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Designing a localized model for cultural data governance in iran: Challenges and opportunities for cultural institutions in the big data era

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ABSTRACT

This study aims to design a localized model for cultural data governance in Iran, addressing the unique challenges and opportunities faced by cultural institutions in the era of big data. Employing a qualitative approach and grounded theory methodology, the research involved in-depth semi-structured interviews with 22 experts, policymakers, and senior managers from key cultural institutions in Iran. Data were analyzed through open, axial, and selective coding, resulting in a paradigmatic model comprising 6 main categories, 18 axial codes, and 72 open codes .Causal conditions -such as data accumulation and fragmentation, the need for evidence-based policymaking, and pressures from emerging technologies- lead to the central phenomenon of "cultural data governance." This phenomenon is embedded within Iran's institutional-structural features, technological infrastructure, and socio-cultural context, while legal, economic, and political-security factors act as intervening conditions. Extracted strategies operate at three levels: institutional-structural, technical-infrastructural, and empowerment, yielding consequences in policy-managerial, socio-cultural, and economic-technological dimensions .Findings indicate that cultural data governance in Iran is a multidimensional phenomenon. Developing a localized model requires simultaneous attention to technical, legal, institutional, economic, and socio-cultural dimensions, with special emphasis on preserving cultural diversity and strengthening national identity. This model can serve as a foundation for policymaking and decision-making in Iran's cultural institutions.

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1. Introduction

1.1. Cultural Data as a Strategic Asset in the Digital Era

In the contemporary digital era, data have emerged as the pulsating core of the digital economy and a strategic resource for high-level decision-making across social, economic, and cultural domains. The advent of big data technologies, artificial intelligence (AI), and machine learning has fundamentally transformed not only the production and exchange of information but also the very nature of governance in modern societies. Within this landscape, the cultural domain holds particular significance due to its deep interconnection with collective identity, values, and shared memory. Cultural data—encompassing written works, intangible heritage, artistic productions, patterns of cultural consumption, and interactions in digital spaces—constitute a vast and strategic repository that can underpin precise policymaking, intelligent planning, and effective delivery of cultural services. The UNESCO Global Report on Cultural Policies (2025) underscores that cultural data serve as a critical input for AI development and a primary source for training AI models, yet their integration into policy frameworks remains largely underexplored.

Recent scholarship has increasingly recognized cultural data as a distinct category requiring specialized governance approaches. Kallinikos and Hasselbladh (2023) argue that data, particularly in cultural domains, are not neutral representations but performative artifacts that actively shape organizational realities and collective identities. Furthermore, Svärd (2022) demonstrates that public sector cultural institutions face unique data governance challenges due to the inherent tension between preservation mandates and digital accessibility demands. The transition from analog to digital paradigms has confronted cultural institutions in Iran with fundamental questions: How should cultural data be collected, classified, stored, and analyzed? Who owns these data? Which entities bear responsibility for governing them? More critically, how can such data be leveraged to advance cultural diplomacy, preserve cultural diversity, counter algorithmic homogenization, and reinforce national identity—while safeguarding citizens' privacy and national cultural security? These questions collectively point to a core gap: the absence of a comprehensive, contextually grounded model for cultural data governance in Iran.

1.2. Digitization Efforts and Persistent Challenges in Iran

Recent scholarship highlights progress in the digitization of Iran's cultural heritage, yet persistent challenges remain in accessibility, standardization, and sustainable infrastructure development. For instance, the digitization of the Pasargadae World Heritage site during the COVID-19 pandemic demonstrated that digital approaches can facilitate online access to cultural heritage, but such efforts require coherent planning and innovative technologies to ensure protection and global outreach (Gerami et al., 2022).

In Iran, despite the presence of numerous—often parallel—institutions responsible for cultural affairs (e.g., the Ministry of Culture and Islamic Guidance, Islamic Republic of Iran Broadcasting, National Library and Archives of Iran, and various public entities), no coherent,

systematic framework for cultural data governance has yet been developed or implemented. Pashkeeva (2024) examines Iran's digital archives, revealing them as curated, selectively managed datasets accessible via open web resources, which raises critical questions about transparency, knowledge production, and potential agnotological effects in authoritarian archival contexts.

