

The Impact of Digital Transformation on the Role of Bureaucracy



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Abstract: This research explores the impact of digital transformation on the structure and function of bureaucracy in the context of modern technological advancements. While classical bureaucracy was characterized by rigid hierarchies and formal rules, digital transformation has redefined public administration, enhancing efficiency, transparency, and flexibility.

The study examines the drivers, infrastructure, goals, and consequences of this shift, particularly the bureaucrat's evolving role as an analyst and strategist rather than a mere executor. It also addresses key challenges such as cybersecurity, digital divide, and institutional resistance. The study concludes that the success of digital bureaucracy relies on a comprehensive strategy integrating technical, political, legal, and human factors while balancing technological efficiency with human-centered values.

Keywords : Bureaucracy, Digital Transformation, E-Government, Governance, Public Services, Artificial Intelligence, Transparency.

تأثير التحول الرقمي على دور البيروقراطية

ملخص: يتناول هذا البحث موضوع التحول الرقمي وتأثيره على بنية ووظيفة البيروقراطية في ظل التطورات التكنولوجية الحديثة. فبينما كانت البيروقراطية الكلاسيكية تعتمد على التسلسل الهرمي والقواعد الجامدة، جاء التحول الرقمي ليعيد تشكيل الإدارة العمومية ويمنحها مزيداً من الكفاءة، الشفافية والمرونة. يسلط البحث الضوء على دوافع التحول، بنيته التحتية، أهدافه، وكذا الانعكاسات على الموظف البيروقراطي ودوره الجديد كمحل وموجه بدلاً من منفذ فقط. كما يناقش التحديات المرتبطة بهذا التحول، لاسيما الأمنية والاجتماعية منها. ويخلص إلى أن نجاح البيروقراطية الرقمية مشروط بتظافر العوامل التقنية، السياسية، البشرية والقانونية في إطار استراتيجي واضح يوازن بين التقنية والبعد الإنساني.

الكلمات المفتاحية: البيروقراطية، التحول الرقمي، الإدارة الإلكترونية، الحوكمة، الخدمات العمومية، الذكاء الاصطناعي، الشفافية.

L'impact de la transformation numérique sur le rôle de la bureaucratie

Résumé :

Cette étude analyse l'impact de la transformation numérique sur la structure et le rôle de la bureaucratie à l'ère des avancées technologiques. Alors que la bureaucratie classique repose sur une hiérarchie rigide et des procédures formelles, la transformation numérique réinvente l'administration publique en favorisant efficacité, transparence et flexibilité. La recherche explore les motivations, l'infrastructure, les objectifs et les implications de ce changement, notamment l'évolution du rôle du bureaucrate vers un profil d'analyste et de stratège. Elle aborde également les défis liés à la cybersécurité, la fracture numérique et la résistance au changement.

Elle conclut que la réussite de la bureaucratie numérique nécessite une stratégie intégrée alliant dimensions techniques, politiques, juridiques et humaines tout en préservant les valeurs humaines.

Mots-clés : Bureaucratie, Transformation numérique, Administration électronique, Gouvernance, Services publics, Intelligence artificielle, Transparence.

Introduction

Modern administrative theory introduced bureaucracy as a fundamental system for state organization and policy development. The state achieves its goals through discipline and continuous operations while following established rules to execute decisions. The state underwent fundamental structural changes because of digital transformation which brought technological advancements to public administration. The digital revolution brought substantial changes to state operations and public administration methods.

The digital transformation has reshaped both state infrastructure and public service delivery systems and actor relationships and their public responsibilities. The bureaucratic system stands as the main focus of these changes because people criticize it for being inflexible and unresponsive. The changes in work tools and methods have expanded to transform the fundamental structure of bureaucracy while reshaping its position in state operations and decision-making processes. Research into digital transformation and bureaucracy shows how state power distribution between administrative bodies and citizens and state institutions and external actors has evolved.

The system has achieved better transparency and accountability through its implementation. The digital transformation helps people understand contemporary state operations and executive systems while working to maintain equilibrium between technological progress and democratic principles. This research investigates digital bureaucracy transformation elements while studying its impact on organizational functions and evaluating both benefits and drawbacks of digital administrative systems.

