Designing a Participatory Governance Policy Framework in Iran's Telecommunications Industry

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Abstract

This study aimed to develop a policy framework for participatory governance in Iran's telecommunications industry. The research was qualitative in nature, employing a case-study approach within the Iranian telecom sector. Participants included managers and experts from telecommunications companies, related firms, as well as academics specializing in public administration and policy-making. Using purposive sampling with a snowball approach, 14 participants were selected until theoretical saturation was reached. Data were collected through semi-structured interviews and analyzed using thematic analysis (including initial coding, sub-themes, and main themes). The credibility and reliability of the data were confirmed through various validation techniques. Analysis of the interviews initially yielded 350 codes during open coding, which, after merging duplicates, were reduced to 213 primary codes. These were ultimately organized into 23 sub-themes and six main themes. The findings indicate that implementing participatory governance in Iran's telecommunications industry requires simultaneous reforms across six key areas: participatory leadership and governance, strategic policy-making and planning, active stakeholder engagement and collaboration, managerial transparency and accountability, development of innovation and technological capacity, and alignment with institutional and market environments. Therefore, establishing participatory mechanisms, enhancing interdepartmental coordination, expanding technological and human resource capacities, and aligning policies with market needs are essential for improving the effectiveness of participatory governance policies in this sector.

Keywords: *Participatory governance, telecommunications industry, policy framework, stakeholder engagement, strategic planning*

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1. Introduction

In the twenty-first century, governance systems around the world have experienced profound transformation, driven by accelerating technological change, societal complexity, and the erosion of traditional bureaucratic hierarchies [1]. The inadequacy of command-and-control models has led scholars and practitioners to emphasize participatory, networked, and collaborative forms of policymaking [2, 3]. This paradigm shift—often described as the transition from "government" to "governance"—represents a movement from top-down direction toward horizontal coordination and shared responsibility across state, market, and civil society actors [4]. In such contexts, public legitimacy increasingly depends on inclusiveness, transparency, and the ability of governance institutions to involve diverse stakeholders in shaping policy outcomes [5].

The growing complexity of public problems—especially in technologically intensive sectors such as telecommunications—has further highlighted the limitations of hierarchical administration and the need for adaptive, participatory models [6]. These "wicked problems" are characterized by uncertain boundaries, incomplete information, and competing stakeholder values, requiring governments to adopt new strategies of collaboration, deliberation, and foresight [5, 7]. As a result, participatory

governance has emerged as a leading response to fragmented authority and public distrust, aligning with global efforts to enhance democratic engagement and policy legitimacy [2, 8].

Participatory governance is defined as a process of joint policymaking in which public institutions and non-state stakeholders engage in consensus-oriented dialogue to co-create decisions [2]. It involves interactive mechanisms that combine government authority with societal input, allowing multiple actors to negotiate interests and contribute expertise [9]. Within this paradigm, the government's role evolves from that of a controller to a facilitator of collective action [3]. Such collaboration requires trust, shared knowledge, and mutual accountability, forming the foundation for sustainable policy systems [10].

At the theoretical level, the integration of participatory governance within modern public administration reflects broader efforts to bridge the gap between efficiency and democracy [4]. According to the OECD, forward-looking policy systems must incorporate strategic foresight and inclusive decision-making to navigate global uncertainty [11]. Similarly, collaborative models enhance learning capacity by bringing together diverse perspectives to address multidimensional policy problems [12]. These perspectives also echo the call for adaptive governance frameworks capable of balancing managerial performance with participatory legitimacy [7].

International experience has demonstrated that participatory mechanisms are particularly effective in sectors characterized by rapid technological change, where policy outcomes depend on coordination among multiple actors [13]. In energy and infrastructure systems, stakeholder participation enhances policy compliance, mitigates risk, and improves accountability [13, 14]. Similar lessons apply to telecommunications, where technological convergence and digital transformation demand flexible governance arrangements integrating governmental, private, and civic inputs [15]. The industry's strategic importance for national development—encompassing economic competitiveness, social inclusion, and information sovereignty—renders it a crucial test case for participatory governance frameworks [16].

In Iran, the telecommunications sector illustrates both the opportunities and challenges of governance reform. Despite significant infrastructure expansion and rapid digitalization, policymaking remains predominantly centralized and hierarchical [15]. Decision-making processes are concentrated in a few governmental institutions, with limited stakeholder consultation, resulting in insufficient transparency, overlapping mandates, and weak coordination [16]. This institutional rigidity undermines innovation and restricts the responsiveness of governance to dynamic market conditions. Moreover, the absence of participatory mechanisms has reduced policy legitimacy, creating a gap between public expectations and state performance [17].

