


Algorithmic dependency: The impact of technological monopoly on developing societies; Case study: The Islamic Republic of Iran

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Article Info	Abstract
<p>Original Article</p> <p>Main Object: Political Science, Artificial Intelligence</p> <p>Received: 29 December 2025 Revised: 11 February 2026 Accepted: 26 February 2026 Published online: 05 April 2026</p> <p>Keywords: algorithmic dependency, artificial intelligence, developing countries, digital divide, digital governance, national resilience.</p>	<p>Background: Beyond being a mere technical tool, Artificial Intelligence (AI) is a socio-political phenomenon that redefines the identity, social, and political structures of developing nations.</p> <p>Aims: This study analyzes the mechanisms of "algorithmic dependency" and its consequences on national identity, social cohesion, and political development, with a specific focus on Iran.</p> <p>Methodology: Employing a qualitative approach and an analytical case study strategy, this research utilizes systematic documentary research. Findings are interpreted through the theoretical lenses of the "Social Construction of Technology" (SCOT) and the "Digital Divide", ensuring validity via data triangulation.</p> <p>Findings: The results indicate that the algorithmic monopoly of global powers fosters "digital colonialism" and erodes political agency. In Iran, the intersection of cultural biases in imported algorithms with a "structural lag" in governance facilitates "silent othering" and social polarization. Furthermore, by engineering citizen expectations, AI exacerbates the "crisis of efficiency" at sovereign levels.</p> <p>Conclusion: Safeguarding political independence and social identity requires a transition toward proactive policymaking and indigenous infrastructure. The study concludes that "smart regulation", developing national AI models, and enhancing algorithmic literacy are essential strategies to strengthen citizen resilience and protect data sovereignty against transnational algorithmic influence.</p>

Cite this article: Molaee A. (2026). "Algorithmic dependency: The impact of technological monopoly on developing societies; Case study: The Islamic Republic of Iran". *Cyberspace Studies*. 10(2): 663-684. doi: <https://doi.org/10.22059/jcss.2026.409059.1221>.



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Website: <https://jcss.ut.ac.ir/> | Email: jcss@ut.ac.ir |
EISSN: 2588-5502
Publisher: University of Tehran

1. Introduction

In the contemporary ecosystem, Artificial Intelligence, as a frontier technology, is redesigning individual, social, and sovereign foundations at an unprecedented pace. The staggering leap of Generative AI and the emergence of Large Language Models (LLMs), which peaked with the introduction of ChatGPT in late 2022, have not only transformed human interaction patterns but have also pushed geopolitical competition between global powers like the United States and China into a phase of "algorithmic hegemony". A prominent example of this was observed in early 2025 with China's release of the open-source LLM, DeepSeek, and its widespread global reception. However, it appears that the penetration of these imported technologies into developing countries will bring complex challenges, such as "cultural homogenization" and the erosion of socio-political security.

Despite its novelty, the subject of Artificial Intelligence (AI) has garnered significant attention from researchers worldwide, with the literature increasingly focusing on the "digital colonialism" paradigm; a concept that, beyond a simple description, explains the mechanisms of the Global North's dominance over the Global South through the imposition of algorithmic dependencies and "technological siege". A critical analysis of the existing literature reveals that most studies in this field are centered on four fundamental axes.

First, regarding national sovereignty, researchers such as Birhane (2020), Kwet (2019), and Yılmaz (2025a) view AI as a tool for reproducing colonial patterns. Furthermore, Yılmaz (2025b) addresses the commodification of the public sphere by linking "Digital Taylorism" and "Lukácsian Reification". Despite the theoretical depth of these works in explaining structural dominance, their efforts remain largely at the level of "macro-description" of colonial processes. The present study, however, takes a step forward by moving beyond mere description toward a "mechanism analysis"; it demonstrates how algorithmic bias redefines not only the labor force but also the "political demand" and "national identity" of citizens within a specific context such as Iran.

In the axis of economic independence, Korinek and Stiglitz (2021), and Sari et al. (2024) focus on the deepening of global inequality without precisely explaining the mechanisms for transitioning away from this dependence in developing societies. Similarly, Holotă and Jebeli-Bakht-Ara (2025), by focusing on political economy and economic dependence in the Global South through industrial monopoly, effectively explain the material foundations of digital colonialism. However, they do not analyze how this process penetrates the "identity" and "political agency" layers of developing societies; a gap that the present research aims to fill by focusing on the concept of "algorithmic dependence" and its impact on national identity.

In the axis of governance and surveillance, Folorunso et al. (2024),

and Roumate (2021) view regulatory gaps and digital diplomacy as obstacles to data sovereignty and as factors changing the classical definitions of security and sovereignty. While these works focus on the causes of problems rather than operational solutions, Molae and Kafi (2023), by introducing the requirements of "AI Diplomacy", and Mohebi and Tarafi (2025), by outlining future scenarios, have taken a practical step toward the localization and desirable governance of AI in Iran. Nevertheless, their focus has not been on investigating how algorithmic monopoly impacts identity, citizen demands, and the "efficiency crisis" in developing societies.

