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Management and Leadership Challenges in the AI Age: An Empirical Study of AI Governance and Control in Somalia's Telecommunications Industry

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Abstract
This research paper examines how modern management and leadership practices are changing in the age of Artificial Intelligence (AI). It specifically focuses on AI control, governance, and institutional readiness in Somalia's telecommunications sector. AI serves as a tool that can address many challenges and reshape leadership and management practices through AI strategies, which enhance focus and discipline in telecom operations. The study uses a descriptive design to explore AI's role in the growth of Somalia's telecom industry. It employs a mixed-methods research design, combining qualitative and quantitative data from operating telecom companies. Insights were also gathered from ICT engineers and senior managers at two of Somalia's leading telecom firms. The main goal is to develop and monitor leadership skills that promote AI-driven decision-making within Somalia's telecommunications sector. Findings indicate that AI control strategies are crucial for the growth and sustainability of telecom industries (Batool et al., 2025). Four dimensions (objectives) were used to explore this argument, looking at telecom activities in relation to the ability to implement and control AI while fostering sector growth. The paper concludes that reforming leadership and management in the AI age requires significant changes in managerial strategies aligned with governance frameworks (Birkstedt et al., 2023). It examines how AI can control and support governance in Somalia's telecommunications sector.

Keywords: AI Control, Leadership Challenges, Telecom Industries, Somalia

1. Introduction

Artificial Intelligence (AI) is quickly becoming a tool for innovation and new ideas, shaping our digital world. In telecommunications, it helps manage aspects such as network integrity, capacity, and infrastructure. However, Somalia's telecom industry is still developing and expanding through improved connectivity. Leadership philosophies have shifted from unique and interactive models to transactional and transformational approaches, yet the management framework has changed significantly (Northouse, 2021; Yukl, 2013). In the twenty-first century, leaders organize not only human teams but also socio-technical systems where smart technologies play active roles in decision-making (Avolio, Sosik, & Kahai, 2020; Li et al., 2022).

Globally, AI has changed how organizations operate and make strategic decisions (Batool et al., 2025). In Somalia, the telecom sector is crucial for digital connectivity and mobile money systems, but it still faces governance challenges. In developing nations like

Somalia, the telecommunications industry has become a key testing ground for AI due to its role in digital connectivity and economic growth. As telecom companies adopt AI for customer service, fraud detection, and network optimization, they encounter new governance and leadership challenges, especially in environments with evolving regulations and limited oversight. Somalia's early legal frameworks related to AI, including the Data Protection Act (2023) and the National Communication Law (2025), provide a basic but incomplete governance structure (Federal Government of Somalia, 2023, 2025), underscoring the need for more thorough examination of AI management in this sector.

Recent research emphasizes the need for structured AI governance frameworks to ensure accountability, transparency, and ethical oversight. Reviews show that AI governance remains uneven, with varying definitions and inconsistent implementations in different industries (Batool et al., 2025). Scholars also note significant knowledge gaps in applying ethical principles within organizations, particularly in emerging markets with developing capacities (Birkstedt et al., 2023). This study aims to address these gaps by examining how telecom companies in Somalia understand and apply AI governance principles in their leadership and management practices. To explore these issues, the author employed a mixed-methods case study approach, conducting semi-structured interviews, analyzed documents, and observed practices within major Somali telecom operators.

This method aligns with recommendations from AI governance research, advocating for empirical, context-specific studies to understand governance processes (Birkstedt et al., 2023). Key technical terms like AI governance, defined as the system of rules, practices, and processes ensuring AI aligns with organizational strategies and legal obligations, as well as algorithmic control, were clarified to maintain consistency throughout the study.

The findings reveal that while Somali telecom companies are keen to adopt AI technologies, their governance practices are mainly informal and reactive. This trend mirrors a global pattern in which many organizations lack adequate safeguards, transparency mechanisms, or responsible AI frameworks to manage emerging risks effectively (Altman Solon, 2024). Leadership teams in Somalia often face challenges related to AI ethics, risk management, and data protection, resulting in fragmented oversight and inconsistent governance standards. However, companies are becoming more willing to establish internal guidelines and invest in training, indicating an increased awareness of AI's strategic significance. The study also highlights a tension between the rapid pace of technological change and slower institutional advancement.