Accordingly, the study attempts to answer the central research question
To what extent has digital transformation affected the structure and role of bureaucracy?

The topic will be addressed through three main axes :

1. The Conceptual Framework of the Study
2. The Drivers, Components, and Objectives of the Shift Toward Digital Bureaucracy
3. The Impact of Digital Transformation on the Structure and Role of Bureaucracy

Section One : The Conceptual Framework of the Study

1. Definition of Bureaucracy

A. Linguistic and Terminological Meaning

The general public views bureaucracy through the lens of administrative complexity and unjustified authority abuse. People commonly link bureaucracy

The word bureaucracy consists of two parts :

- Bureau : meaning office, a term that emerged in the early 18th century to denote administrative premises or workspaces such as corporate or government offices.
- Cracy: derived from the Greek root kratos (κράτος), meaning power or authority.

Together, the term bureaucracy thus refers to the power or authority of the office.¹

The definition of bureaucracy as a term describes an administrative system which organizes groups of people through standardized procedures and hierarchical structures of authority and power.²

According to Stéphane Dion, bureaucracy encompasses ten meanings,as follows:

1. **Power of Offices** : Corresponds to the literal (linguistic) definition of bureaucracy the authority associated with administrative offices.
2. **An Organization:** Based on rational rules, impersonality, hierarchical structure, division of labor, and assigning positions based on merit and competence.
3. **Large-Scale Organizations** : Bureaucracies are considered large, modern, and complex forms of organization.
4. **Systems:** Refers to the formal and written rules governing organizations, making bureaucracy a general term for all frameworks that define institutional structures.
5. **Public Administration:**Bureaucracy is often used synonymously with public administration, whose role is to implement government policies.
6. **Power of Civil Servants** : Bureaucracy is a description of the authority exercised by public sector employees.

¹ الموسوعة السياسية-موسوعة المصطلحات والمفاهيم والاعلام السياسية، 2022. على الموقع

<https://political-encyclopedia.org/dictionary/%D8%A7%D9%84%D8%A8%D9%8A%D8%B1%D9%88%D9%82%D8%B1%D8%A7%D8%B7%D9%8A%D8%A9>

² المرجع نفسه.

7. **State Expansion** : Sometimes symbolizes the growth of the state, the inflation of its budget, and expansion of its workforce often equated with increased state intervention and influence.
8. **Dehumanization**: Highlights the overwhelming complexity of modern society and the restrictions it places on individual initiative and participation.
9. **Oligarchy**: Bureaucracy is seen as the concentration of power in the hands of a small elite senior officials or leaders.
10. **Communist System** : The term has also been used as a conceptual tool to analyze communist regimes, where bureaucracy aligns with closed, totalitarian authority³

The definition of bureaucracy describes an organizational system which controls people through established rules and laws and specific job roles and specialized work areas and defined organizational structures. The main goal of bureaucracy exists to fulfill public needs and support the entire state.

Max Weber established bureaucracy as the perfect administrative system through his work as a German sociologist. Weber identified bureaucracy through its defining characteristics which include⁴

- precise system for the distribution of powers and responsibilities
- Recruitment based on merit and qualifications
- The objective application of rules and regulations to all
- Separation between personal property and the ownership of the administrative position

Accordingly, Max Weber defined bureaucratic organization as follows:

"An administrative system based on the absolute specialization of labor and a precise hierarchical structure of authority, with strict adherence to impersonal legal rules that govern the behavior of officials, and a clear separation between the position and its occupant to prevent the appropriation of the office while ensuring the continuity of public service⁵

The rational bureaucratic model which Max Weber described stands as a unique organizational system that demonstrates better performance than alternative administrative approaches. The main objective of this system focuses on achieving peak productivity through the most effective operational methods. The rational basis of bureaucracy along with its established rules and procedures creates its superior status. The established frameworks within bureaucratic organizations create stability

³ Jean Mercier, L'administration publique de l'école classique au nouveau management public, Quebec, les presses d'université laval.2002, p⁴¹⁸⁻⁴¹⁹

⁴قاسم، ميلود. إشكالية المشاركة في صنع السياسة العامة في الجزائر: مدخل الحكم الراشد. مجلة العلوم السياسية والقانون، المجلد 1، العدد 4، 2017، ص. 145-162.