In the axis of epistemology and sociology, despite the emphasis of Mohseni Ahooei (2024), and Khodabin et al. (2024) on the erosion of "human agency" and algorithmic biases in the AI era, no attention is paid to the political consequences and the transformation of citizen identity in the face of this technology.

1.1. Theoretical innovation and contribution of the research

A serious gap in the aforementioned studies is the neglect of "identity transformation" and the "formation and change of political demands" within this technological siege and their effects on the sovereignty and national security of developing societies. Unlike the cited studies that view technology as a monolithic and imposed tool, the present research adopts the "Social Construction of Technology" (SCOT) theory, focusing on "structural lag" and "silent othering". It seeks to move beyond a purely descriptive view of digital colonialism and exploitation to analyze the multifaceted impacts of imported AI on the socio-political structures of developing countries. The fundamental distinction of this article from previous works lies in explaining how algorithms are not merely tools of dominance but re-constructors of citizen identity and changers of the nature of political demands in besieged societies. This approach represents a step forward in understanding the "dialectic of power and identity" in the AI era.

Consequently, the fundamental research question is: "How does dependence on the AI models of global powers affect the identity of developing societies and, subsequently, their sovereignty and national security?" The main hypothesis of the paper is based on the proposition that "the influence of imported platforms, through the transformation of identity demands and the polarization of the political discourse space, leads to the erosion of social capital and the weakening of the security layers of national sovereignty."

2. Methodology

This research adopts a qualitative approach utilizing an "Analytical Case Study" strategy to provide a coherent framework for examining the emerging phenomenon of algorithmic dependence. The research process was operationalized through two structured steps.

Step 1. Systematic documentary research. In this stage, secondary data were extracted through the targeted collection of evidence, including high-ranking academic articles, technical reports, and policy documents. To ensure precision in source selection, data were gathered based on the following defined criteria:

- **Inclusion criteria.** a) Documents and articles published between 2018 and 2025; b) Technical reports from reputable international organizations (such as UNESCO and the Stanford Internet Observatory) directly addressing technological governance, digital dependence, and algorithmic bias; c) High-level strategic documents of the Islamic Republic of Iran (e.g., the National AI Document and resolutions of the Supreme Council of Cyberspace).
- **Exclusion criteria.** a) News-based and non-analytical reports; b) Studies focusing solely on the technical/ engineering dimensions of AI without considering socio-political consequences.

Scope of analysis. A total of 58 documents— including academic papers, strategic reports, and policy documents— were analyzed. These sources were selected based on the principle of theoretical saturation. The objective of this step was the rigorous documentation of the multifaceted impacts of AI on the socio-political structures of developing societies (Yin, 2018).

Step 2. Qualitative content analysis and theoretical explanation.

The collected data underwent critical interpretation grounded in the theoretical frameworks of the "Social Construction of Technology" (SCOT) and the "Digital Divide". This approach facilitates the explanation of causal relationships between technological dependence and the erosion of political agency, providing a context-oriented interpretation of the redefinition of identity and sovereignty (Creswell & Creswell, 2023).

Validity and reliability. To ensure the validity and reliability of the findings, a "Data Triangulation" strategy was employed. This strategy was implemented across the following three layers to ensure the convergence of results:

- **Theoretical layer.** Aligning findings with classical and modern concepts (such as SCOT, Digital Colonialism, and Digital Divide theories).
- **Global-technical layer.** Examining evidence related to the functioning of algorithms and AI within reports from global technology watchdog centers to identify patterns of dependence and influence.
- **Indigenous-policy layer.** Mapping the extracted patterns against Iranian sovereign documents to understand "structural lag" and domestic policy responses.

By creating a cross-argumentative network, this multi-dimensional approach minimizes potential biases and ensures the convergence of technical and policy evidence.

3. Results

The analysis of AI's influence in developing countries, particularly in the Iranian context, has led to the extraction of three key findings. It is noteworthy that due to the emerging nature of this technology and existing statistics (such as reports from the ISPA, 2025), AI utilization in these societies has not yet reached full ubiquity. Therefore, these findings primarily explain "probable trends" and "potential threats" that will gain certainty if algorithmic dependency persists.

3.1. Potential identity transformation and the challenge to individual agency

Documentary evidence suggests that Artificial Intelligence, through recommendation algorithms, can overshadow classical concepts of free will and decision-making. In target societies, the technology possesses the potential to channel choices based on the biases of primary designers by creating "parallel digital identities", thereby facilitating "silent othering" and the gradual erosion of indigenous cultural authenticity.

3.2. Algorithmic polarization and the weakening of national cohesion

Analysis of transnational platforms indicates that existing monopolies can contribute to the formation of "echo chambers". By eliminating alternative perspectives, this process has the potential to deepen social fissures. Such a situation, coupled with the digital divide, increases the risk of emerging "digital elite classes" and the marginalization of underprivileged groups, which poses a threat to national solidarity in the near future.