Managers reported challenges in balancing competitive pressures with the need for ethical protections, particularly regarding customer data privacy and the transparency of automated decisions. These issues are compounded by the absence of a national AI strategy, despite the emergence of institutions like the Somalia National AI Center (SNAIC), which seeks to promote responsible AI development and enhance capacity in various sectors. This institutional gap compels telecom firms to rely on internal controls that can significantly differ in their effectiveness. In summary, the study shows that effective AI governance in Somalia's telecommunications sector presents both management and leadership challenges.

It demands strategic vision, technical expertise, and regulatory support. Strengthening governance structures will not only minimize risks but will also foster organizational trust, dependability, and long-term competitiveness. By highlighting current governance practices and identifying major gaps, this research contributes to the global discussion on AI governance. It also offers context-specific insights crucial for policymakers, industry leaders, and academics aiming to encourage responsible AI use in Somalia and similar emerging markets.

2. Literature Review

Somalia's telecom sector is lively and changing, driven by private innovation, the widespread use of mobile money, and a quick shift towards digital services. These factors create a good chance for implementing AI, but they also bring about governance challenges. While regulations like the Data Protection Act (2023) and the National Communication Law (2025) provide some guidelines, they don't establish a complete national AI strategy. Consequently, companies often have to navigate compliance and ethical issues mostly on their own. In Somalia, there are emerging national initiatives aimed at building capacity, but the readiness of leadership within firms varies widely. Thus, internal governance practices are the primary protection for organizations in the short term. These initiatives seem promising, but they are still in the early phases. Their effectiveness in shaping industry practices will depend on ongoing funding, collaboration between public and private sectors, and the ability to transform high-level guidance into enforceable standards. Reviews of digital governance in Somalia show that the telecommunications industry is dynamic, boasting high mobile penetration and a strong mobile-money ecosystem. As a result, telecom operators quickly adopt AI tools for tasks like fraud detection, network optimization, and automating customer service, all while handling sensitive personal data. This scenario raises important privacy and security concerns, especially given the limited enforcement capacity in the region.

2.1 Overview of AI Governance Concepts in the Telecom Sector in Somalia

AI governance is becoming crucial as organizations increasingly rely on automated systems for decision-making. A review by Batool et al. (2025) notes that these frameworks aim to ensure fairness, accountability, transparency, and inclusivity throughout the AI lifecycle, addressing risks like algorithmic bias, data misuse, and unclear decision processes. They typically function at various levels, including team, organizational, industry, national, and international levels, showing how challenging it is to govern AI in diverse settings. Understanding this is essential for examining governance issues in Somalia's telecommunications sector.

2.2 Leadership Challenges in AI-Driven Organizations

Leadership plays a vital role in how AI is used and governed in organizations. Santiago-Torner et al. (2026) argue that to lead effectively in AI-heavy areas, one needs not only digital skills but also the ability to interpret algorithmic results and align them with the organization's strategy. Their AI-Leadership Configurational Framework (ALCF) suggests that leadership success depends on the alignment of AI integration depth, governance mechanisms, and human oversight. This is especially crucial for telecom companies in Somalia, where leadership capabilities vary significantly.

2.3 Global AI Governance Challenges

AI governance faces ongoing challenges across sectors, such as fragmented frameworks, unclear accountability, and inconsistent implementation. Batool et al. (2025) highlight that stakeholders often struggle to identify suitable governance models due to the multitude of overlapping frameworks and the absence of standard guidelines. These global issues mirror those in Somalia, where regulatory systems are still developing, leaving organizations to manage governance gaps independently.

2.4 AI Governance in Fragile and Emerging EAC Markets

Research on digital governance in fragile states indicates that localized and context-specific governance strategies are essential. Hashi (2025) reveals that Somalia's public sector requires

hybrid governance frameworks that combine systematic mapping with participatory assessment to build legitimacy and trust in governance systems. Although this primarily focuses on public institutions, it underscores the need for telecom operators to adopt governance models that suit Somalia's socio-political context.

2.5 Digital Transformation in Somalia's Telecommunications Sector

Somalia's telecom industry stands out as one of the most advanced in East Africa, driven by private innovation and broad use of mobile money. However, the rapid pace of digital transformation has outstripped regulatory growth, leading to governance challenges similar to those seen in broader digital governance research. Hashi (2025) notes that in Somalia, digital solutions often develop faster than institutional oversight can keep pace, creating gaps in accountability and transparency. This situation directly affects how AI is adopted in telecom firms.

2.6 Ethical and Responsible AI Considerations for Telecom Providers in Somalia

Responsible AI prioritizes fairness, transparency, and accountability. Research by CSIRO (2024) shows over 3,000 recorded AI incidents globally, highlighting the dangers of poorly managed AI systems, such as discrimination, privacy violations, and security issues. For Somalia's telecom sector, where protecting customer data is crucial, these ethical considerations are particularly urgent.