⁵بدر محمد المنيف، نظرية التنظيم البيروقراطي لماكس فيبر، الرياض: دار المنيف، 2017، ص 101

and routine operations which allow complete and unbiased monitoring throughout the entire organizational framework.

Bureaucracy operates as a realm of factual operations and predictive systems which use deliberate methods to connect specific actions with desired outcomes⁶

B. Criticism of Bureaucracy

The public sector faces criticism because bureaucratic systems create obstacles to decision-making through their rigid nature and excessive resource consumption and numerous rules and insufficient transparency and unaccountable practices⁷. The traditional bureaucratic system operates through standardized administrative processes and vertical organizational structures and limited flexibility which makes it harder to adapt to modern societal needs during the digital revolution.

Bureaucratic power growth enables officials to abandon their fundamental duties through two methods: they use information control as a tool for domination or they establish political partnerships. Max Weber identified this trend when he said⁸

2. The Nature of Digital Transformation

The first step requires understanding that multiple terms exist within modernization and public administration discussions although they share common ground. The terms digitization and digital transformation and digital bureaucracy and e-administration and e-government exist as related concepts in public administration discussions. The different terms share some common ground but they maintain distinct meanings and operational characteristics.

The terms share a common objective of digital transformation which involves converting paper-based systems into digital formats through technological implementation.

The following section defines each term separately before presenting a detailed explanation of digital bureaucracy.

1. Digitization

The process of digitization transforms work activities from traditional methods to digital operations through the implementation of electronic tools

The conversion of paper documents and data into digital format through digitization represents the core definition of this process.⁹

2. Digital Transformation

Digital transformation is defined as :

⁶ كمال العايب، اسماعيل قيرة، "دلالات وابعاد الظاهرة البيروقراطية في سوسيولوجيا التنظيمات"، *مجلة المعيار*، مجلد 25، عدد 62، 2021، ص 765

⁷ Joshua NEWMAN, Micheal MINTROM, Deirdre O'NEILL, « technologies numériques, intelligence artificielle et transformation bureaucratique », *futures*, vol 136, février 2022

⁸ نجاح مبارك، تكوين الدولة وبناء القوة في المجتمع بين النظرية والواقع، *اطروحة دكتوراه في علم الاجتماع السياسي*، جامعة وهران، كلية العلوم الاجتماعية، 2007، ص 285

⁹ صراع سعاد، يومين حسيين، "واقع الرقمنة في الادارة الجزائرية"، *المجلة الجزائرية للمالية العامة*، مجلد 15، عدد 1، 2025، ص 180

The transformation of human existence through technology-based changes in daily activities and mental processes and social connections and communication methods requires sustained planning efforts for practical experience redesign¹⁰

The implementation of modern digital technologies through social media and mobile phones and embedded devices enables institutions to optimize their core operations¹¹

The delivery of public services to citizens has been enhanced through information technologies and digital tools which enable service improvement and customization and automation.¹²

Digital culture. Transformation requires more than technological integration because it brings fundamental changes to activities and processes and competencies and organizational

Digital transformation functions as a complete process which transforms institutional and societal operations by implementing contemporary technological systems.

1. E-Government

E-government is defined as :

Government agencies can use internet networks to exchange information between themselves and deliver services to citizens at fast speeds and affordable rates while maintaining secure and confidential data transmission¹³

The systems. government needs to transform its operational methods by implementing new approaches for information integration and website accessibility and process participation.¹⁴

Digital technology enables the state to link with citizens and private sector entities and civil society organizations through digital platforms which establish transparent relationships between state authorities and their citizens.

2. E-Administration

E-administration is considered a component of e-government. It refers to the use of information and communication technologies (ICT) to improve the management of public services.

E-administration functions within the broader framework of e-government, applying governance standards and metrics, and is responsible for delivering public services and monitoring their quality through the use of ICT¹⁵

E-administration focuses on modernizing administrative procedures within institutions through the use of information technology.