3.3. Efficiency crisis and the redefinition of sovereignty

Although the application of AI in governance is in its early stages, data analysis reveals that the engineering of citizen expectations by global platforms has reinforced the likelihood of an "efficiency crisis". These conditions confront national sovereignty with a form of "potential structural dependence", wherein state authority in developing societies will be significantly influenced by infrastructures managed by major technological powers.

Alignment of findings with the research hypothesis by mapping the findings derived from the Iranian case study against the initial hypothesis, it is observed that the primary research proposition, namely "the erosion of national sovereignty and social capital through the influence of imported platforms", is largely aligned with the identified trends. Analysis indicates that the transformation of identity demands

can be regarded as a consequence of "algorithmic bias", which, by influencing expectations, drives the political discourse space toward polarization.

These trends have the potential to erode social capital through the gradual decline of trust in formal institutions and, by transferring data authority, confront the security layers of sovereignty with novel risks. Although these impacts are currently in the stage of "formation and strategic forecasting" due to the lack of absolute technological ubiquity, their alignment with the Digital Colonialism paradigm demonstrates the strength of the hypothesis in explaining potential structural threats to the independence and national security of developing societies.

4. Discussion

4.1. The transformation of citizen identity and the emergence of political nihilism

Artificial Intelligence is not merely a neutral technology; rather, it is a phenomenon with distinct socio-political dimensions that plays a decisive role in redefining individual and collective identities. According to the Social Construction of Technology (SCOT) approach, this technology is the product of negotiation and the cultural values of its original designers in the countries of origin. Its application in developing countries, due to the lack of indigenous infrastructure and regulation, leaves profound consequences on human identity and agency. Research indicates that various forms of AI, from bots to deepfakes, have challenged classical concepts of personhood and agency (Cataleta & Cataleta, 2020: 61-62). From the perspective of Digital Divide theory, inequality in outcomes has led to a situation where, at the level of individual identity, algorithms channel personal choices by exploiting cognitive biases, thereby transferring decision-making power from humans to intelligent systems. This outsourcing of the decision-making process has led to the weakening of individual willpower and autonomy, depicting a new image of human action (Rajabi & Nasrollahi, 2023: 119-120).

Continuous interaction with recommendation systems shapes individuals' self-perception and affects personal independence; notably, the "digital identities" generated by big tech corporations do not necessarily align with individuals' actual identities, thereby undermining the authenticity of independent decision-making (O'Neil, 2016: 45). This transformation at the collective identity level also impacts the structure of social communications and cultural norms. While AI can create capacities for social cooperation (Kaur & Gupta, 2024: 24), in societies with fragile identities, over-reliance on non-indigenous platforms leads to the erosion of social cohesion and exacerbates polarization (Rajesh, 2024: 47). Furthermore, training systems with biased data deepens "structural bias" in the form of opportunity gaps (Molaei & Kafi, 2023: 112).

Within the framework of technological dependence, the monopoly of this technology by major powers has led to the exportation of values and behavioral patterns embedded in codes to consuming countries. The proliferation of fake news and deepfakes not only undermines public trust and confronts the authority of formal institutions with a crisis (Bhattacharjee et al., 2021: 2; Tufekci, 2017: 23) but also results in the erosion of national identity and a decline in belonging to indigenous culture due to the cultural hegemony arising from the dominance of global algorithms (Rajabi & Nasrollahi, 2023: 118). The use of these non-indigenous systems in governance reinforces the risk of institutionalizing algorithmic discrimination and intensifying social discontent (Lainjo, 2023: 4971; Venkateswaran & Raghavi, 2024: 4-5).

Ultimately, the intersection between the structure of imported algorithms and internal social dynamics promotes a form of political nihilism. Personalized content, through the manipulation of users' perception and self-image, creates deep distrust toward governmental institutions and formal policymaking mechanisms (Mohammadi et al., 2024: 151). The prevalence of these intelligent technologies weakens citizens' socio-political skills and the capacity for political innovation, making society vulnerable to intolerance and divergent tensions (Rajabi & Nasrollahi, 2023: 120). Therefore, within the SCOT framework, the localization of AI in accordance with cultural needs and values is a vital necessity to counter political and cultural de-prioritization in the digital age.

4.2. The erosion of national solidarity and democratic cohesion in platform societies

As Artificial Intelligence expands its role as the primary mediator of information flow, this technology is becoming a challenging factor for national solidarity and political development in developing countries. At the social level, intelligent tools, such as virtual assistants and recommendation systems, are replacing face-to-face interactions. By eliminating cultural nuances, they provide a fertile ground for misunderstandings and the weakening of empathy (Turkle, 2017: 49). This isolation and withdrawal from the public sphere directly erode social capital (Putnam, 2000: 23).