Research on Iran's public administration indicates that participatory governance could serve as a transformative mechanism to enhance accountability, coherence, and inclusiveness across strategic sectors [18]. Studies have identified key drivers influencing the future of participatory policymaking in the country, emphasizing the importance of foresight, stakeholder trust, and institutional reform [19]. Integrating these insights with international best practices suggests that combining participatory governance with scenario planning can enable Iranian policymakers to anticipate uncertainty, assess strategic alternatives, and build adaptive capacities [20, 21].

Scenario planning provides a structured method for exploring multiple plausible futures rather than predicting a single outcome [22]. It equips policymakers to analyze key drivers of change—technological, political, social, and environmental—and to develop robust strategies that remain viable under diverse conditions [11]. Originally developed in the corporate domain, this technique has been widely adopted in public administration to foster anticipatory learning and improve long-term decision-making [23]. When combined with participatory processes, scenario planning not only strengthens stakeholder engagement but also enhances the credibility and legitimacy of strategic choices [21].

Participatory scenario planning has been applied across sectors such as environmental management, climate adaptation, and urban development, where it fosters collective sense-making and knowledge co-production [20]. The approach promotes social learning by allowing participants to share experiences, align expectations, and co-design alternative policy trajectories [21]. Such multi-actor collaboration is particularly vital in telecommunications, where interdependencies between public agencies, private operators, and consumers shape policy effectiveness [24]. In Iran, adopting similar participatory foresight frameworks could improve coordination among ministries, regulatory authorities, and service providers, thus enhancing innovation and policy alignment with market needs [18].

Globally, participatory governance has also been linked with digital transformation and sustainable development

agendas [22]. The integration of artificial intelligence, big data analytics, and open government platforms allows stakeholders to access information, monitor policies, and contribute to decision processes in real time [1]. Digital technologies thereby reduce asymmetries of information and increase the transparency and efficiency of governance [13]. As Iran's telecommunications industry forms the backbone of its digital economy, embedding participatory mechanisms into digital governance architecture could accelerate institutional modernization and reinforce public trust [15].

However, achieving participatory governance in developing contexts requires addressing institutional, cultural, and managerial barriers [25]. In Iran, bureaucratic inertia, weak inter-organizational coordination, and limited stakeholder capacity have constrained participation [26]. Building collaborative governance therefore necessitates systemic reforms that enhance transparency, decentralize authority, and strengthen stakeholder competencies [17]. Comparative research shows that collaborative policymaking succeeds when governments move beyond consultation toward co-production of policies and services [2].

Moreover, sustainable governance depends on continuous feedback, learning, and accountability mechanisms [9]. The lack of reliable performance indicators and evaluation systems in Iran's public administration has often hindered policy adaptation [18]. International literature highlights that collaborative governance thrives where monitoring frameworks, conflict-resolution systems, and trust-building strategies are institutionalized [8, 14]. Therefore, embedding such mechanisms within Iran's telecommunications governance can help transform fragmented decision structures into integrated, evidence-based policy networks.

From a policy design perspective, the dual challenge for Iranian policymakers lies in enhancing both participation and foresight. Modern governance demands the ability to anticipate disruptive technological trends—such as 5G deployment, the Internet of Things, and artificial intelligence—while ensuring that policies remain socially legitimate and responsive [22]. Scenario-based participatory governance thus represents an innovative framework that links long-term strategic vision with inclusive policy processes [20]. This integrative model allows decision-makers to co-develop strategies under conditions of uncertainty, fostering adaptability and shared ownership among stakeholders [21].

Empirical studies reinforce this logic. In Iran's environmental sector, participatory governance models have demonstrated the effectiveness of citizen engagement in addressing sustainability challenges [24]. Similarly, foresight-based approaches have been used to identify the key uncertainties shaping governance futures [18]. These findings imply that cross-sectoral learning—transferring methods from environmental and water management to digital and telecommunications policy—can catalyze more inclusive governance. At the same time, international frameworks underscore the need for contextual adaptation, recognizing that participatory governance must be rooted in national political culture and institutional realities [27].

The theoretical literature further suggests that participatory policymaking strengthens both policy capacity and implementation quality [2, 6]. By mobilizing distributed knowledge, governments can mitigate policy failure arising from design mismatches and capacity gaps [7]. Institutionalized participation also supports social capital formation, enabling iterative problem-solving and collaborative innovation [8]. In this sense, participatory governance is not only a normative ideal but also a pragmatic strategy for improving efficiency, effectiveness, and resilience in complex policy environments [3].

Recent research in post-COVID public management has re-emphasized the importance of trust, cooperation, and resilience as pillars of governance reform [1]. The pandemic underscored the value of co-production and networked response mechanisms across sectors. Applying similar principles to telecommunications policy in Iran could strengthen the system's adaptability to global shocks, digital disruptions, and emerging social demands. Furthermore, the OECD advocates integrating strategic foresight into national planning systems to ensure that governments remain agile in confronting future uncertainties [11].