¹⁰ المرجع نفسه، الصفحة ذاتها.

¹¹ مداني حروفوش، "التحول الرقمي حتمية ما بعد البيروقراطية ام خيار استراتيجي في عصر الرقمنة"، *حوليات جامعة الجزائر*، المجلد 37، عدد2، جوان 2023، ص 495.

¹² Steve JACOB, Samuel DEFACQZ, NadegeAgossou, « Promesses et défis de la transformation numérique du secteur public », *cahier de recherche sur l'administration publique à l'ère numérique*, N° 6, Québec, 2022, p4

¹³ عمار بوحوش، *نظريات الإدارة الحديثة في القرن الواحد والعشرين*، بيروت، دار الغرب الاسلامي، 2006، ص181

¹⁴ المرجع نفسه، الصفحة ذاتها.

¹⁵ المرجع نفسه الصفحة نفسها.

3. Digital Bureaucracy

Digital bureaucracy is defined as:

The use of integrated data and information to guide policy and organizational procedures in order to provide the flexibility necessary for carrying out tasks, by employing information and communication technologies (ICT) to manage and improve administrative processes within state institutions¹⁶

Digital bureaucracy represents a contemporary administrative system which performs administrative work and delivers public services through digital platforms and electronic technology. The system keeps all traditional bureaucratic procedures and principles intact while performing them through a completely digital system.

The administrative model represents a fusion of traditional bureaucratic systems with modern technological resources that include extensive database management and digital platform capabilities.

Section Two: Motivations, Pillars, and Objectives of the Shift Toward Digital Bureaucracy

1. Motivations and Drivers of the Transformation

The implementation of digital bureaucracy stems from multiple factors which match the drivers behind e-administration and e-government adoption. The main drivers for digital bureaucracy adoption focus on improving public institution efficiency and delivering better services to citizens.

- Accelerated technological advancement: The failure of states to keep pace with technological transformations places them in isolation from the global environment.
- Globalization trends toward strengthening human connections : Citizen satisfaction has become a global standard for measuring a state's level of progress.
- Democratic transitions : These have been accompanied by administrative reforms often required for states to join various international organizations¹⁷
- The increasing public pressure on governments, along with rising expectations among citizens for better and faster services particularly in light of growing public awareness of the right to access information, understand decision-making mechanisms, and participate in discussions and express opinions on issues of concern has led to the demand for an open communication system¹⁸

¹⁶ محمد بوعزة، عامر عبد الرؤوف السعيدة، "الحكومة الإلكترونية في ضوء تقرير الأمم المتحدة، الحكومة الإلكترونية في المغرب نموذجاً"، Dossiers de

recherche économie et gestion, D12, N°1

¹⁷ سامية عزيز، أم الخير قوارح، "الإدارة الإلكترونية كاستراتيجية بديلة للإدارة التقليدية"، مجلة افاق للبحوث والدراسات، مجلد4، عدد1، 2021، ص8

¹⁸ عمار بوحوش، مرجع سابق الذكر، 183

The government workforce requires better qualitative assistance through dependable databases and contemporary work systems to support their daily operations while reducing bureaucratic strain from rising public service quality expectations.

- The mounting pressure on governments resulting from growing demands to empower citizens to participate in public discourse and express their opinions on all matters that concern them. These demands also include the establishment of an open communication system characterized by maximum transparency¹⁹, that enables citizens to participate in the management of their own affairs and guarantees their right to access information
- The interconnectedness of human societies under globalization trends: Globalization, as a global phenomenon, now governs relationships within an integrated environment. The technological revolution has become one of its most essential tools compressing distance and time, and enabling the rapid flow and exchange of information and opinions across the world²⁰
- Complex work processes and procedures, which have led to increased costs that burden organizations and negatively impact their performance.²¹
- The method of decision-making and issuing recommendations within organizations, which is often expected to be immediate and time-sensitive²²

2. Infrastructure and Pillars of the Shift Toward Digital Bureaucracy

Digital bureaucracy operates through a base of essential elements which support its operational tasks and long-term maintenance. The system operates through a complex network which unites technical aspects with informational components and financial elements and legislative frameworks and environmental factors and human resources,²³ These components can be summarized as follows:

The Political Requirement : This involves the need for strong political will from decision-makers to implement fundamental changes in administrative work methods, as well as to allocate the necessary financial resources, effort, time, and ensure ongoing monitoring and follow-up.²⁴

The Administrative and Human Resource Requirement: The process of digital transformation demands organizations to modify their administrative systems and

¹⁹ المرجع نفسه، نفس الصفحة.