In the political dimension, this situation leads to what can be termed the "Platformization of Democracy". In this context, a major portion of political deliberation occurs on platforms that, while facilitating interaction, simultaneously utilize algorithms to create "filter bubbles" and "echo chambers". These mechanisms reinforce existing beliefs while filtering out dissenting perspectives (Pariser, 2011: 115). Beyond exacerbating socio-political polarization, this mechanism undermines the possibility of constructive dialogue and national consensus, leading to the debilitation of the public sphere and democratic discourse (Innerarity, 2024: 13-14). Furthermore, the employment of deepfakes

and fake news within the framework of information influence operations seriously threatens national cohesion by fueling ethnic and religious tensions (Mohammadi et al., 2024: 151).

On the other hand, Big Data plays a dual role: while it enhances the efficiency of public services and planning, its unequal distribution of access and control turns it into a source of political power. In a data-driven society, "new social classes" emerge based on the capacity to produce, collect, and analyze data; a phenomenon observed in both international relations and domestic affairs. According to the SCOT framework, AI is interpreted and deployed by elites and platforms in ways that are not necessarily aligned with the public interest. In developing countries, imported AI tools are primarily at the disposal of information and economic elites. These groups are capable of utilizing AI for political propaganda, deepfake production, targeted dissemination of misinformation, and the creation of sophisticated echo chambers. Conversely, ordinary citizens and weaker civil institutions lack the necessary tools and literacy to identify and counter such operations. This imbalance skews digital networks in favor of better-equipped actors and widens the gap in political outcomes between the state and the people, as well as among different social groups. The consequence is the weakening of nascent democratic institutions, the erosion of public trust, and increased political instability. Moreover, algorithms themselves are sources of inequality; by decoding social preferences, they increase the influence of designers over consuming societies (Ramos, 2022: 18).

At the governance level, the use of AI-based surveillance technologies, such as facial recognition, by governments to control political opponents restricts freedom of expression and political participation, thereby closing off open political space (Poursaeid et al., 2024: 41). Ultimately, the weakness of indigenous data infrastructure and dependence on global platforms reduce the power of citizens and civil institutions to use AI transparently and accountably in democratic processes (O'Neil, 2016: 47). Consequently, the "black box" nature of algorithms and the lack of algorithmic literacy (the second-level digital divide) reinforce the risk of digital authoritarianism and the erosion of public trust in countries with deep digital divides (Molae & Kafi, 2023: 95).

4.3. The weakening of national sovereignty and the efficiency crisis within platform monopoly

The concentration of technological power in the hands of major foreign tech corporations poses a structural threat to the sovereignty and independence of developing nations. According to the SCOT framework, AI technology carries the inherent values and biases of its original designers; consequently, the control of information flow by "Big Tech" erodes the capacity of developing countries for independent

policymaking and digital self-determination. This erosion occurs not through overt confrontation, but through the imposition of foreign standards and values embedded within algorithms, leading to cultural transformation and normative homogenization (Sharifi Poor & Sharajsharifi, 2025: 860). In this context, leading nations undermine traditional sovereign borders by providing intelligent infrastructures in exchange for access to strategic data, thereby reproducing a new form of "Digital Imperialism" and technological dependence (Molae & Kafi, 2023: 34).

Simultaneously, based on Digital Divide theory, infrastructural inequality in developing countries leads to the emergence of an "Efficiency Crisis" in governance. The process of citizen re-socialization in the AI era and their continuous use of advanced global technologies have heightened public expectations, giving rise to "smart" or "global citizens" who demand the full digitalization of administrative processes (Misuraca & Van Noordt, 2020: 15). The inability of developing governments to meet these high-level demands, due to the digital gap in execution, results in a decline in public trust and the weakening of political legitimacy (Rajabi & Nasrollahi, 2023: 117).

Furthermore, the expansion of Generative AI and its capability to mass-produce persuasive content and deepfakes has exacerbated the "epistemic crisis". By eroding public trust in media and governmental institutions, it directly undermines the political standing of the state (Honigberg, 2022: 82). This intersection between the "structural influence of foreign platforms" and the "structural lag of domestic governance" challenges national sovereignty on two fronts: on one hand, dependence on imported technology (codes and algorithms) deprives the state of decision-making autonomy; on the other hand, the failure to meet the technological expectations of citizens destabilizes the government's internal authority.

5. Findings

5.1. Case study: Challenges of imported artificial intelligence in the Iranian social context

Developing societies, including Iran, are exposed to a phenomenon known as "Algorithmic Dependency". This is a condition in which critical infrastructures, data, and decision-making systems rely on algorithms and platforms predominantly controlled and directed by major global technology powers. This dependency directly and, in some cases, indirectly affects national identity, social cohesion, political development, and governance efficiency in Iran.