In light of these considerations, designing a participatory governance policy framework for Iran's telecommunications industry requires blending three interdependent dimensions: institutional reform, technological foresight, and stakeholder collaboration. Institutional reform provides the legal and organizational basis for participation; technological foresight ensures anticipatory capacity; and stakeholder collaboration enables inclusive implementation. Such integration promises to transform telecommunications governance from a closed, hierarchical system into a transparent, network-based regime capable of fostering innovation and accountability [18, 19].

Ultimately, participatory governance represents a pathway toward sustainable, future-oriented policymaking that aligns institutional capacity with societal expectations [13, 24]. By linking scenario-based foresight with collaborative mechanisms, Iran can strengthen policy legitimacy, foster innovation, and enhance resilience in its rapidly evolving telecommunications sector.

Accordingly, the present study aims to design a scenario-based participatory governance policy framework tailored to the structural, technological, and institutional realities of Iran's telecommunications industry.

2. Methodology

This study adopts a qualitative approach with a case-study design and relies on semi-structured interviews for data collection. Initially, an interview protocol was developed and, after validation by experts, interviews were conducted following predefined criteria in the protocol, including ethical considerations and adherence to interview questions. Some of the key interview questions included:

1. In your opinion, what are the most important drivers and trends that could shape the future of participatory governance in Iran's telecommunications industry? Please consider political, economic, social, and technological factors.
2. Based on your experience, what are the main challenges and obstacles to implementing participatory governance in the telecommunications sector, and how do they impact policy success?
3. How can digital technologies and smart platforms (e.g., open data, online participation tools, AI) facilitate or strengthen participatory governance processes?
4. What potential scenarios do you envision for the future of participatory governance in Iran's telecommunications industry? Please describe favorable, likely, and unfavorable scenarios.
5. Considering current and potential future conditions, what policies and strategies could ensure effective participatory governance in the telecommunications sector?
6. What should be the roles of government, operators, users, and other stakeholders in designing and implementing participatory policies, and what mechanisms would you propose to enable effective participation?

Participants included managers from telecommunications companies such as Hamrah Aval and Irancell, as well as faculty members holding at least a PhD in public administration or policy studies with a minimum of 10 years of professional experience. Purposive sampling, specifically the snowball technique, was employed, and theoretical saturation determined the endpoint of data collection. After 11 interviews, theoretical saturation was achieved, and a total of 14 interviews were conducted.

Data were collected through interviews and analyzed using Braun and Clarke's (2006) thematic analysis approach, with MAXQDA software employed for coding. Thematic analysis is a method for identifying, analyzing, and reporting patterns in qualitative data. It transforms scattered textual data into rich, detailed information and can be applied across most qualitative methods (Braun & Clarke, 2006).

To enhance the credibility and validity of the findings, data triangulation was applied. This approach emphasizes examining a phenomenon through multiple sources and methods, enabling cross-verification of information. Expert opinions and literature in public management were used to validate the extracted interview content. To minimize bias and improve accuracy in data collection and analysis, multiple researchers participated in the coding, analysis, and interpretation processes.

Additionally, Holsti's reliability coefficient was used to assess the consistency of coding, a recognized measure for evaluating agreement between coders and the stability of qualitative data. In this method, texts are coded in two stages. Holsti's formula for calculating the reliability of nominal data using the "percentage of observed agreement" is as follows:

$$PAO = 2M / (N1+N2)= 2 (213)/ (252+243)= 0.86$$

The formula above defines M as the number of coding instances agreed upon by both coders, while N_1 and N_2 represent the total number of codes assigned by the first and second coders, respectively. The PAO value ranges from 0 (no agreement) to 1 (complete agreement), and a value above 0.7 is considered acceptable. As observed, the Holsti reliability coefficient for the thematic analysis is 0.86, which exceeds 0.70, indicating that the reliability of the coding is confirmed.

Table 1. Research Participants

Interviewee	Gender	Education	Work Experience	Position
1	Male	PhD in Public Administration	22 years	Policy Manager, Ministry of Communications
2	Female	MSc in Telecommunications	15 years	Senior Technical Expert, Telecommunication Company of Iran
3	Male	PhD in Economics	18 years	University Faculty & Economic Advisor, Ministry of Communications
4	Female	MSc in IT Management	10 years	Digital Transformation Project Manager, Hamrah Aval
5	Male	PhD in Public Law	25 years	Legal Expert & Manager, Regulatory Authority (RACO)
6	Female	BSc in Electrical Engineering	12 years	Network Expert, Irancell
7	Male	PhD in Public Policy	20 years	Senior Researcher, Strategic Telecommunications Research Center
8	Female	MSc in Business Administration	14 years	Stakeholder Relations Manager, Telecommunication Infrastructure Company
9	Male	PhD in IT	17 years	Manager, Innovation & Digital Services Development Unit
10	Female	MSc in Communication Sciences	11 years	PR Specialist, Ministry of Communications
11	Male	BSc in Industrial Engineering	9 years	Process Analyst & Organizational Improvement
12	Female	PhD in Sociology	16 years	Researcher on Social Participation in Digital Governance
13	Male	PhD in Strategic Management	23 years	Planning Deputy, Regional Telecommunication Company
14	Female	MSc in Science & Technology Policy	10 years	Policy Analyst, Parliamentary Research Center

3. Findings and Results

The operational process of qualitative data analysis in this study involved open coding, categorization of codes, theme selection, and the construction of a thematic network. In this section, data were collected through semi-structured interviews and analyzed using thematic analysis.