²⁰ المرجع نفسه، ص 184

²¹ أحمد منيغدا، التحول من البيروقراطية الى الكتروقراتية-دواعيه ومتطلباته-، مجلة الفكر القانوني والسياسي، مجلد 1، عدد 7، الجزائر، 2023، ص 1790

²² عزيز سامية، ام الخير قوارح، مرجع سابق الذكر، ص 120

²³ مناحي عبد الله السبيعي، امكانية تطبيق الادارة الالكترونية في الادارة العامة للمرور من وجهة نظر العاملين فيها، مذكرة ماجستير في العلوم الادارية، جامعة نايف العربية للعلوم الامنية، كلية الدراسات العليا، قسم العلوم الادارية، 2005، ص 36.

²⁴ عمار بوحوش، مرجع سابق الذكر، 185

make them compatible with modern developments. Human capital needs to undergo substantial quality transformation through educational methods and training programs which support digital transformation. The implementation of digital administration needs administrators to receive training and skill development and organizations must adopt new learning approaches that suit digital transformation needs. Digital bureaucracy adoption needs leaders who will create strategic plans for organizational change during the transformation process. Leaders need to possess digital competencies to lead successful digital transformation efforts.

mindset, the development of a clear strategy, and the definition of measurable objectives²⁵

The Legal and Legislative Requirement: The process requires organizations to create suitable legal and regulatory systems that outline digital transformation boundaries and control its new operational approaches.²⁶

The Economic Requirement: The digital administration transition needs enough financial support to implement all necessary changes which include buying new equipment and tools and training staff. The transformation process needs substantial financial support together with human resources to succeed

The success of bureaucratic transformation depends on a large amount of data which includes government records and electronic registries. The transformation process requires digital platforms to deliver services which replace physical offices and long queues to generate the necessary data for its success.²⁷

To ensure the success of digital bureaucracy, three fundamental pillars must be in place²⁸

1. Political frameworks that guarantee legitimacy and accountability
2. Ethical principles that uphold justice
3. Design strategies that ensure transparency, ease of use, and human oversight.

The complete process transformation instead of basic digital platform implementation for queue management.

The achievement of this transformation requires strategic planning and appropriate institutional infrastructure and sufficient human and technical resources and psychological and social factors and leadership development.

²⁵ رمزي مبارك الطرانة ، سحر مبارك الطراونة، "دور استراتيجيات التحول الرقمي في تعزيز الريادة الرقمية في جامعة الشرق الاوسط من وجهة نظر

أعضاء هيئة التدريس"، مجلة اتحاد الجامعات العربية للبحوث، مجلد 43، ع1، 2023، ص 80

²⁶ عمار بوحوش، مرجع سابق الذكر، ص185

²⁷ المرجع نفسه،الصفحة ذاتها.

²⁸ Stella OVIRKWU Amelia, Gerald MURNANE, « Digital bureaucracy 2.0: policy, ethis, and design of autonomous agentsingovernmentalworkflows",juin2025,https://www.researchgate.net/publication/392622035_Digital_Bureaucracy_20_Policy_Ethics_and_Design_of_Autonomous_Agents_in_Governmental_Workflows/references

4. Objectives of Bureaucratic Transformation

Digital bureaucracy implementation seeks to create a fundamental transformation of state administrative operations which will produce transparent systems and enhanced efficiency and enable staff members to perform different responsibilities.

