Castillo (2021).

In stark contrast, the humanistic paradigm, with exponents such as Elton Mayo and Douglas McGregor, breaks with the formal structure. Its principles revolve around motivation, communication, and participatory leadership. The tools and techniques are qualitative, such as work climate surveys and human relations training programs. The core belief and value is that workers are social beings (Bendix & Fisher, 1949) whose relationships and emotions directly influence productivity (McGregor, 1960).

Along the same lines, Abraham Maslow's hierarchy of needs is also integrated into this perspective, emphasizing the importance of self-actualization in the workplace. The role of the manager is transformed into that of a leader and mediator, while the role of the employee is that of an active member with social and emotional needs. This contrast between an organization that values rules (Weber) and one that values people (Mayo, McGregor) is one of the most important tensions in administrative evolution, as Stein (1999) points out when comparing Drucker with Taylor and Follett.

Systemic and Total Quality Paradigm: The Open Organization and its Environment.

Continuing the evolution, the grouping of the Systemic, Contingency, and Total Quality Paradigms represents a momentous shift in focus: from within the organization to outside it, that is, to the environment and the customer. The systemic approach of authors such as Ludwig von Bertalanffy and Joan Woodward conceived of the organization as an open system that must adapt to its environment in order to survive. For its part, the Total Quality Paradigm, with authors such as W. Edwards Deming and Joseph M. Juran, took this logic to its maximum expression by placing the customer as the *raison d'être* of the company. The justification for this union lies in the shared vision of both models: the company as an adaptive organism, which radically differentiates them from the conceptions of machine or rigid structure of the preceding paradigms.

This section compiles two approaches that transcended the vision of the organization as a closed entity, to understand it as an interconnected organism that constantly interacts with its environment (Viloria and Toro, 2015). The structure of these paradigms is fluid and adaptable, rather than static.

The systemic and contingency paradigm, promoted by authors such as Ludwig von Bertalanffy, Norbert Wiener, and Russell L. Ackoff, conceives of structure as an open system (Moore, 2011), with interconnected subsystems. Its fundamental principle is that there is no single way to manage, as the best structure depends on environmental variables (Lema, 1983). The tools and techniques are situational analysis and contingency plans, and the belief is that adaptability is the key to survival (Pantoja-Aguilar & Garza-Treviño, 2019). The role of the manager is that of a strategist who diagnoses the environment, while the role of the employee is flexible and adapts to the demands of the environment. This view is also supported by the studies of Joan Woodward, Paul Lawrence, Jay Lorsch, Tom Burns, and G. M. Stalker (Suárez, 2004).

The Total Quality paradigm, with authors such as W. Edwards Deming, Joseph M. Juran, Philip B. Crosby, Armand Feigenbaum, and Kaoru Ishikawa, redefines the structure by making quality the basis of the organization. Its principle is continuous improvement (Kaizen), and the tools and techniques are quality circles, statistical process control (SPC), and benchmarking. The central belief is that quality is the responsibility of every member of the organization, and the customer is the center of the operation. In this model, the role of the manager is that of a facilitator who empowers teams, and the role of the employee is that of an agent of change who actively participates in process improvement. Both visions, systemic and quality, represent a break with internal control by focusing on external factors, such as the environment and the customer.

The Network Paradigm: The Connected and Fluid Organization.

In a theoretical sense, the Network Paradigm is presented individually because it represents the culmination and synthesis of all previous paradigms in the digital age. With its focus on agility and collaboration, this model takes the adaptability of contingency, the focus on human talent of humanism, and the customer orientation of total quality to create a decentralized and fluid structure that differs radically from the hierarchies of previous paradigms. Peter Drucker's concept of the "knowledge worker" and Eric Schmidt's thinking at Google are the basis of this model, which reflects not only an evolution but a new state in organizational logic, underpinned by information and technology as key assets.

This is the most recent paradigm, characterized by speed, flexibility, and decentralization. Its structure moves away from static hierarchies to adopt a networked, fluid, and collaboration-centered model, reflecting the emergence of new business paradigms (Begazo Villanueva, 1998; Abad, 2020).