This fragmentation has led to several adverse outcomes: data silos across organizations, inconsistencies in definitions and standards, underutilization of big data analytics capabilities, heightened vulnerability to cyber threats, and, most importantly, missed strategic opportunities for domestic and international cultural influence. A recent study of local government cultural economy data practices in England (Ashton & Bell, 2024) identified strikingly similar challenges—including capacity limitations, misaligned decision-making incentives, and difficulties in cross-sectoral partnership formation—suggesting that many of Iran's obstacles are not unique but reflect broader global patterns in cultural data governance.

Further compounding these challenges are legal, ethical, and material dimensions. Palladino and Bodard (2023) explore the tension between the materiality of cultural heritage artifacts and the intangible aspects of digital methods, addressing how digitization affects intellectual property rights and ownership of cultural heritage—issues that resonate strongly with Iran's legal-regulatory gaps and cultural sensitivities. Lercari et al. (2022) address the preservation of cultural heritage in the digital age, focusing on the recording, analysis, management, and sustainable dissemination of cultural heritage knowledge, with particular attention to collaboration among researchers and stakeholders.

1.3. International Frameworks for Cultural Data Governance

Data governance refers to the policies, processes, standards, and mechanisms that define the management, access, use, sharing, and protection of data within a given system. In the cultural realm, this concept acquires added complexity, as cultural data are not mere numerical entities but carriers of meaning, values, and identity narratives. Grincheva (2025) introduces the framework of "smart cultural data intelligence" to integrate cultural data within smart urban ecosystems, emphasizing the need for inclusive governance and interoperable infrastructures to enable cross-sectoral data sharing. Accordingly, cultural data governance must extend beyond technical and legal dimensions to encompass socio-cultural, ethical, and strategic considerations. On the practical side, Eryurek et al. (2021) provide a comprehensive guide to implementing data governance in organizations, focusing on creating value from data through effective governance—a perspective directly relevant to Iran's need to transform cultural data into strategic national assets.

Internationally, several comprehensive frameworks have emerged. Zheng and Pan (2022) propose a public cultural data governance system comprising four core elements: governance targets, governance subjects, governance objects, and governance methods, providing a modular architecture that can be adapted to different national contexts. Building on these insights, Ning et al. (2024) apply evolutionary game theory to model collaborative supply of cultural resource big data in China, revealing that government participation and incentive mechanisms critically

determine the stability of inter-institutional cooperation. Beyond East Asia, European experiences provide valuable comparative insights. The edited volume by Hylland and Primorac (2024) analyzes digital cultural policies across seven European countries, showing how such policies struggle to align aspirations with effectiveness. This comparative perspective underscores that no single governance model fits all contexts, reinforcing the necessity of localized approaches.

1.4. Ethical Dimensions: Data Sovereignty and Cultural Diversity

Furthermore, the influx of transnational platforms and content-recommendation algorithms into Iran's cultural ecosystem introduces novel challenges. These platforms, with access to vast behavioral datasets from Iranian users, shape cultural consumption patterns and sometimes engage in unmonitored cultural taste-making. UNESCO (2025) warns that AI systems pose new risks to cultural diversity and the visibility of diverse cultural expressions. China's experience with a national framework for collaborative cultural resource big data supply— involving coordinated participation from cultural institutions, data service platforms, and government— illustrates how such integration can preserve, disseminate, and commercially exploit cultural resources while fostering sustainable cultural development (Ning et al., 2024).

Beyond technical and legal considerations, ethical governance of cultural data has gained prominence internationally. Carroll et al. (2020) introduced the CARE Principles for Indigenous Data Governance (Collective Benefit, Authority to Control, Responsibility, and Ethics), which directly address the need for collective rights, self-determination, and culturally appropriate data management—principles that resonate strongly with Iran's emphasis on preserving cultural diversity and national identity. The edited volume by Walter et al. (2022) examines how Indigenous Peoples around the world are demanding greater data sovereignty, challenging the ways in which governments have historically used Indigenous data to develop policies and programs. This volume explicitly asks what data sovereignty looks like in policy and practice—questions parallel to those facing Iran's cultural institutions.