2.7 Organizational Governance Structures in AI Adoption in the Horn of Africa

Establishing AI governance within a company requires clear rules, control mechanisms, and collaboration across functions. Batool et al. (2025) categorize governance artifacts into team-level, organizational-level, and industry-level structures and stress that organizations must integrate governance into the entire AI development lifecycle. However, telecom companies in Somalia tend to rely on informal governance methods due to the minimal regulatory framework guiding them.

2.8 Leadership Role and Institutional Preparedness in Somalia's Telecom Sector

The issue of leadership capability in Somalia's telecom sector runs throughout the literature on AI governance. Santiago-Torner et al. (2026) state that leaders must be somewhat technically literate while providing strategic oversight to manage AI effectively. Leadership capacity directly influences the ability to implement structured AI governance in Somalia's telecom firms. According to Hashi (2025), institutional readiness is one area that needs more development to ensure sustainable digital governance in fragile states.

2.9 Overview and Recommendations for the Telecom Sector in Somalia

Collectively, the studies suggest that a solid AI governance system requires a well-planned framework, capable leaders, and strategies that suit local conditions. The telecommunications sector in Somalia faces not only a lack of regulatory frameworks but also limited institutional capacities and a rapidly changing technology landscape. The combination of international studies on AI governance, leadership development, and Somalia's local literature on digital governance indicates that the telecom sector would benefit from formalizing governance functions, enhancing leadership skills, and developing policies at a national level for responsible AI use.

3. Data and Methods

This study uses a mixed-methods case study design to examine the management and leadership challenges that AI brings to Somalia's telecommunications sector. It combines qualitative

methods, such as semi-structured interviews, document analysis, and participant observation, with targeted quantitative data collection from company records and industry reports to support the findings. This mixed approach aims to capture specific leadership practices that affect AI governance, along with measurable factors like training hours, incident counts, and compliance metrics that indicate how prepared organizations are. The case study focuses on a specific timeframe from 2023 to 2025, the mobile network operators and major service providers sector, and key commercial centers in Somalia. The research seeks to answer four main questions:

i. How do Somali telecom companies define and implement AI governance and algorithmic control within their organizations?
ii. What leadership structures and skills exist to manage AI deployment?
iii. What institutional, regulatory, and resource challenges most impact governance outcomes?
iv. What practical governance tools and capacity-building initiatives have companies adopted or plan to adopt?

These questions guided the design of research tools and sampling methods. They ensured that data collection focused on governance tools such as policies, committees, and audit logs, as well as leadership roles like CIO, CTO, and data protection officers. The data collection also targeted specific results, including privacy incidents, model rollouts, and customer complaints. The sampling and case selection used purposeful and criterion-based reasoning. Two major mobile network operators with large value-added service providers (Hormuud & Somnet) were selected as primary cases. They were chosen for their market presence, documented use of AI systems such as automated customer support, fraud detection, and network optimization, and their willingness to participate. In each company, I deliberately selected respondents from various levels, including senior leaders like CEOs and CTOs, mid-level managers in areas such as product, operations, and compliance, as well as technical staff like data scientists and network engineers. Overall, I conducted 28 in-depth interviews for my qualitative analysis. For the quantitative aspect, I requested anonymized operational metrics from the participating firms when available, such as the number of automated decisions made monthly, incident response times, and hours spent on staff training.

Data collection methods included semi-structured interviews, document reviews, and some direct observations. The interview questions covered topics such as governance definitions, decision-making processes, risk assessment practices, and leadership development activities. Each interview lasted between 45 and 90 minutes and was recorded with the participants' consent. I also reviewed internal policies, model documentation, audit logs, training materials, and relevant regulatory filings during my document analysis. I made observations during site visits and virtual walkthroughs, focusing on governance meetings, model deployment reviews, and incident response drills. I used the quantitative data descriptively to provide context for my qualitative findings, such as linking training hours to reported confidence in AI oversight. For data analysis, I applied thematic coding to the qualitative data and descriptive statistics to the quantitative data. I coded the interview transcripts and documents iteratively, using a pre-established codebook based on AI governance literature. This included themes such as accountability, transparency, human-in-the-loop, and auditability, along with new codes that emerged during open coding. I used cross-case synthesis techniques to compare governance artifacts and leadership practices across different firms, identifying patterns, differences, and contextual factors. I summarized the quantitative metrics in tables and simple visualizations to show variations in capacity, such as the proportion of trained staff and the frequency of audits, and to support the claims made during interviews.