5.1.1. Threats to Iranian-Islamic identity and culture

Algorithmic dependency on foreign platforms and global AI services (such as search engines, social networks, and content creation tools)

directly challenges Iranian-Islamic identity and culture. Content recommendation algorithms and linguistic/ cultural filters— such as those observed in Instagram, YouTube, or search engines— are trained on non-indigenous and primarily Western data. This leads to "Silent Othering". These algorithms determine what content is deemed "appropriate", "ethical", or "attractive". When the criteria for this assessment are Western cultural norms, local users gradually feel that their own culture and values are "abnormal", "backward", or "irrelevant" while the culture presented by the algorithm is perceived as the "primary" and "normal" one. Consequently, the lifestyle and cultural consumption of Iranians, and even the Persian language, undergo gradual shifts and influences that conflict with the "Islamic identity and values" of the society (Baniamerian et al., 2015: 18).

Another challenge in this domain for Iranian society is AI-assisted person identification and authentication. Since April 2023, the Iranian police have officially and extensively initiated the use of smart technology for "identifying and addressing the removal of hijab by women".¹ Accordingly, concerns regarding centralized state control over citizens' identities and the transformation of AI into a tool for monitoring lifestyles and beliefs constitute a fundamental challenge. This issue stands in direct conflict with the right to privacy and individual freedoms (Sadeghian, 2024: 31; Hashemi et al., 2020: 81).

5.1.2. Threats to national solidarity and the intensification of the digital divide

Artificial Intelligence has revolutionized the ease with which people worldwide, including in Iran, access communication tools, news, and information. This phenomenon impacts the process of political socialization, attitudes, political and religious beliefs, and, in short, individual identity. By inducing changes in political behavior and individual performance, it ultimately affects national unity and integrity (Molae & Kafi, 2023: 179).

Although recent surveys indicate that a significant portion of the Iranian population is currently unfamiliar with AI tools, and only about one-third of social media users possess the ability to utilize them (ISPA, 2025), the gradual penetration of this inherently imported technology presents profound challenges to Iranian society.

AI has permeated Iran not as an indigenous product, but through platforms built upon algorithms designed by major global powers; algorithms that, consciously or unconsciously, carry the cultural biases and behavioral standards of their developing societies. Within the "trust" layer, there is a thought-provoking finding: more than half of users (53.6%) place high trust in AI-generated responses. This high

1. For more information, see: "The implementation of the smart plan to deal with the removal of hijab has begun" (April 15, 2023), News Code 5755152, Mehr News Agency: <https://www.mehrnews.com/news/5755152>.

level of trust, intersecting with "dependency on imported platforms", renders developing societies highly vulnerable to algorithmic biases and information influence operations.

Table 1. Survey indicators of AI awareness and usage in Iran

Measurement indicator	Key findings (%)	Strategic analysis
Awareness level	32.3% active users, 67.7% non-users	Existence of a deep epistemic divide within the general public.
Geographical distribution	Provincial centers (43.7%), Rural areas (12.4%)	Technology concentration in urban hubs and the risk of regional inequality.
Field of usage	General information acquisition (54.4%)	Dominance of information consumerism over specialized production.
Trust level	53.6% high trust	High potential for perceptual manipulation due to elevated trust levels.

Source: ISPA, 2025

By replacing authentic and intimate human interactions with alien virtual assistants and recommendation systems, these tools are reshaping the foundations of social communication based on Western behavioral models. This process, by weakening discursive skills rooted in the Iranian context and confining citizens within "echo chambers" managed by multinational corporations, leads to the intensification of cognitive dissonance and severe social polarization. In fact, while Iranian users are becoming more adept at using smart tools, the decline in genuine dialogues and the reliance on communication channels driven by big data and transnational algorithmic powers have led to profound misunderstandings and public withdrawal from unifying national discourses. This trend ultimately exposes national cohesion to the risk of social and political tensions rooted in the mismatch between imported technology and the identity needs of the society (Baniamerian et al., 2015: 19).

Furthermore, according to the survey, there is a stark difference between AI usage among educated individuals and residents of provincial centers compared to those with lower education levels and residents of villages and small towns. This indicates the formation of a "Digital Elite Class" within Iranian society. AI tends to operate based on existing data; if a large segment of society (the undereducated or rural residents) is not actively involved in data production, algorithms will ignore their needs. Consequently, in a future where governmental and economic services become "smart", residents of villages and small towns with lower average consumption face the risk of "Double Marginalization". This unequal distribution of opportunities leads to feelings of discrimination and dissatisfaction, challenging the sense of national solidarity and cohesion (Daneshvar, 2024: 24).

5.1.3. Threats to democracy and political development

Critical research in the field of Artificial Intelligence indicates that imported algorithmic technologies—predominantly developed within the social, cultural, and linguistic contexts of Western societies—can produce unintended social consequences when deployed in non-Western societies (Birhane, 2020). In the Iranian social context, these challenges are particularly prominent within social media and digital platforms. Intelligent algorithms based on content personalization can influence users' social behavior and limit their power of informed choice by selectively representing reality, reinforcing attention cycles, and prioritizing specific media consumption patterns (Ansari & Mahdanian, 2025: 238-239). This phenomenon negatively impacts the process of democracy and political development in Iran.