1.5. Research Gap, Objectives, and Contribution

Given the nascent state of cultural data governance in Iran and the limited context-specific theoretical foundation, this study adopts a qualitative approach using grounded theory methodology. By deeply exploring the perspectives, experiences, and perceptions of experts, policymakers, and senior managers from key cultural institutions, the research seeks to design a localized model for cultural data governance in Iran. Specifically, it addresses the following core questions: What are the primary dimensions and components of cultural data governance in the Iranian context? What challenges and opportunities confront cultural institutions in this domain? And what features characterize an optimal, indigenous governance structure?

The ultimate contribution of this research is a theoretically informed and practically oriented framework that fills an existing scholarly gap, serves as a guide for policymakers and cultural managers navigating the big data era, and facilitates a transformative shift in treating cultural data as a strategic national asset.

2. Methods

The This study employs a qualitative approach using grounded theory methodology to design a localized model for cultural data governance in Iran. Grounded theory was first introduced by Glaser and Strauss (1967) in their seminal work, *The Discovery of Grounded Theory*, which aimed to bridge the gap between abstract theorizing and empirical social research through the "systematic discovery of theory from data" (p. 2). The present research adopts the evolved version developed by Corbin and Strauss (2008) in *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.), which is grounded in symbolic interactionism and pragmatist philosophy, emphasizing interaction, meaning, and process in theory construction (pp. 6-8).

Grounded theory was selected for several methodological reasons. First, cultural data governance in Iran represents an emergent concept lacking a well-established indigenous theoretical framework, and grounded theory is specifically designed for theory generation in under-explored domains (Glaser & Strauss, 1967). Second, the method allows for in-depth exploration of lived experiences and perspectives of key actors—experts, policymakers, and cultural managers—yielding a contextually rooted theoretical model aligned with Iran's socio-cultural and institutional realities (Corbin & Strauss, 2008).

2.1 Sampling and Participants

Initial participant selection utilized purposive sampling. Inclusion criteria included: at least five years of professional experience in cultural institutions (e.g., Ministry of Culture and Islamic Guidance, National Library and Archives of Iran, Islamic Republic of Iran Broadcasting, Hozeh Honari), current or recent involvement in managerial or policymaking roles, and practical experience in digitization, cultural data management, or emerging information technologies. Sampling continued until theoretical saturation was achieved. Subsequently, theoretical sampling was employed, whereby additional participants were selected based on their potential to elaborate, refine, or challenge emerging categories (Corbin & Strauss, 2008; Charmaz, 2014).

2.2. Data Collection

The primary data collection instrument consisted of in-depth, semi-structured interviews. This format offers flexibility and facilitates the discovery of participants' perspectives and experiences, making it well-suited to grounded theory inquiry (Charmaz, 2014). Interview guides were developed around core themes: participants' experiences with the current state of cultural data in their institutions, perceived challenges and opportunities in cultural data governance, the role of emerging technologies in cultural data management, and visions for an optimal governance model in Iran. All interviews were conducted with informed consent, audio-recorded (with permission), and transcribed verbatim.

2.3. Data Analysis

Data analysis followed the three-stage coding process outlined by Corbin and Strauss (2008): open coding, axial coding, and selective coding. The constant comparative method was applied

throughout, whereby each segment of data was systematically compared with others and with emerging categories to identify similarities and differences (Glaser & Strauss, 1967).

In open coding, interview transcripts were examined line-by-line to identify initial concepts and categories, which were labeled descriptively. Axial coding then organized relationships among categories according to dimensions, causal conditions, contextual conditions, intervening conditions, action/interaction strategies, and consequences. Selective coding identified the core category around which other categories were integrated, enabling the construction of a coherent paradigmatic model. Memo-writing was conducted continuously to document theoretical insights, questions, and reflections across all stages.

2.4 Trustworthiness

To ensure the study's quality and trustworthiness, the four criteria proposed by Lincoln and Guba (1985) were applied: credibility, transferability, dependability, and confirmability. Credibility was enhanced through prolonged engagement with the data, member checking (participant validation of interpretations), and triangulation of data sources where applicable. Transferability was supported by providing thick descriptions of the research context and participant characteristics. Dependability was achieved via detailed documentation of all procedural steps and the creation of an audit trail. Confirmability was promoted through researcher reflexivity and the inclusion of direct participant quotations to substantiate findings (Lincoln & Guba, 1985).