The study used various methods to ensure validity. By triangulating data from different sources, it reduced bias from dependence on a single source. Member checking confirmed interpretations with key informants, and I maintained an audit trail to record coding decisions and analytical notes. Ethical considerations were crucial, including anonymizing respondent identifiers, using encrypted storage for data security, and obtaining institutional review board (IRB) approval or equivalent ethical clearance when necessary. Given the sensitive circumstances surrounding governance practices and security issues in Somalia, maintaining confidentiality was a primary concern. The methodologies acknowledged certain constraints. Accessibility challenges limited the number of companies involved and the depth of quantitative data collected; some operational metrics were proprietary and could only be accessed in aggregated or redacted forms. The purposive sampling strategy prioritized depth over generalizability, suggesting that the findings are intended to be useful for similar firms in fragile or emerging markets rather than statistically representative of all telecommunications operators.

Despite these limitations, the methods fit well with the study's goals: they provide a detailed understanding of how leadership and management practices affect AI governance within Somalia's telecommunications sector, giving practical insights for policymakers and industry stakeholders. The mixed-methods design results in both actionable recommendations, such as focusing on governance artifacts and developing leadership training programs, as well as a conceptual contribution that illustrates how governance artifacts interact with leadership capacity in a fragile-state telecom environment.

4. Results and Discussion

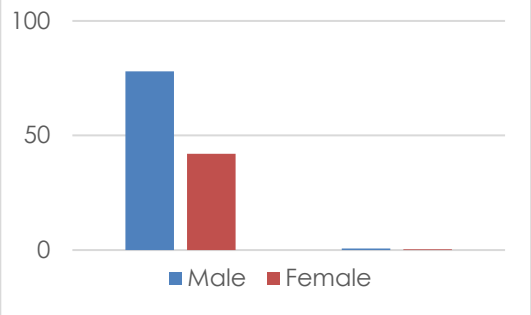
This study investigated the management and leadership obstacles associated with the governance and control of Artificial Intelligence (AI) within the telecommunications industry in Somalia. As the researcher, I collected information from staff, supervisors, IT professionals, and managers at prominent Somali telecom firms, such as Hormuud and Somnet. The findings indicate that AI technologies are being increasingly adopted in fields like customer relationship management, mobile payment services, cybersecurity monitoring, fraud prevention, and network optimization. Nonetheless, despite these advancements, organizations continue to encounter substantial leadership and governance challenges concerning data privacy, policy execution, limited digital skills, ethical dilemmas, and resistance to organizational change.

Furthermore, the results emphasize that the lack of comprehensive national AI regulations in Somalia leads to uncertainty in operational governance and accountability within the telecommunications sector.

Table 4.1: Demographic Data

Variable	Category	Frequency	Percentage
Gender	Male	78	65%
	Female	42	35%
Total		120	100%

Figure 4.1: Graphic Demographic

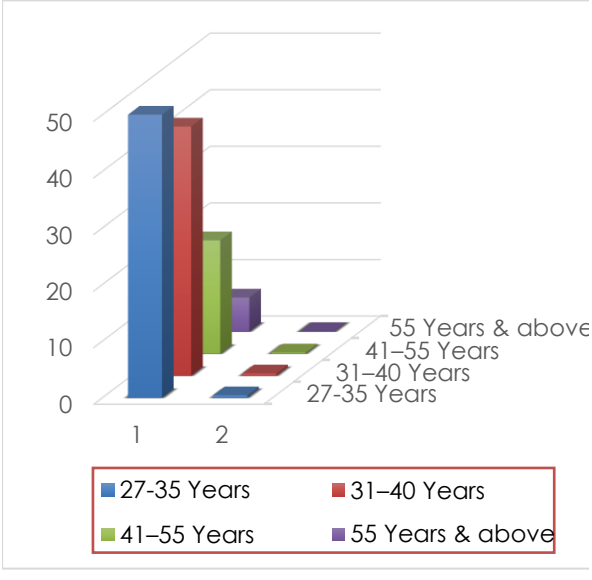


The demographic results show that male participants made up the majority of workers in Somalia's telecommunications industry. This is indicative of the overall employment trends in Somalia, where men are more prevalent in technical and managerial roles, especially within ICT sectors. Nonetheless, the rising involvement of women in telecom activities signals a gradual shift towards greater inclusivity and digital empowerment in the workforce. Female participants were mainly engaged in customer service, administration, and digital finance areas, while men were predominantly found in technical and infrastructure management positions. The results imply that having diverse leadership is crucial for fostering innovation, ethical governance, and well-rounded decision-making in the application of AI within telecom companies.