In the open coding stage, 350 concepts were initially extracted. After removing duplicates, 213 core concepts remained, which were then categorized into 6 main themes and 23 sub-themes. It is important to note that the analysis was conducted iteratively, revisiting the data multiple times until theoretical saturation was achieved for both main and sub-themes. The following outlines the steps of thematic analysis, which is the technique employed in this research.

In the imitial coding phase, sections of interview transcripts were examined and initial codes were assigned based on the content.

Table 2. Initial Coding

Interview Excerpt	Extracted Code
“One of the main problems in telecommunications governance is that decisions are often made behind closed doors, and information regarding policies, plans, and budgets is not transparently shared with stakeholders. Transparent data and performance reports would increase accountability and public trust.”	Need for transparency in governance
“In recent years, stakeholder participation has mostly been formal. Achieving genuine participatory governance requires mechanisms that allow operators, private sector, universities, and even end-users to play an effective role in policy-making.”	Necessity of active stakeholder participation
“Various institutions operate in the telecommunications sector, but coordination among them is very weak. The Ministry of Communications, the regulator, operators, and research centers each pursue their own path. The lack of a coordination mechanism leads to duplication of efforts and resource waste.”	Need for inter-institutional coordination and collaboration
“Excessive concentration of decision-making at high management levels reduces the real participation of experts and technical staff. This concentration of power ultimately hinders creativity and the adoption of policies by the executive body.”	Risk of power concentration and limited participation
“For participatory governance to succeed, channels for stakeholder feedback must be established, especially after policies are implemented. Without this feedback, policymakers cannot assess policy effectiveness or identify necessary adjustments.”	Importance of establishing feedback channels
“Currently, each organization has its own vision, and there is no shared national goal in telecommunications governance. A unified vision would allow all institutions to move along a defined path.”	Need for shared vision and goals
“Mutual trust between government, operators, and users is weak. Many policies are formulated without stakeholder dialogue, and this distrust leads to resistance during implementation. Transparency, dialogue, and accountability are needed to rebuild trust.”	Necessity of trust-building in participatory governance

“Decision-making in telecommunications is often slow and opaque. Some plans remain in committees for months before approval. This delays responses to rapid technological needs.”	Problem in the decision-making process
“Implementation of policies often faces financial and human resource constraints. Many programs are well-designed but fail due to lack of execution resources.”	Challenge of resource allocation for policy implementation
“One key to success in participatory governance is empowering stakeholders. When the private sector or professional associations lack sufficient skills and knowledge, their participation remains superficial.”	Importance of stakeholder capacity-building
“We do not have clear indicators to measure policy success. Precise and measurable criteria are needed to determine which policies are successful and which are not.”	Need for success measurement criteria
“The telecommunications sector requires a long-term perspective. Short-term policies are often halted when management changes occur. Strategic and sustainable planning is necessary.”	Necessity of long-term planning
“The biggest barrier to participation in the country is the centralized, hierarchical organizational culture. Many managers still equate participation with a reduction in authority. Changing this mindset requires time and training.”	Cultural and organizational challenges
“Currently, accurate and up-to-date information on the industry, users, networks, and market is lacking. Without precise data, decisions are mostly intuitive or political rather than evidence-based.”	Need for accurate information systems
“The telecommunications industry is changing rapidly, and innovation must be central to policy-making. If governance structures cannot facilitate innovation, the country will fall behind in global competition.”	Importance of innovation in the telecommunications sector

In this stage, the initial codes or basic concepts were semantically grouped and named to form sub-themes, resulting in 23 sub-themes. Subsequently, sub-themes were further organized based on their conceptual similarity to form the main themes.