2.5. Ethical Considerations

The study adhered to ethical principles for qualitative research. Participants received a clear explanation of the research objectives prior to interviews, and written informed consent was obtained. They were informed of their right to withdraw at any stage without consequence. Anonymity and confidentiality were maintained by assigning numerical codes to participants, with data used solely for scientific purposes.

3. Results

The findings from the qualitative data analysis, based on grounded theory methodology following Corbin and Strauss (2008), are presented in this section. Data were collected through in-depth semi-structured interviews with 22 experts, policymakers, and senior managers from key cultural institutions in Iran. Analysis involved open, axial, and selective coding, resulting in the identification of 6 main categories, 18 axial codes (3 per main category), and 72 open codes (4 per axial code). Below, the paradigmatic model is first presented diagrammatically, followed by detailed descriptions of each main category, including their axial and open codes.

3.1 Paradigmatic Model of Cultural Data Governance in Iran

Based on the data analysis, the paradigmatic model for cultural data governance in Iran comprises six main categories: causal conditions, core phenomenon, contextual conditions, intervening conditions, strategies, and consequences. The following Fig. 1 this model:

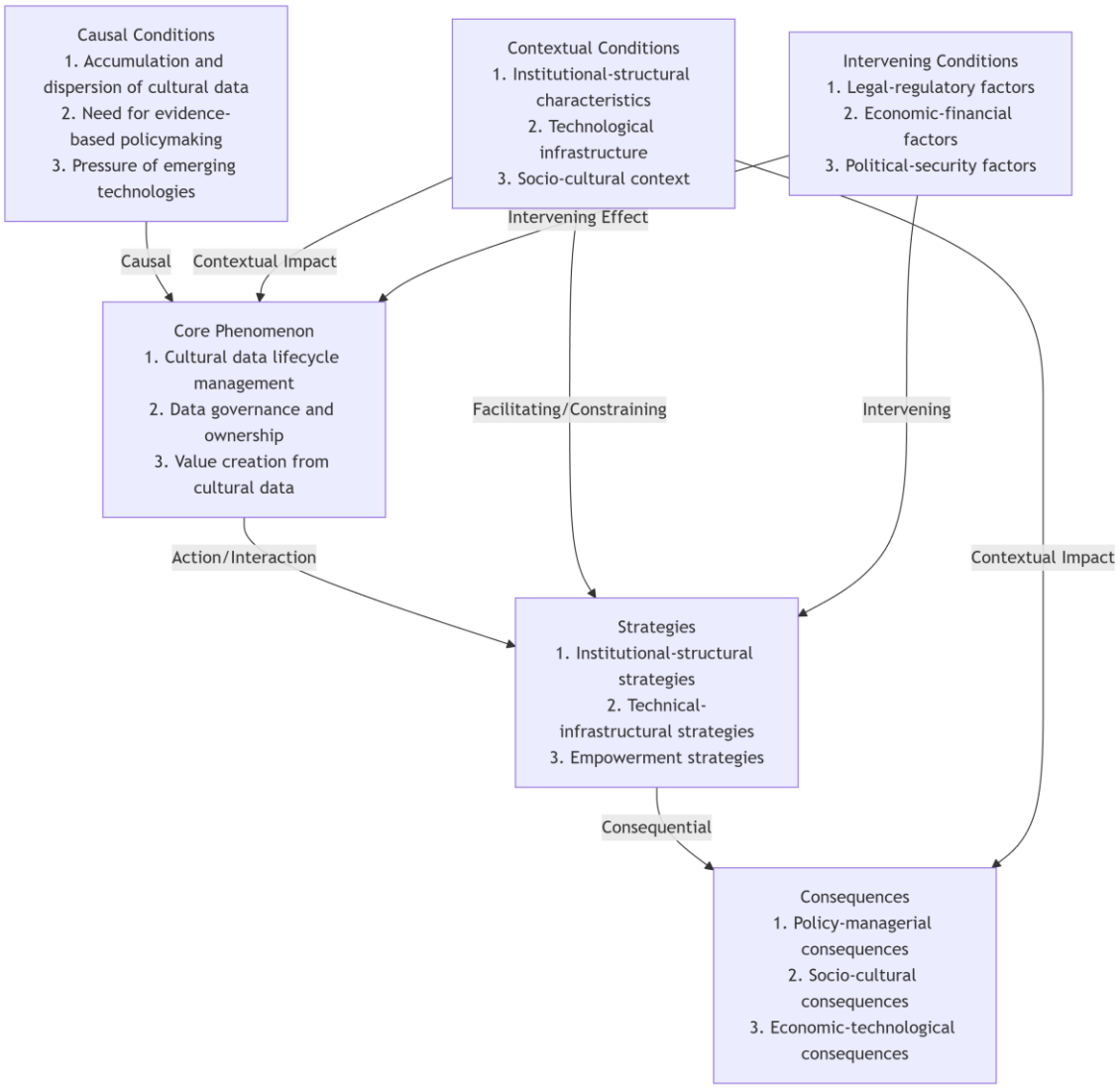

Fig. 1. Paradigmatic model of cultural data governance in Iran.

In the following subsections, each main category is detailed with its corresponding axial codes and open codes.

3.1.1. Causal Conditions

Causal conditions refer to factors that directly contribute to the emergence of the core phenomenon (the necessity for cultural data governance). This category includes 3 axial codes and 12 open codes.

Table 1.
Causal conditions influencing cultural data governance.

Axial Code	Open Codes
Data accumulation and fragmentation	1. Exponential growth of digital data in the cultural domain2. Fragmentation of data across multiple organizational silos3. Absence of an integrated cultural database4. Duplication and parallel efforts in data collection
Need for evidence-based policymaking	5. Inefficiency of subjective decision-making in culture6. Requirement for precise monitoring and evaluation of cultural policies7. Need to identify cultural consumption patterns8. Demand for forecasting future cultural trends