AI creates a duality for Iran's political development, characterized by the opportunity for transparency and state-nation cooperation versus the threat of surveillance authoritarianism and government inefficiency. This technology has the potential to enhance the state's understanding of societal demands by facilitating large-scale data analysis and providing rapid feedback on public needs. Furthermore, by creating interactive platforms for consultation and participatory decision-making, it can strengthen cooperation between the state and citizens, enhance policy transparency, and aid the country's political development.

Conversely, AI intensifies the risk of forming "Digital Surveillance Authoritarianism"; meaning that instead of empowering citizens, it may be utilized for tighter control over public opinion and the violation of privacy. Additionally, "Structural Lag" within governance institutions presents another obstacle to Iran's political development. This implies that despite the global advancement of AI, Iran's administrative-managerial apparatuses do not yet systematically utilize this technology for transparency and accountability (Hasanzadeh, 2025).

This gap between AI's surveillance capacities and the lack of accountability infrastructures has not only failed to increase government efficiency but, by reinforcing non-transparent bureaucratic processes, could lead to the erosion of public trust, public rejection of these technologies, a lack of confidence in government smart systems (Torabi & Eghbal, 2024: 18), and the obstruction of pathways for political participation.

5.1.4. Intensification of the efficiency and authority crisis

Iranian citizens, exposed to global smart platforms, have shifted their demands toward "Smart Governance" and expect extensive services from the state and various institutions through intelligent technologies (Dolatkhah, 2022; Mohammadbeigi, 2024). Furthermore, the modern digital approach of neighboring countries (such as the UAE and Saudi Arabia), which showcase a new model of digital governance through

massive investments in AI, has significantly shifted the expectation levels of Iranian citizens (Molaei & Kafi, 2023: 179).

The emergence of these demands and mindsets occurs while a deep gap is forming between citizen expectations and the capabilities of Iran's administrative-managerial system due to a lack of proper infrastructure and insufficient investment in smart technologies. Additionally, numerous attacks against Iran's smart infrastructure in the context of cyber warfare lead to periodic system outages. Collectively, these issues fuel an "Efficiency Crisis" at macro levels (Yazdanpanah, 2022). Meanwhile, algorithms of foreign platforms (such as Instagram or search engines) engineer the mental priorities of Iranian citizens. These platforms tend to "magnify" domestic inefficiencies in Iran while "highlighting" the successes of rival countries. This causes the "efficiency crisis" to appear much deeper in the minds of the Iranian people than the existing reality.

Beyond the expectation gap, the imported and exogenous nature of AI technology will push the efficiency crisis toward a "Sovereignty Crisis". Dependency on algorithms designed by global powers not only transfers foreign cultural biases into decision-making layers but also increases the risk of infrastructural dependency due to a "lack of algorithmic transparency" for the state. When a government's smart tools are imported, its efficiency becomes "conditional" rather than intrinsic; meaning the Iranian government relies on tools whose "on/off switch" (sanctions, API access, etc.) is held by major powers. This leads citizens to perceive the state as lacking independence even in its most modern sectors, further fueling a "Crisis of Authority."

5.1.5. Perceptual manipulation and political nihilism

Today, social media recommendation algorithms, content generated by Generative AI, and digital tools such as Deepfakes are utilized as modern instruments by regional and global powers for cultural influence and social change in target countries, including Iran (Keyhanian & Asgari, 2024: 1211).

A concrete piece of evidence for this claim is the 2022 report by researchers from the Stanford Internet Observatory (SIO) and the research firm Graphika. The report reveals that a campaign exporting United States interests operated for nearly five years across 8 social networks and messaging platforms (including Facebook, Instagram, WhatsApp, and Twitter). This campaign promoted U.S. perspectives, values, and goals while simultaneously attacking the policies and approaches of the governments of Russia, China, Iran, and other nations. The accounts behind these operations often posed as news media outlets or individuals who did not exist, publishing content in at least seven languages, including Persian, Russian, Arabic, and Urdu (Stanford Internet Observatory & Graphika, 2022).

The focus of such algorithmic efforts, which are not exclusive to the

United States and are rigorously pursued by other regional rivals and adversaries of Iran has ,political space in Iran-to manage the socio¹ consistently been to instill the notion among citizens that no positive change is possible through political participation (such as elections, civil activity, or dialogue), that political parties are no longer effective, and that the entire political system has reached a deadlock (Khamenei, 2022). This approach aims to foster "Political Nihilism" in Iran; a state in which any effort toward political participation and influence is perceived as fundamentally meaningless.

Of course, the dominance of a security-oriented approach in the government's utilization of technology, coupled with the gap between citizen demands and the government's executive capabilities, are other factors paving the way for a form of "Political Disenchantment". When imported algorithms push citizen demands toward global standards on one hand, and domestic governance infrastructures, due to structural lag, focus primarily on the control layers of AI on the other, a type of civil frustration emerges. By overshadowing the political agency of the Iranian citizen, this situation can lead to distrust in the effectiveness of official institutions and push constructive political participation toward divergent actions. From this perspective, political nihilism in Iran is the product of the convergence of "perceptual manipulation" by foreign platforms and the "sluggishness in reconfiguring" domestic governance in the AI era, which ultimately threatens national security stability from within.