Table 3. Identification and Categorization of Sub-Themes and Main Themes

Main Themes	Sub-Themes	Core Concepts (Open Codes)
Participatory Governance and Leadership	Leadership and Power Concentration	Concentration of power in one institution, lack of strategic leadership, absence of participatory leadership, lack of effective leadership, managerial resistance to participation, managerial resistance to change
	Governance Structure Flexibility	Lack of a defined participatory structure, absence of flexible organizational structure
	Centralization and Fragmented Focus	Focus on control instead of participation, focus on minor problems, focus on minor rather than strategic issues
	Inter-Institutional and Cross-Sector Coordination	Weak inter-organizational coordination, lack of cross-sector collaboration, limited cooperation between government entities, lack of collaboration between companies, limited cross-sector interaction, lack of policy alignment
Policy-Making, Planning, and Performance Evaluation	Strategic Planning and Macro-Policy-Making	Lack of shared vision, absence of comprehensive plans, no integrated strategy, delays in program approvals, focus on short-term policies, exclusive focus on government policies, emphasis on short-term objectives, emphasis on short-term political goals
	Feedback, Monitoring, and Evaluation Systems	Lack of feedback mechanisms, weak feedback processes, absence of continuous feedback systems, lack of monitoring and evaluation systems, no performance evaluation mechanism
	Performance Assessment and Quality Standardization	Lack of performance evaluation criteria, absence of transparent performance metrics, absence of quality standards, lack of international standards, insufficient attention to international benchmarks
	Project Management and Policy Implementation	Weak project management, weak management of joint projects, poor technology project management, delays in policy implementation, slow decision execution
	Risk Management and Oversight of Participatory Projects	Weak risk management, weak management of participatory risks, inadequate supervision and control
Stakeholder Participation and Interaction	Stakeholder Engagement	Limited private sector participation, lack of mechanisms for private sector engagement, restricted stakeholder involvement, lack of active private sector engagement, limited end-user participation, insufficient civil society involvement, absence of user engagement mechanisms
	Organizational Communication and Networking	Weak information dissemination, limited stakeholder communication, lack of communication channels among stakeholders, poor engagement with end-users
	Cross-Sector and Institutional Collaboration	Weak collaboration between public and private sectors, poor coordination between policies and markets, lack of policy alignment
Transparency, Accountability, and Trust	Managerial Transparency and Accountability	Lack of transparency in managerial decisions, insufficient financial transparency, non-transparent contracts, absence of clear competition policies, opaque policy approval

		processes, lack of motivation for transparency, organizational resistance to transparency, insufficient managerial accountability
	Motivation, Trust, and Social Capital	Lack of stakeholder trust, low motivation among stakeholders, absence of reward systems, no performance-based reward mechanisms, absence of transparent incentives, lack of mechanisms promoting innovation
	Conflict of Interest and Dispute Resolution	Conflicting interests among institutions, absence of dispute resolution mechanisms, lack of clear conflict resolution methods
Innovation, Resources, and Capacity Development	Financial and Economic Resources	Limited financial resources, project budget constraints, restricted resources for innovation, weak financial management, focus on economic policies
	Training, Learning, and Empowerment	Weak training and capacity-building, lack of educational programs for stakeholders, insufficient staff skill development, absence of organizational learning culture, neglect of human capital development
	Innovation, Technology, and Digital Infrastructure	Lack of focus on innovation, insufficient attention to digital innovation, technological and infrastructure limitations, absence of IT infrastructure, limited access to new technologies, inadequate information security measures
	Experience, Benchmarking, and International Learning	Lack of successful analogous experiences, absence of successful participatory practices, limited cross-sector experience, few successful project examples, insufficient international learning
Institutional Environment and Market Alignment	Legal System and Governance Framework	Reliance on outdated laws, lack of clear legal framework for participation, legal constraints on innovation, legal limitations on cross-sector collaboration, restrictions on stakeholder participation
	Policy Alignment with Industry and Market Needs	Policies misaligned with market needs, weak alignment of policies with industry requirements, insufficient coordination between policies and market demands
	Organizational Culture and Resistance to Change	Resistance to change, cultural resistance to innovation, cultural barriers to structural changes
	Data, Information, and Analytical Capacity	Lack of up-to-date information, limited data analysis capacity, inability to analyze data, restricted access to data, limited access to information resources, restricted access to market information

The qualitative data analysis from the interviews revealed that the governance system in Iran's telecommunications industry faces a complex set of interwoven challenges in terms of participation, policy-making, and institutional structure. The main themes identified include "Participatory Governance and Leadership," "Policy-Making, Planning, and Evaluation," "Stakeholder Participation and Interaction," "Transparency, Accountability, and Trust," "Innovation, Resources, and Capacity Development," and "Institutional Environment and Market Alignment." Each of these themes represents a critical dimension of participatory governance, where weaknesses or gaps hinder effective engagement in decision-making and policy formulation.

Particularly within the "Participatory Governance and Leadership" dimension, power concentration in specific institutions, managerial resistance to change, and the absence of effective participatory leadership emerged as key barriers to the development of networked and interactive governance in the industry.

Similar patterns of structural and cultural weaknesses were observed across other themes. Sub-themes such as "lack of feedback and performance evaluation systems," "insufficient communication mechanisms among stakeholders," and "absence of transparent performance metrics" indicate that the policy-making system lacks a continuous learning and improvement cycle. Additionally, limited financial resources, weak training and capacity-building, and insufficient attention to digital innovation were identified as obstacles to enhancing participatory capacity. From an institutional perspective, outdated laws and misalignment of policies with market needs hinder synergies between the private and public sectors.