Below is a summary of the key objectives of this transformation :

- Enhancing efficiency at minimal cost ²⁹Initially, the transformation focused on office automation, and was gradually extended to a wider range of services. New technologies have contributed to reducing production costs by minimizing workforce size, lowering operational expenses, and optimizing resource utilization
- Faster service delivery and overcoming geographic barriers: Citizens are no longer required to travel long distances to access public services ; they can simply log into the relevant digital platform and access the desired service anytime and anywhere.
- Enhancing transparency and accountability: By electronically tracking procedures, digital platforms record all operations, making manipulation more difficult. This reduces corruption, increases citizen oversight of bureaucratic operations, and promotes transparency.
- Managing complexity and responding to rapid global developments stemming from the diversity and growing needs of individuals.
- Simplifying procedures within bureaucratic institutions, which positively impacts the quality and accessibility of services provided to citizens³⁰
- Implementing collaborative governance by enabling citizens to participate in managing their own affairs³¹. Strengthening the relationship between the administration and the citizen, enhancing direct communication, and facilitating access to services.
- Flexibility: Digitization ensures that individuals can adapt to new changes while minimizing the negative impacts caused by sudden transformations.
- Reducing obstacles to decision-making by providing data and linking it to decision-making centers, as well as facilitating communication between departments.³²

²⁹ Steve JACOB, Samuel DEFACQZ, Nadege Agossou, Op.Cit, p8

³⁰ المناحي عبد الله السبيعي، مرجع سابق الذكر، ص34

³¹ Steve JACOB, Samuel DEFACQZ, Nadege Agossou . Op.Cit, p9

³² المناحي عبد الله السبيعي، مرجع سابق الذكر، ص34

- Reducing paper usage addresses a common issue faced by most institutions and bureaucratic bodies in terms of document storage and archiving, thereby eliminating the need for physical storage³³
- Reducing human error, accelerating procedures, and enabling proactive governance³⁴
- Promoting transparency and reducing administrative corruption.

The digital transformation of bureaucracy involves more than technology adoption because it represents a complete approach to enhance administrative performance and simplify procedures and increase service quality and transparency. The initiative works to transform the bureaucratic system into a modern structure which addresses current challenges while establishing new functions that match contemporary state operations.

Section Three: The Impact of Digital Transformation on the Structure and Role of Bureaucracy

The digital transformation revolutionized how bureaucracy operates through changes to its organizational structure and functional roles. The digital transformation requires administrative process redesign to create flexible digital systems which deliver transparent and efficient task execution. The traditional bureaucratic control of policy-making information has lost its dominance because digital information and data streams now enable continuous decision-making and policy development. Digital transformation has eliminated the bureaucratic control of information distribution. The digital transformation has transformed bureaucrats from basic implementers into decision-making data managers who provide technical advice for digitized processes.

Digital bureaucracy allows for real-time information flow, supported by AI-powered systems capable of handling complex tasks, assisting in decision-making, and organizing workflow processes³⁵ Digital transformation has not only eliminated the bureaucrats' monopoly over information, but it has also displaced certain categories of employees from the traditional administrative hierarchy³⁶

The complete removal of human involvement from administrative procedures now depends on automated systems and digital platforms for operation. The human role in these processes has decreased substantially because some operations now function without human involvement. 'Bureaucratic functions now extend beyond execution to include data analysis and strategic guidance and monitoring activities.

³³ المرجع نفسه، ص 35

³⁴ Stella OVIKWU, Gerald MURNANE, *Ibid*

³⁵ Stella Ovikwu et Gerard MURNANE, Op . Cit.

³⁶ J Tinkler, S Bastow, P Dunleavy, H margetts , *Digital era governance: It corporation the state and E government*. Oxford, oxford university press, 2008, p^{3/7}

Modern technology systems help different administrative departments work together through coordinated operations. Real-time information exchange through digital platforms and open communication channels has eliminated bureaucratic barriers which in turn has reduced administrative fragmentation and restored integrated administrative structures³⁷

The process of data integration and unification creates a system which allows all stakeholders to access information and receive updates in real time thus speeding up decision-making.

The transition of traditional manual operations into continuous digital services has resulted in accelerated execution while minimizing both time requirements and physical space limitations³⁸

Modern technology systems enable stakeholders to participate in public policy development through consultative processes. The process leads to better policy effectiveness because it meets citizen needs and enhances policy legitimacy.