Pressure from emerging technologies	9. Rise of digital cultural platforms10. AI requirements for training data 11. Competition with transnational platforms for audience engagement12. Necessity to meet citizens' digital expectations

3.1.2. Core Phenomenon

The core phenomenon represents the central concept of the study: "cultural data governance," around which all other categories are organized. This category includes 3 axial codes and 12 open codes.

Table 2.
Core phenomenon - Dimensions of cultural data governance.

Axial Code	Open Codes
Management of cultural data lifecycle	1. Systematic collection of cultural data 2. Standardized and secure data storage 3. Data processing and analysis for knowledge extraction 4. Data sharing and exchange among institutions
Governance and ownership of cultural data	5. Determination of cultural data ownership (government, private sector, public) 6. National sovereignty over strategic cultural data 7. Rights of access and use of data 8. Protection of data against misuse and export
Value creation from cultural data	9. Transformation of data into strategic assets 10. Commercialization of cultural data 11. Utilization of data for cultural diplomacy 12. Representation of national identity through data

3.1.3. Contextual Conditions

Contextual conditions refer to the specific settings and circumstances in which action and interaction strategies are formed. This category includes 3 axial codes and 12 open codes.

Table 3.
Contextual conditions for cultural data governance in Iran.

Axial Code	Open Codes
Institutional and structural features	1. Multiplicity of cultural institutions and parallel operations 2. Lack of inter-sectoral coordination in cultural affairs 3. Centralized and bureaucratic decision-making structures 4. Weak interaction between cultural institutions and academia/research
Technological infrastructure	5. Absence of an integrated cultural data infrastructure 6. Weaknesses in data standardization 7. Lack of indigenous data-sharing platforms 8. Bandwidth limitations and internet access constraints
Socio-cultural context	9. Ethnic and linguistic diversity and cultural pluralism 10. Deep linkage of cultural data with identity and values 11. Cultural and religious sensitivities in data 12. Generational and regional digital divides

3.1.4. Intervening Conditions

Intervening conditions are factors that facilitate or constrain the process of cultural data governance. This category includes 3 axial codes and 12 open codes.

Table 4.
Intervening conditions influencing cultural data governance.