Overall, the results suggest that transitioning to participatory governance in the telecommunications industry requires simultaneous reforms in power structures, legal frameworks, organizational culture, and performance evaluation mechanisms to foster trust, transparency, and genuine stakeholder engagement.

Based on these research findings, the present study's model is illustrated in Figure 1.

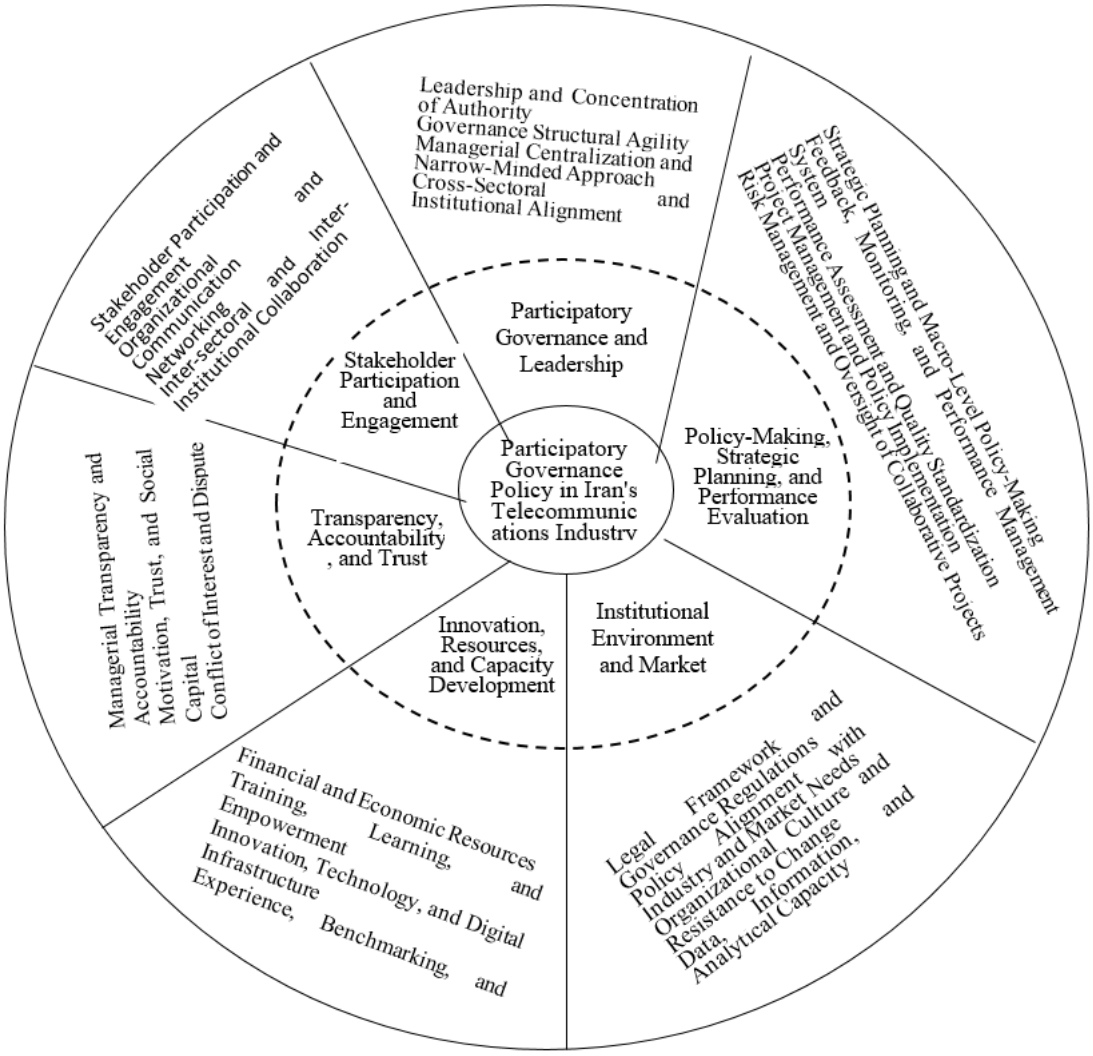

Figure 1. Policy Model of Participatory Governance in Iran's Telecommunications Industry

4. Discussion and Conclusion

The findings of this study reveal that the implementation of participatory governance in Iran's telecommunications industry is hindered by multiple, interrelated structural, managerial, and cultural barriers. One of the core findings concerns the high degree of power centralization within a limited number of institutions, which constrains participatory leadership and limits networked collaboration among stakeholders. This result echoes global findings on governance rigidity in hierarchical administrative systems, where centralized authority reduces agility and innovation [4, 7]. Such concentration of decision-making power reinforces a top-down management culture that undermines the inclusivity and trust necessary for effective participatory governance [18, 20]. In the Iranian context, these tendencies reflect deeply institutionalized patterns of bureaucratic control that weaken both horizontal and vertical coordination mechanisms among regulatory bodies, private operators, and civic actors [15, 16].