5.1.6. The Iranian government's encounter with AI challenges

The experience of the Islamic Republic of Iran in facing platforms equipped with intelligent algorithms confirms that this technology is more than a technical tool. In response to these developments, the Iranian sovereignty, through the ratification of the "National AI Document" and the establishment of the "National AI Organization" in 2024, has sought to align technological innovation with national values by strengthening institutional agency, developing indigenous infrastructure, and safeguarding data (Supreme Council of the Cultural Revolution, 2024).

Critical mandates emphasized in the National AI Document of the Islamic Republic of Iran include a smart confrontation with major powers through a de-monopolization approach; preventing the misuse of AI for the "domination of human over human" and the "domination

1. In December 2021, Meta (formerly Facebook) terminated the activities of seven "surveillance-for-hire" firms. One of the most prominent was the Israeli company Bluehawk CI. This firm utilized AI to create highly realistic fake accounts that infiltrated Persian-speaking groups. Posing as ordinary citizens or Iranian civil activists, these accounts published content opposing Iranian sovereign policies and supporting Israeli policies. For more information, see: Meta. (2021, December 16). *Adversarial Reporting: Surveillance-for-Hire Industry*. Meta Newsroom.

of AI over human"; cultural capacity building and the promotion of public literacy; and creating the groundwork for the responsible and safe use of AI technology. Furthermore, the document stresses developing AI while reinforcing natural human communications and avoiding the social isolation of individuals (National AI Document of the Islamic Republic of Iran, 2024). However, success in this path requires a transition from reactive approaches toward "proactive policymaking".

Table 2. Mechanisms of AI influence on the social structure of developing societies

Levels of analysis	Key variables (Based on hypothesis)	Algorithmic influence and penetration mechanism	Strategic consequences in the Iranian context
Identity level	Transformation of demands and individual identity	Cultural bias in Large Language Models (LLMs) and "Silent Othering"	Erosion of Iranian-Islamic lifestyle and weakening of individual autonomy.
Social level	Social capital and national cohesion	Creation of "Echo Chambers" and reproduction of discrimination in digital classes	Intensification of social polarization and sense of marginalization in less-developed regions.
Political level	Political development and democracy	"Platformization of Democracy" and perceptual manipulation (Deepfakes/ Fake News)	Promotion of "Political Nihilism", civic disenchantment, and reduced constructive participation.
Governance level	Efficiency and institutional legitimacy	Expectation gap ("Smart Citizen")	

Source: Findings of the present study

5.2. Strategic recommendations framework for developing societies

The synthesis of the provided analyses demonstrates that the influence of imported Artificial Intelligence systems in developing countries, rather than fostering socio-political development, poses structural threats to national identity, social solidarity, civil liberties, and institutional legitimacy. These threats primarily stem from algorithmic monopolies, cultural biases embedded in alien technologies, and the erosion of social capital. Addressing these challenges necessitates a balanced policy approach that focuses simultaneously on developing

indigenous capacities and regulating the influence of foreign technologies in a manner that guarantees citizens' rights and freedoms.

It is essential to acknowledge that developing societies— unlike developed nations, which often benefit from robust civil institutions, advanced technological infrastructure, and high levels of public literacy— face challenges such as structural inequality, the digital divide, and the concentration of institutional power. In these societies, the technology-media market is frequently controlled by foreign actors or the state, leaving citizens and civil society organizations with significantly less influence and agency compared to the government. In such a context, policymaking for the secure utilization of AI must prioritize institutional capacity-building and state-level interventions to bridge existing gaps and safeguard national sovereignty within the information sphere.

5.2.1. Recommendations for sovereignties

Strengthening technological sovereignty in developing countries necessitates a transition from confrontational approaches toward "Smart Regulation" and "Targeted Specialization". Given the resource constraints, governments should prioritize the formulation of mandatory frameworks in high-risk sectors (such as security, healthcare, and elections) to prevent the erosion of national sovereignty and the irresponsible extraction of data by transnational corporations (O'Neil, 2016: 128).

In other words, rather than investing in the development of general Large Language Models (LLMs), which entail exorbitant costs, policymakers should adopt a strategy of "Adapting and Retraining Open-Source Models" for specific national applications. This approach not only reduces algorithmic dependence and cultural influence but also ensures infrastructural resilience against sanctions and economic fluctuations.

Furthermore, in the context of infrastructural limitations, establishing "Regional Shared Cloud Data Centers" serves as a strategic solution for pooling resources and breaking global data monopolies. However, adhering to rigorous requirements, such as the principle of "Non-surveillance Tracking" in procurement contracts for foreign technologies, is essential to safeguard civil liberties.