Public administration needs to adjust its operations to match citizen expectations which leads to better policy outcomes and sometimes results in developing forward thinking policies to address public requirements³⁹ The analysis of available data enables better comprehension of public problems and citizen requirements and social conduct⁴⁰ This, in turn, facilitates the task of both politicians and administrators in the process of.

Digital bureaucracy maintains Weber's organizational principles of rational management through efficiency and objectivity yet implements these principles through technological systems to achieve its objectives.

Decision-making has become automated rather than human, establishing a system of rational, objective, and automated governance that is subject to technological oversight,⁴¹ It also enhances transparency, which helps to reduce bureaucratic procedures and administrative corruption, facilitates the process of administrative accountability, and enables the rapid identification of weaknesses and evaluation of public policies⁴² Digital bureaucracy seeks to minimize human error, accelerate procedures, and enable proactive governance⁴³

³⁷ Ibid. p75/73

³⁸ أحمد منيغ، مرجع سابق الذكر، ص 1792

³⁹ Steve JACOB, Samuel DEFACQZ, Nadege Agossou, Ibid, p9

⁴⁰ أمال حاجة، مرجع سابق الذكر ص 504

⁴¹ Chris Muellerleile, Susan L. Rebetson, « Digitalweberianism : bureaucracy, information and the tecno-rationality og neoliberal captilism », Indiana journal of global legal studies, vul 25, issue1, 2018, p198

⁴² عمار بوحوش، مرجع سابق الذكر ، ص192

⁴³ Stella Ovikwu et Gerard MURNANE, OP. Cit

Bureaucrats need to develop their digital skills through digital transformation to execute their daily work better. The new system operates through updated delivery methods instead of replacing the existing framework.

The bureaucratic staff needs to enhance their competencies because this will help them deliver better public services and achieve complete development goals and move away from outdated methods which caused bureaucracy to stray from its original purpose.

Conclusion:

The digital transformation of bureaucracy has emerged as an essential requirement because of technological advancements. The bureaucratic system underwent functional and structural changes through this transition instead of disappearing completely.

The digital transformation system has solved multiple traditional bureaucratic problems which included complicated administrative processes and information control and centralized authority and separate organizational units. The system has decreased administrative corruption while promoting citizen participation and it enables quick information sharing between different administrative departments. The digital transformation has achieved three main benefits which include shorter processing times and lower costs and better citizen service delivery and a network-based bureaucratic structure.

The digital transformation has transformed bureaucratic roles by making officials responsible for data governance and decision participation and data management. Digital bureaucracy provides various benefits yet faces major security risks that endanger data privacy as its main challenge. The combination of technical breakdowns and high maintenance expenses for digital systems creates service disruptions because these systems need continuous upkeep which requires large financial resources.

The digital transformation between administrative bodies and digitally illiterate citizens has established an information gap which results in public service dehumanization. The bureaucratic system now faces internal conflicts because of digital transformation which creates confusion and resistance to change among older staff members who fear job loss and uncertainty. The digital bureaucratic system creates transparency which makes some administrators uncomfortable because they use their power for personal enrichment.

Digital bureaucracy success requires administrative procedure reengineering and employee technical capacity development and administrative decision-maker leadership skills.

Digital bureaucracies need to develop systems which serve different population segments including people who lack digital skills Digital bureaucracy is contingent upon the ability of its units to.

The success of digital bureaucracy depends on achieving equilibrium between technological systems and human interaction and between operational speed and legal fairness and between open data access and individual privacy protection. The digital and technological revolution has not eliminated bureaucracy because it maintains its essential role in society through stability maintenance and justice promotion. The creation of legal boundaries should define the extent of digital platform and artificial intelligence system decision-making responsibility. The system which denies service access to citizens through artificial intelligence needs clear identification of responsible parties for service delivery.

The law needs to create procedures which allow human operators to step in during specific situations. The training of administrative personnel needs improvement for fast response times when human involvement becomes necessary to protect both system functionality and justice and fairness principles. The organization needs to create an open environment which uses digital tools to enhance public administration operations while maintaining human values.

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