The study further found that managerial resistance to participatory leadership limits opportunities for innovation and inter-sectoral learning. The lack of leadership models that emphasize collaboration, transparency, and distributed decision-making aligns with previous research suggesting that participatory leadership is a prerequisite for sustainable governance transformation [2, 3]. Similarly, evidence from collaborative policymaking research indicates that participatory leaders act as meta-governors—balancing control with autonomy—while ensuring that deliberative processes are institutionally embedded [8, 21]. This supports the idea that leadership in participatory systems should not merely delegate authority but should cultivate an environment of mutual trust and shared vision [5]. In the telecommunications industry, where technological

complexity and regulatory interdependence are pronounced, such leadership deficits prevent effective network management and weaken stakeholder motivation [12, 25].

Another major finding highlights the absence of structured feedback mechanisms and performance evaluation systems. Respondents emphasized that decisions are often made without clear indicators of success or institutionalized learning cycles. This corroborates Howlett and Ramesh's typology of "design mismatches" in governance, where inadequate feedback and weak policy capacity reduce system adaptability [6, 7]. Without effective monitoring, organizations tend to prioritize short-term political objectives rather than long-term strategic development. Similar outcomes have been observed in OECD member countries, where the lack of foresight and evidence-based policy evaluation often undermines reform implementation [11]. In Iran's case, the problem is compounded by insufficient integration of data analytics and the absence of open-access performance reports [17, 19]. Establishing continuous feedback loops could not only enhance accountability but also help generate learning-based governance, consistent with participatory and adaptive policy approaches [2, 10].

Furthermore, the findings demonstrate that stakeholder participation—particularly that of the private sector, academia, and end users—remains superficial and fragmented. The results indicate that stakeholders often participate symbolically, rather than substantively, in decision-making processes. This phenomenon parallels earlier work emphasizing the distinction between procedural participation (consultation) and substantive participation (co-decision) [9, 13]. Studies of participatory scenario planning suggest that active involvement of diverse stakeholders promotes system thinking, enhances trust, and strengthens collaborative learning [21]. By contrast, tokenistic participation can reinforce cynicism and reduce legitimacy. Research from water governance in Iran supports this view, showing that real participation requires institutional mechanisms and incentives that enable both direct and indirect stakeholder contributions [24, 26]. Likewise, Nilchi's foresight-based study demonstrates that the transition toward participatory governance depends on institutional capacity-building and the internalization of participatory culture within bureaucratic systems [18].

A related outcome concerns the deficiency in communication networks and cross-sector coordination among regulatory institutions, telecom operators, and knowledge-based firms. This structural fragmentation reduces synergy, causing policy duplication and resource waste—issues consistent with findings from comparative public administration research in Europe [4]. Warsen and colleagues have shown that successful public–private partnerships rely on trust, coordination, and performance-oriented collaboration, attributes that remain underdeveloped in Iran's telecommunication governance [14]. Similarly, studies by Lahat and Sher-Hadar found that the durability of collaborative governance depends on institutional flexibility and managerial willingness to adapt, which are notably weak in highly centralized environments [25]. Thus, the lack of inter-organizational communication observed in this study can be understood as a key constraint that limits policy coherence, participatory foresight, and long-term planning.

Transparency, accountability, and trust also emerged as critical yet fragile elements in the industry's governance ecosystem. Respondents reported that opaque decision-making, absence of clear accountability frameworks, and limited access to policy data have generated distrust between the government, private firms, and the public. This finding supports the argument that legitimacy is an evolving construct that depends on transparency throughout the policy cycle [28]. Collaborative governance research likewise emphasizes that mutual trust and shared responsibility are essential for sustaining networked governance [2, 8]. Empirical evidence from environmental and infrastructure sectors confirms that transparency mechanisms, such as open data systems and public reporting, directly influence stakeholder confidence and participation levels [22, 23]. Thus, enhancing transparency and establishing reliable accountability mechanisms are necessary steps toward institutionalizing participatory governance in Iran's telecommunications industry.

The findings also underline the critical role of innovation, digital infrastructure, and capacity development in promoting participatory governance. Respondents identified inadequate technological resources, weak training systems, and insufficient financial support as barriers to sustainable reform. This aligns with the broader literature emphasizing that technological capacity and knowledge infrastructures are fundamental enablers of collaborative governance, especially in data-intensive sectors like telecommunications [1, 22]. Moreover, as the OECD highlights, foresight-driven innovation enables governments to anticipate disruptions and design adaptable governance systems [11]. Similar conclusions were reached by Hosseinpour, whose study on urban scenario planning in Urmia demonstrated that

participatory foresight strengthens adaptive policymaking [20]. The present research confirms that participatory governance cannot thrive without digital empowerment, stakeholder training, and institutional learning frameworks [17].