Table 4.2: Age Distribution of Respondents

Age Group	Frequency	Percentage
27-35 Years	50	42%
31-40 Years	44	37%
41-55 Years	20	17%
55 Years & above	6	5%
Total	120	100%

Figure 4.2: Age Distribution

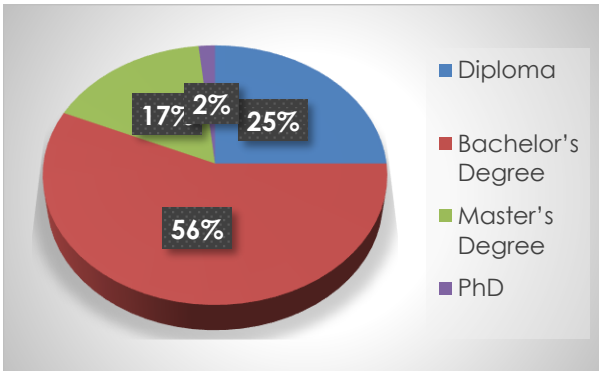


The age distribution results reveal that the telecon
composed of young and middle-aged professio
formed the largest proportion of respondents, ir
economically active and technologically ac
demonstrated greater familiarity with AI system
innovation tools compared to older workers. Ho
managerial experience and strategic understandin
difference created leadership tensions regarding
transformation. The findings suggest that telecom
programs to bridge generational gaps in AI literacy and technological adaptation.

Table 4.3: Educational Level of the Respondents

Education Level	Frequency	Percent-age
Diploma	30	25%
Bachelor's Degree	68	57%
Master's Degree	20	17%
PhD	2	2%
Total	**120**	**100%**

Figure 4.3: Educational Representation

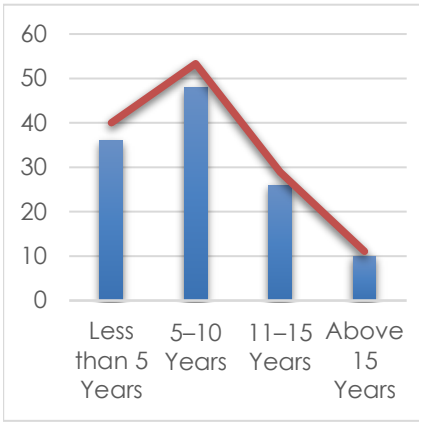


The educational outcomes reveal that a majority of respondents held undergraduate degrees, especially in fields such as information technology, business administration, telecommunications engineering, and computer science. The results suggest that Somalia's telecommunications sector has cultivated a relatively knowledgeable workforce that can facilitate digital transformation efforts. However, the research uncovered a deficiency of specialized AI professionals, cybersecurity analysts, and data governance specialists within telecom firms. Managers indicated that the scarcity of local training programs in advanced AI technologies compels companies to rely on foreign expertise and external software providers.

Table 4.4: Experience of the Respondents

Years of Experi-ence	Frequency	Percent-age
Less than 5 Years	36	30%
5-10 Years	48	40%
11-15 Years	26	22%
Above 15 Years	10	8%
Total	**120**	**100%**

Figure 4.4: Graphical Expression



The findings related to work experience indicate that the largest group of respondents (40%) possessed between five and ten years of professional experience within the telecommunications sector. Employees with substantial experience exhibited a heightened awareness of the challenges in organizational leadership that are linked to AI integration, such as system reliability, cybersecurity threats, employee resistance, and ethical dilemmas associated with automated decision-making. Numerous senior managers contended that although AI enhances efficiency and service delivery, it simultaneously brings about uncertainties concerning accountability and workforce restructuring. Conversely, employees with limited experience tended to be more supportive of AI adoption, likely due to their comfort with digital technologies and innovation-oriented work environments.

These insights underscore the necessity of balancing technological progress with effective change management strategies in Somalia's telecommunications organizations. Furthermore, the study revealed that AI governance within Somalia's telecommunications industry is still in its infancy, hindered by weak institutional frameworks and a lack of comprehensive digital policies. Most telecom companies did not have formal AI governance committees, ethical oversight mechanisms, or standardized cybersecurity regulations. Managers voiced concerns about the escalating risks of customer data breaches, cyberattacks, and the misuse of AI-driven financial technologies, such as mobile money platforms. The lack of clear governmental regulations regarding AI deployment generates uncertainty in organizational accountability and operational compliance. As a result, telecom leaders frequently depend on internal policies that differ significantly among companies. This variability undermines sector-wide coordination and restricts the effectiveness of AI governance systems in Somalia.