Axial Code	Open Codes
Legal-regulatory factors	1. Legal gaps in the cultural data domain 2. Ambiguities in intellectual property laws for data 3. Absence of comprehensive data privacy laws 4. Weak enforcement of existing regulations
Economic-financial factors	5. Budget constraints for cultural institutions 6. Sanctions and limited access to advanced technologies 7. Lack of sustainable economic models for cultural data 8. High costs of digitization and data maintenance
Political-security factors	9. Security concerns regarding cultural data 10. Political sensitivities in data sharing 11. Cyber threats and data security risks 12. Data sovereignty considerations at the international level

3.1.5. Strategies

Strategies refer to actions and interactions adopted in response to the core phenomenon, influenced by contextual and intervening conditions. This category includes 3 axial codes and 12 open codes.

Table 5.
Strategies for cultural data governance in Iran.

Axial Code	Open Codes
Institutional-structural strategies	1. Establishment of a Supreme Council for Cultural Data Governance 2. Development of a national strategic document for cultural data 3. Integration of institutions responsible for cultural data 4. Creation of a National Cultural Data Center
Technical-infrastructural strategies	5. Design and implementation of an integrated cultural data system 6. Formulation of national standards for cultural data 7. Establishment of an inter-institutional data-sharing platform 8. Utilization of emerging technologies (AI, blockchain)
Empowerment strategies	9. Training and enhancement of data literacy for cultural managers 10. Engagement of the private sector and startups 11. Promotion of data-sharing culture 12. Development of international collaborations in cultural data

3.1.6. Consequences

Consequences refer to the outcomes and achievements resulting from the adoption of strategies in cultural data governance. This category includes 3 axial codes and 12 open codes.

Table 6.
Consequences of cultural data governance in Iran.

Axial Code	Open Codes
Policy-managerial consequences	1. Enhancement of evidence-based cultural policymaking quality 2. Increased coordination and reduced institutional overlaps in culture 3. Improved resource allocation in the cultural domain 4. More precise monitoring and evaluation of cultural programs
Socio-cultural consequences	5. Preservation and protection of cultural diversity 6. Strengthening national identity in the digital space 7. More equitable citizen access to cultural heritage 8. Empowerment of local communities for cultural data production
Economic-technological consequences	9. Generation of economic value from cultural data 10. Strengthening of the creative economy and cultural industries 11. Development of data-driven cultural startups and businesses 12. Elevation of Iran's position in digital cultural diplomacy

3.2. Summary of Findings

The data analysis identified 6 main categories, 18 axial codes, and 72 open codes in the domain of cultural data governance in Iran. The findings indicate that the phenomenon of "cultural data governance" is shaped by causal conditions such as data accumulation and fragmentation, the need for evidence-based policymaking, and pressures from emerging technologies. This phenomenon is situated within Iran's institutional features, technological infrastructure, and socio-cultural context, with legal gaps, economic constraints, and political-security considerations acting as intervening factors. In response, strategies are adopted at institutional-structural, technical-infrastructural, and empowerment levels, leading to consequences across policy-managerial, socio-cultural, and economic-technological dimensions.

4. Discussion

The findings of this study provide a comprehensive, contextually grounded paradigmatic model for cultural data governance in Iran, structured around six main categories: causal conditions, core phenomenon, contextual conditions, intervening conditions, strategies, and consequences. This model responds directly to the three central research questions by delineating the primary dimensions and components of cultural data governance in the Iranian context, identifying the principal challenges and opportunities confronting cultural institutions, and outlining the key features of an optimal, localized governance structure.

The results reveal that cultural data governance is inherently multidimensional, extending far beyond technical infrastructure to encompass institutional, legal, economic, political-security, and socio-cultural dimensions. The centrality of the phenomenon—"cultural data governance"—emerges as the integrative hub around which causal pressures (data accumulation/fragmentation, demand for evidence-based policymaking, and technological imperatives), contextual embeddedness (institutional multiplicity, infrastructural deficits, and socio-cultural diversity), and intervening constraints (legal gaps, economic limitations, and security concerns) interact. This complexity aligns with Grincheva's (2025) conceptualization of "smart cultural data intelligence," which similarly calls for holistic integration of cultural data within broader socio-technical ecosystems, while underscoring the necessity of interoperable infrastructures and inclusive governance mechanisms.