Another dimension identified is the misalignment between institutional structures and market realities. Policies are frequently disconnected from the evolving needs of the telecommunication market, resulting in inefficiencies and limited responsiveness to technological change. This resonates with findings by Rahmani, who noted that the governance of Iran's ICT sector is dominated by rigid bureaucratic systems that impede innovation [15]. Comparative studies in post-COVID governance also reveal the necessity of revisiting administrative models to balance accountability with flexibility [1]. Similarly, research on distributed governance indicates that aligning policy objectives with market incentives enhances effectiveness and long-term sustainability [13]. Therefore, Iran's telecommunication governance can benefit from adopting adaptive and demand-responsive frameworks that integrate private sector insights and global best practices [2, 3].

An additional interpretive layer arises from the cultural and behavioral challenges identified in the study. Participants emphasized that many managers equate participation with a loss of authority and perceive stakeholder involvement as a threat to institutional control. This finding is consistent with sociological studies of organizational resistance, which highlight that cultural inertia often undermines formal governance reforms [10]. Asadollahi and colleagues also observed similar resistance in environmental governance, where hierarchical structures resisted participatory mechanisms until sustained dialogue and institutional adaptation occurred [24]. Therefore, transforming governance culture toward openness, dialogue, and collaborative learning requires sustained investment in human capital and continuous reinforcement of participatory norms [18, 19].

From a broader theoretical perspective, the study's findings reaffirm that participatory governance functions most effectively when it is integrated with scenario-based and foresight-driven policy design. This integration enables decision-makers to anticipate uncertainties and engage multiple stakeholders in envisioning alternative futures [20, 21]. According to the collaborative governance model, multi-actor participation promotes co-production of knowledge, joint problem framing, and collective ownership of outcomes [2, 8]. In the Iranian telecommunication sector, where rapid technological change intersects with institutional inertia, foresight methods such as scenario planning can enhance resilience and legitimacy [11, 22]. Thus, the results of this study provide empirical support for the theoretical claim that participatory governance and foresight are mutually reinforcing components of adaptive public management [5, 6].

In synthesis, this research illustrates that Iran's telecommunication governance remains characterized by hierarchical control, weak institutional learning, and low trust. Nevertheless, the study identifies clear pathways for improvement: decentralizing leadership structures, integrating feedback systems, strengthening cross-sectoral coordination, and embedding foresight-based scenario planning within policymaking. These reforms correspond closely with the prescriptions of collaborative governance theory and contemporary models of public administration reform [2-4]. The convergence of empirical evidence and theoretical insight reinforces the conclusion that participatory governance, when supported by transparent leadership, technological innovation, and stakeholder empowerment, can significantly enhance policy efficiency and democratic legitimacy in Iran's telecommunications industry.

This study is qualitative and context-specific, relying on semi-structured interviews with a relatively small number of experts from the telecommunications sector. Although theoretical saturation was achieved, the findings may not fully represent the diversity of opinions across all relevant institutions and private entities. The focus on the Iranian telecommunications industry limits the generalizability of the results to other sectors or countries with different governance contexts. Additionally, the interpretation of interview data may be influenced by researcher bias, despite efforts to ensure coding reliability and triangulation. Another limitation is that the study concentrated primarily on institutional and managerial factors, while external influences such as political dynamics, international sanctions, and global market shifts were not extensively analyzed.

Future research should employ mixed-method designs combining qualitative and quantitative approaches to validate the thematic dimensions identified here. Comparative studies across sectors—such as energy, transportation, or environmental management—could elucidate whether similar governance barriers exist in other domains. Longitudinal analyses using policy-tracking or big-data methods would provide insight into how

participatory governance evolves over time in response to digital transformation. Moreover, investigating citizen-level perceptions of transparency and accountability could enrich the understanding of trust dynamics. Integrating simulation and system-dynamics models with participatory foresight could also help policymakers explore potential policy scenarios in complex adaptive systems.

To strengthen participatory governance in Iran's telecommunications industry, policymakers should decentralize authority, create multi-stakeholder councils, and formalize channels for continuous feedback. Training programs focused on participatory leadership and collaborative decision-making are essential for changing organizational culture. Institutions should invest in digital platforms that enable open data sharing and interactive policymaking. Encouraging cross-sectoral partnerships among government agencies, private firms, and universities will enhance innovation and adaptability. Finally, embedding foresight methods such as scenario planning into national policy cycles will help anticipate future challenges and sustain transparent, accountable, and inclusive governance structures.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

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