Another significant discovery of the research indicated that the style of leadership had a considerable impact on employee perceptions regarding AI adoption and organizational change. Telecom companies that employed participatory and transformational leadership styles reported enhanced employee motivation, better collaboration, and increased acceptance of AI technologies. Leaders who engaged employees in the decision-making process were able to diminish organizational resistance and bolster trust during technological shifts. Conversely, authoritarian leadership styles fostered fear, uncertainty, and adverse views towards AI implementation. Employees highlighted the importance of effective communication, transparency, and ongoing training as critical components for successful AI governance. These results imply that adaptive leadership frameworks are essential for navigating technological disruptions in Somalia's swiftly changing telecommunications landscape. Without substantial investment in digital infrastructure and the enhancement of institutional capacities, efforts to govern AI within Somalia's telecommunications sector may persist in encountering operational inefficiencies and challenges in implementation. Ultimately, the findings indicate that effective management and leadership are essential factors for successful AI governance in Somalia's telecommunications industry. Telecom companies that have invested in employee training, ethical AI policies, cybersecurity measures, and collaborative leadership frameworks have shown greater organizational resilience and improved operational performance. The study suggests that Somali telecom companies should create formal AI governance structures, enhance regulatory compliance systems, and encourage ongoing professional development programs related to AI technologies. Furthermore, government entities ought to work in partnership with private telecom operators to formulate national AI regulations that foster innovation while safeguarding consumer rights and data privacy. By means of strategic leadership, institutional reform, and investment in technology, Somalia's telecommunications sector can adeptly navigate the opportunities and challenges presented by the AI era.

5. Conclusion and Recommendations

The study concludes that Artificial Intelligence (AI) is transforming Somalia’s telecommunications industry by improving operational efficiency, customer service delivery, fraud detection, network management, and digital financial services. However, despite these advancements, significant management and leadership challenges continue to affect the successful governance and control of AI systems within the sector. The findings revealed that many telecommunications companies in Somalia face difficulties related to inadequate AI governance frameworks, limited technical expertise, weak cybersecurity infrastructure, insufficient regulatory policies, and organizational resistance to technological change. Furthermore, the absence of comprehensive national AI regulations has created uncertainty regarding ethical standards, data privacy protection, and accountability in AI-driven operations. Therefore, the study establishes that effective leadership, institutional

preparedness, and strategic governance are essential for ensuring sustainable AI integration within Somalia's telecommunications sector.

The study further concludes that leadership style plays a critical role in determining the success of AI adoption and governance within telecom organizations. Companies that practiced participatory, adaptive, and transformational leadership approaches demonstrated greater employee engagement, stronger innovation capacity, and smoother technological transition processes. In contrast, organizations with weak communication systems and centralized decision-making structures experienced higher levels of employee resistance and operational challenges during AI implementation. Additionally, the study identified the shortage of qualified AI professionals and inadequate investment in technical training as major barriers limiting the effectiveness of AI governance in Somalia's telecom industry.

In the AI epoch, effective management demands that telecom leaders embrace flexible leadership styles that can adapt to Somalia's changing regulatory, security, and infrastructure landscapes. It is essential for leaders to promote collaboration across departments to ensure that AI tools align with national data protection objectives and governance standards across the sector. Building strong partnerships with regulators, universities, and international tech organizations will further boost compliance and foster innovation.

Declarations

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Conflict of Interest
The author declares no conflict of interest. The author is affiliated with Somnet Telecom, one of the two companies studied; data collection and analysis were conducted with attention to minimizing potential bias, including triangulation across sources and member checking with informants from both participating firms.

Ethics and Consent
All interview participants were informed of the voluntary and confidential nature of their participation and provided consent prior to taking part. Respondent identifiers were anonymized, and institutional review board (IRB) approval or equivalent ethical clearance was obtained prior to data collection.

Data and Source Availability
The interview transcripts and firm-level operational data analysed in this study contain confidential business information and are not publicly available; anonymized excerpts may be available from the corresponding author upon reasonable request and with the permission of the participating firms. All secondary sources cited are listed in the reference list.

Author Contributions
The author is solely responsible for the conception, research design, data collection, analysis, and writing of this article, and approved the final manuscript.

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