On the other hand, to maintain legitimacy and efficiency in the digital age and to protect democratic processes, governments must establish "National Observation Centers" to identify fake news and deepfakes. Additionally, they should undertake the digitalization of public services through indigenous AI to ensure data retention on domestic servers and to enhance institutional efficiency (Romanishyn et al., 2025).

Consequently, in developing nations, focusing on the proactive management of dependence risks, rather than striving for full-scale

comprehensive localization, enables the maximization of AI benefits within technical and budgetary constraints.

5.2.2. Recommendations for citizens

In developing countries, where citizens are primarily consumers of foreign platforms, macro-level strategies must shift from passive consumption toward strengthening agency and reconstructing social capital. To this end, it is essential to enhance AI literacy and the cognitive resilience of society. Developing "AI literacy" goes beyond mere technical skills; it focuses on understanding bias mechanisms and the "filter bubble" phenomenon within global platforms (Pariser, 2011: 138). The objective of such education is to build cognitive resilience against algorithmic manipulation and to empower citizens to detect AI-generated content and utilize anonymization tools to safeguard their privacy.

Furthermore, AI should be employed as a tool to facilitate out-group civic dialogues rather than as a substitute for human interaction. Governments are responsible for strengthening traditional media institutions and supporting non-algorithmic public discourse spaces to reduce over-reliance on monopoly platforms and to curb the erosion of public trust caused by misinformation (Putnam, 2000: 122).

On the other hand, given the structural constraints in developing nations, specialized civil society and judicial bodies must focus on documenting and challenging algorithmic biases in public services. They should also raise awareness among citizens regarding their rights against automated decision-making systems to ensure institutional accountability. Consequently, this hybrid approach, centered on education and civic oversight, provides a foundation for citizens to maintain their independence of thought and deterrent power in the face of transnational platform influence.

6. Conclusion and Final remarks

The final inference of this study confirms that in developing nations, Artificial Intelligence is not merely a neutral technology for development, but rather a "political catalyst in the reconfiguration of power relations". Through algorithmic monopoly, it challenges citizen agency and places governments at a crossroads between "strengthening technological sovereignty" or "integration into digital imperialism". By penetrating the underlying layers of individual identity and democratic structures, this technology has dissolved the traditional boundaries between the private and public spheres, subjecting national sovereignty to a form of "modern structural dependency". In fact, the primary challenge for these societies lies not only in the digital divide but in the "imbalance of agency" between transnational monopoly platforms and national institutions.

Table 3. Strategic framework for managing algorithmic dependency

Stakeholder level	Strategic axis	Operational actions and policy requirements	Ultimate goal
Governance (State & high-level institutions)	Smart regulation and data sovereignty	Formulating mandatory frameworks for high-risk sectors; Establishing regional cloud centers; Implementing the "Non-surveillance Tracking" principle in foreign tech procurement.	Safeguarding political independence and data sovereignty.
	Infrastructural specialization	Focusing on "Adapting and Training Open-source Models" instead of heavy investment in costly general LLMs.	Technological sustainability under sanctions and resource constraints.
	Institutional stability and efficiency	Launching national observation centers for Deepfake detection; Standardizing public services through indigenous AI.	Reconstructing public trust and combating fake news.
	Cognitive resilience and algorithmic literacy	Education on "Filter Bubble" mechanisms; Empowering citizens in detecting synthetic content and using privacy-preserving tools.	Enhancing human agency against perceptual manipulation.
Civil society and citizens	Reconstruction of social capital	Strengthening non-algorithmic public discourse spaces; Supporting traditional media to reduce reliance on transnational monopoly platforms.	Countering polarization and the erosion of national cohesion.
	Justice and civil oversight	Documenting algorithmic biases; Digital rights education to ensure the accountability of automated decision-making systems.	Achieving algorithmic justice and oversight of technological power.

Source: Findings of the present study

In the specific case of the Islamic Republic of Iran, research findings indicate that confronting this transformative technology cannot be reduced merely to protective or restrictive approaches. Iran's experience demonstrates that AI profoundly impacts national identity, social cohesion, political development, and governance efficiency. Consequently, Iran's policies toward national institution-building will lead to sustainable success only when they transcend the dichotomy of "pure technocracy" versus "absolute localization" and move toward "smart and flexible governance".

The final synthesis of this paper is based on the principle that safeguarding national sovereignty in the AI era requires a "new synthesis" between technology and culture. True independence in this field lies not in isolation from the global network, but in the capacity for smart regulation, strengthening the cognitive resilience of citizens against algorithmic manipulation, and transforming national data into strategic infrastructure. Only by reinforcing this "joint sovereign-citizen agency" can developing nations prevent the erosion of national identity and elevate their position in the new world order from passive consumers to active, self-determined actors.

Conflict of interest

The author declared no conflicts of interest.

Ethical considerations

The author has completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc. This article was not authored by artificial intelligence.

Data availability

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

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