The thinking of Eric Schmidt and Jonathan Rosenberg in *How Google Works* (2014) advocates a horizontal and flexible structure, supported by collaboration and information technologies. Its principles are based on agility and disruption, and its tools and techniques are Big Data analysis, artificial intelligence, and collaborative platforms. The main belief is that information is the most valuable asset and that constant innovation is the basis of competitiveness (Arcia-Hernández et al., 2025). The role of the manager is that of a technological leader who encourages experimentation, while the role of the employee, seen as a "knowledge worker" (Drucker), is that of a collaborative agent who uses digital tools for decision-making. This model differs from all previous ones in its complete dissociation from physical structure and the supremacy of the human and digital factors. It is the culmination of evolution, where the structure has become fluid and adaptive like a network (Agüero, 2021; Velásquez Vásquez, 2002; Bernal Payares et al., 2016; Oropeza and Bondarenko, 2024).

METHODOLOGY

For this work, the methodological approach is based on a qualitative approach, whose objective is to interpret the theoretical evolution of administrative ideas and not just quantify phenomena. This analysis is framed within an interpretive paradigm, which, following authors such as Hernández Sampieri and Taylor and Bogdan, seeks to understand in depth the changes in meaning and conceptual transitions of administration over time. The technique used is documentary and bibliographic review, which, as a research method, allows for the deconstruction and comparative analysis of existing literature to generate new knowledge.

The procedure was based on a systematic immersion in the literature, which included a meticulous selection of primary and secondary sources. The first stage was a search and selection of key texts, from the classics of Fayol and Taylor to contemporary proposals on the network paradigm. Once the paradigms were identified, the procedure focused on dissecting each model to identify its essential components: the principles and theories that underpin it, the tools and techniques that characterize it, the values and beliefs that animate it, and the roles that define managers and employees. This deconstruction made it possible to establish a comparative analysis matrix, which not only identified similarities and differences but also illuminated the continuities and ruptures between

the paradigms. Finally, the information obtained was interpreted and organized into thematic axes, facilitating a coherent and reasoned narrative on the evolutionary logic of administrative thought.

FINDINGS, DISCUSSION, AND CONTRIBUTION TO NEW KNOWLEDGE

The findings of this documentary review demonstrate a clear progression in the conception of management that transcends the mere accumulation of theories. An initial shift is identified from a classical paradigm, where the organization was seen as a closed machine focused on control and internal efficiency, to a dichotomy: Weberian bureaucracy, which sought to perfect the formal structure, and the humanistic paradigm, which, on the contrary, introduced the notion of the organization as a social system, marking the beginning of the appreciation of the human factor. Subsequently, this approach was extended to the external environment, with the systemic and total quality paradigms, which conceived the company as an open and adaptive organism, focused on the contingencies of the environment and the centrality of the customer. The evolution culminates in the network paradigm, a fluid and decentralized model that relies on technology and collaboration.

The discussion of these findings lies in the interpretation of management as a discipline that has adapted to the growing complexity of the social and technological environment. The central thesis of this work is that the evolution of management paradigms is an epistemological progression, since knowledge was initially constructed on the basis of linear causality, characteristic of the mechanistic model. However, as society became more complex, the epistemology of administration had to incorporate social, environmental, and technological variables, moving away from universal truths to embrace contingency and fluidity. Unlike views that see administration as a series of passing fads, this analysis argues that paradigms are interconnected theoretical frameworks that construct a progressive body of knowledge.

The main contribution of this work to new knowledge is the proposal of an analytical typology to understand the evolution of management through its structural components. Rather than limiting itself to a chronological description, this study breaks down each paradigm into its principles, tools, values, and roles, offering an "X-ray" that reveals the internal logic of each model. This comparative approach, therefore, demonstrates that the transition from one paradigm to another was not a simple replacement, but a process of redefining the essence of the organization. Thus, it offers a new lens for interpreting the history of administration, which is invaluable for academics and professionals seeking to understand the philosophical foundations of modern management.