In terms of dimensions and components (first research question), the model identifies three core axial categories under the phenomenon: lifecycle management (collection, storage, processing, sharing), governance and ownership (sovereignty, access rights, protection against misuse/export), and value creation (strategic asset formation, commercialization, cultural diplomacy, national identity representation). These dimensions partially resonate with established international frameworks such as the OECD principles on enhanced access to and sharing of research data, which emphasize transparency, interoperability, security, and accountability (OECD, 2021). However, the present model's pronounced emphasis on identity representation, national sovereignty over strategic cultural data, and cultural diplomacy reflects the specific socio-political and historical context of Iran—features less prominent in generic, technology-centric international models.

Regarding challenges and opportunities (second research question), the identified causal and intervening conditions highlight structural fragmentation, legal-regulatory voids, budgetary constraints exacerbated by sanctions, cybersecurity risks, and cultural sensitivities as major barriers. These findings are consistent with prior work on Iran's digital cultural landscape. For example, Gerami et al. (2022) documented that digitization efforts at Pasargadae during the COVID-19 pandemic improved online accessibility yet suffered from inadequate standardization and sustainable infrastructure. Similarly, Pashkeeva (2024) pointed to the curated and selectively managed nature of Iran's digital archives, raising questions about transparency, knowledge production, and potential agnotological effects. At the same time, the model surfaces significant opportunities: exponential digital cultural data growth, the rise of indigenous digital platforms, increasing demand for evidence-based cultural policy, and the strategic potential of cultural data for soft power projection and creative economy development. These opportunities mirror successful international experiences, such as China's coordinated national big data framework for cultural resources, which has enabled preservation, dissemination, and commercial exploitation through government–industry collaboration (Ning et al., 2024).

The proposed strategies and anticipated consequences (third research question) offer a practical pathway forward. Institutional-structural interventions (e.g., establishing a Supreme Council and a National Cultural Data Center), technical-infrastructural measures (integrated systems, national standards, inter-institutional platforms, adoption of AI/blockchain), and empowerment actions (data literacy training, private-sector engagement, international cooperation) collectively aim to address the identified bottlenecks while capitalizing on opportunities. These recommendations are broadly aligned with UNESCO's (2025) call for integrated policy responses to mitigate AI-related risks to cultural diversity and the visibility of diverse cultural expressions. The anticipated consequences—improved evidence-based policymaking, reduced institutional redundancy, preservation of cultural pluralism, strengthened digital national identity, equitable heritage access, growth of cultural industries, and enhanced digital cultural diplomacy—underscore the transformative potential of effective governance.

4.1. Comparison with Extant Literature and Theoretical Implications

The localized model developed here extends existing scholarship in several ways. While international data governance frameworks (e.g., OECD, 2021) provide valuable technical and procedural guidance, they often adopt a relatively culture-neutral stance. The present study demonstrates that, in culturally rich and geopolitically sensitive contexts such as Iran, effective governance must explicitly incorporate identity preservation, resistance to algorithmic homogenization, and cultural diplomacy as core objectives. The model also complements Grincheva's (2025) work on smart cultural data intelligence by translating the concept into concrete institutional and infrastructural strategies tailored to a developing, sanction-affected environment. Likewise, it builds on—but goes beyond—case-specific studies of Iranian heritage digitization (Gerami et al., 2022; Pashkeeva, 2024) by offering a systemic, multi-level framework rather than isolated project evaluations.

4.2. Significance and Contributions

This research makes several important contributions. First, it represents the first systematic, empirically grounded attempt to construct an indigenous model of cultural data governance in Iran, thereby filling a critical theoretical and practical gap. Second, by employing grounded theory (Corbin & Strauss, 2008), the study ensures that the resulting framework is deeply rooted in the lived experiences and contextual realities of Iranian cultural actors rather than imported prescriptions. Third, the paradigmatic structure provides policymakers with a dynamic, systemic understanding of interrelationships among conditions, actions, and outcomes—facilitating more holistic and anticipatory interventions. Finally, the deliberate foregrounding of socio-cultural and identity-related dimensions distinguishes the model from predominantly technocratic approaches and highlights the necessity of culturally attuned governance in pluralistic societies.