With regard to the research question, "How have management paradigms evolved from the rigidity of the classical model to the fluidity of the digital age, and what key structural elements defined their operating logic in each period?", this is answered by demonstrating that the transition from one paradigm to another was a profound process in which each subsequent model redefined the key structural elements that governed the organization. Initially, the classical paradigm defined its operating logic around hierarchy, vertical control, and the functional division of labor, with the aim of maximizing efficiency as if the company were a machine. In contrast, the bureaucratic paradigm refined this logic through formalization, impersonality, and rules, while the humanistic paradigm introduced a new structural dimension by focusing on social relationships, motivation, and employee participation.

With the advent of the systemic paradigm, the logic was redefined to prioritize adaptability to the environment, while the total quality paradigm was structured around continuous improvement and customer centricity. Finally, the network paradigm dissolved rigid and hierarchical structures, redefining the logic of operation around agility, decentralized collaboration, and information flow, responding comprehensively to the challenges of the digital age and the complexity inherent in the human factor. In essence, the evolution of these paradigms has been a journey from rigid and closed structures to increasingly open and flexible models.

CONCLUSIONS

The conclusions of this work not only trace the evolution of administrative paradigms, but also demonstrate that the history of the discipline is a constant quest to balance organization as a structure, the social system, and the adaptable entity. What classical visions considered a universal truth has been transformed into a set of malleable tools that contemporary leaders combine to address complexity.

The main revelation of this analysis is that there is no winning paradigm. Today's companies are methodological hybrids that simultaneously apply Total Quality principles for customer service, encourage collaboration from the humanistic paradigm, and at the same time use Big Data algorithms and network technologies for decision-making. This research, therefore, brings a fresh and pragmatic perspective to the literature by proposing that true progress in management does not lie in replacing one paradigm with another, but

in the ability to synthesize them. The main novelty is that modern management, far from being a monolithic discipline, has become an epistemology of hybridization, where theoretical boundaries fade away to make way for an eclectic and contextual practice. This forces leaders to be less theoretical and more architects of structure, capable of designing dynamic organizations that combine the best of each era to thrive in an uncertain environment.

The justification for this analysis lies in its ability to offer a framework for interpretation that transcends mere linearity. Unlike reviews that present theories as a chronological succession, this work proposed an analytical typology that organizes paradigms into axes of transition. The real contribution to knowledge is the demonstration that the history of management is not a gallery of paradigms that cancel each other out, but a tapestry where each thread of thought adds a new layer of meaning. It reveals that organizational structure is the common thread running through the entire discipline. From Fayol's principles dictating the division of labor, through the bureaucracy that formalized hierarchy, to the networks that dissolved it, the form of organization has been the main variable over time. By breaking down each paradigm into its key structural elements, this work allows us to understand how the company has been constructed and deconstructed throughout the century, offering an invaluable lens for future studies on organizational design and its relationship to innovation and leadership.

The internal structure of administrative paradigms is conceptualized as a system of interrelated components that define the operational logic of an organization in a given period. This structure is more than just a theory, as it is the mental model that guides managers and employees, dictating how roles are designed, decisions are made, and resources are distributed. This structure consists of at least four key elements: fundamental principles and theories, which are the central ideas that underpin a paradigm (e.g., the division of labor in the classical paradigm or continuous improvement in the total quality paradigm); tools and techniques, which are the methodological instruments for putting these principles into practice (such as time and motion studies or quality circles); values and beliefs, which are the philosophical assumptions that determine what is valued in the organization (from the impersonality of bureaucracy to the well-being of the employee in humanism); and finally, the roles of the manager and the employee, which define the functions and responsibilities of people within the structure, evolving from the authoritarian supervisor in the classical model to the facilitator of innovation in the digital age. Together, these four components form the backbone of each paradigm and allow us to understand its operating logic, demonstrating that the evolution of management has been a process of constantly redefining this internal structure to adapt to the demands of each era.

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