4.3. Limitations

Several limitations should be acknowledged. The qualitative, exploratory nature of grounded theory precludes statistical generalizability; transferability to other contexts depends on similarity of institutional, technological, and socio-cultural conditions. Access to certain high-level decision-makers was constrained by administrative and security considerations, potentially under-representing some institutional perspectives despite efforts to diversify the sample. The study primarily captured viewpoints from public-sector actors; voices from the private sector, cultural startups, and civil society were comparatively underrepresented. Finally, given the rapid evolution of digital technologies and shifting cultural policies, some empirical details may date; however, the abstract, relational structure of the model affords considerable adaptability over time.

These limitations, while important, do not undermine the overall validity of the emergent theory within the Iranian context and instead point to productive directions for future inquiry.

5. Conclusions

This study set out to design a localized model for cultural data governance in Iran—not as a definitive blueprint, but as a situated theoretical construct emerging from the lived experiences of 22 cultural experts and policymakers. The resulting paradigmatic model, with its six categories and eighteen axial codes, confirms that cultural data governance in the Iranian context is irreducible to technical standardization or legal compliance alone. Rather, it operates as a nexus where institutional fragmentation, political-security sensitivities, identity claims, and technological imperatives constantly negotiate each other. What the model makes visible, however, is also what it conceals: the very act of modeling imposes a coherence that may not fully capture the contingent, often contradictory nature of decision-making in Iran's parallel cultural institutions. The apparent neatness of causal conditions, strategies, and consequences should not obscure the messy reality where legal gaps are sometimes deliberately maintained, and where fragmentation may serve political or bureaucratic interests rather than merely signalling underdevelopment.

The core insight that effective governance requires a holistic balance between technical efficiency and ethical safeguards is analytically sound but practically precarious. The model implicitly assumes that a centralized national framework (e.g., a Supreme Council or National Cultural Data Center) can resolve fragmentation; yet evidence from other policy domains in Iran suggests that centralization often reproduces rather than reduces silos when inter-institutional trust is low. Moreover, the foregrounding of "national sovereignty over strategic cultural data" — while contextually justified — raises unresolved tensions with the equally valid goal of empowering local communities as data producers. The CARE Principles (Carroll et al., 2020) and Indigenous data sovereignty frameworks (Walter et al., 2022) cited in this study were developed in contexts where community rights are asserted against state power; in Iran, the relationship between state cultural institutions and ethno-linguistic communities is configured differently. Thus, translating these principles into practice within Iran's centralized governance structure would require a degree of institutional reconfiguration that the model acknowledges but does not fully theorize.

Future research should move beyond validating the model's interrelationships quantitatively. A more generative direction would be to examine the conditions under which the model's strategies become self-defeating — for instance, when technical-infrastructural integration without accompanying institutional trust deepens resistance rather than cooperation. Comparative regional studies with Turkey or Saudi Arabia are valuable, but they should focus not only on similarities but on why different political regimes produce different configurations of cultural data governance. Finally, the integration of blockchain or AI is not a technical fix; future work must ask who these technologies empower, whose access they restrict, and whether they risk reifying existing power asymmetries within Iran's cultural sector. By framing the model as a heuristic rather than a prescription, this study invites iterative critique and adaptation — precisely because cultural data governance in Iran will remain a site of ongoing negotiation, not a problem to be solved once and for all.

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Conflicts of interest

The authors declare no conflict of interest.

Authors contribution statement

Nesari: Conceptualization; Nesari: Data curation; Nesari: Formal analysis; Nesari, Mathkour Al Abboudi: Investigation; Nesari, Mathkour Al Abboudi: Methodology; Nesari: Project administration; Nesari: Resources; Nesari: Software; Nesari: Supervision; Nesari, Mathkour Al Abboudi: Validation; Nesari: Visualization; Nesari: Roles/Writing – original draft; Nesari, Mathkour Al Abboudi: Writing – review & editing.

Data Availa Mathkour Al-Abboudi[2]bility Statement

The data supporting the findings of this study consist of anonymized interview transcripts, coding files, and researcher memos derived from in-depth semi-structured interviews with 22 participants. Due to ethical considerations, including participant confidentiality, informed consent restrictions, and institutional sensitivities regarding cultural and security-related information, the raw data are not publicly available. Anonymized excerpts and additional details may be provided by the corresponding author upon reasonable request, subject to approval and compliance with ethical guidelines.

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