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Intellectual Property Rights in Data Transfer: Challenges and Solutions in Management Information Systems

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Abstract

Purpose: This study examines the current state of Intellectual Property Rights (IPR) in data transfer within Management Information Systems (MIS). It explores the impact of IPR on organizational governance, reviews the relevant legal frameworks, and identifies strategies for secure data transfer that ensure the preservation of intellectual property.

Methodology: A qualitative research design employing thematic analysis was used. Data were collected through semi-structured interviews with nine experts in IPR and MIS, selected via snowball sampling until theoretical saturation was reached. Credibility and dependability were strengthened through participant validation and inter-coder agreement.

Findings: The results show that existing Iranian IPR regulations are foundational but insufficient, challenged by unclear data ownership, inadequate technical infrastructure, and limited enforcement mechanisms. IPR significantly shapes data governance, innovation capacity, and competitive advantage. A comprehensive IPR framework—integrating policies, technical controls, and monitoring—is essential. Effective strategies include data-sharing agreements, anonymization technologies, layered access control systems, and strengthened user training and awareness programs.

Conclusion: Robust IPR protection in MIS requires an integrated combination of legal, technical, and educational measures. Advancing legislative frameworks, enhancing infrastructural capabilities, and promoting organizational awareness are critical. Implementing the proposed strategies enables organizations to transfer and utilize data securely, improve governance, and foster innovation, ultimately strengthening competitive advantage.

Value: This research provides actionable insights that help organizations leverage data resources while protecting intellectual property, thereby improving governance mechanisms and fostering sustained innovation and competitiveness.

Keywords: ***Intellectual Property Rights, Management Information Systems, Data Transfer, Organizational Governance, Legal Framework, Data Security***

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Extended Abstract

Introduction: Management Information Systems (MIS) function as essential infrastructure for organizational development and informed decision-making. However, data transfer—whether internal or external—introduces substantial challenges related to intellectual property rights (IPR). As data increasingly functions as a strategic intangible asset, ensuring its lawful use, ownership clarity, and protection demands robust legal, technical, and managerial safeguards. This study examines the intersection of IPR and data transfer within MIS, with a particular focus on the Iranian context, while drawing comparative insights from international regulations such as the GDPR to highlight gaps, challenges, and potential alignment strategies.

Purpose: The research aims to:

1. Assess the current status of intellectual property rights (IPR) protection in data transfer within management information systems (MIS).
2. Examine the impact of IPR on organizational governance and decision-making processes.
3. Identify the key components of an effective IPR framework for MIS.
4. Propose strategies for secure inter-organizational data transfer while ensuring the protection of intellectual property rights.

Methodology: A qualitative research design employing thematic analysis was used to explore IPR challenges in data transfer within MIS. Data were gathered through semi-structured interviews with nine experts—five MIS specialists and four IPR lawyers—selected via snowball sampling. Theoretical saturation was reached after in-depth interviews averaging 20–35 minutes. Research validity was strengthened through participant review, peer debriefing, and member-checking procedures. Inter-coder reliability was confirmed using Cohen's Kappa coefficient (0.82), indicating strong agreement. Data analysis was conducted in MAXQDA using a three-stage coding process (open, axial, and selective), producing 127 initial codes that were refined into seven overarching themes.

Table1. Profile of Expert Participants

Participant Code	Field of Expertise	Work Experience	Gender
P1	MIS & Data Security	10-15 years	Male
P2	MIS & System Architecture	5-10 years	Male
P3	Intellectual Property Law	10-15 years	Female
P4	MIS & IT Governance	5-10 years	Male
P5	Intellectual Property Law & Compliance	15+ years	Male
P6	Data Management & Policy	5-10 years	Male
P7	Cybersecurity & Network Management	10-15 years	Male
P8	International Law & Data Regulations (e.g., GDPR)	15+ years	Male
P9	Intellectual Property Law & Technology	10-15 years	Male

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Findings:

1. Current Status of IPR Protection

The thematic analysis identified seven critical dimensions shaping the current status of intellectual property rights (IPR) protection in data transfer contexts:

- *Laws and Regulations*: Existing Iranian legislation—particularly the Copyright Law and the Trade Secrets Protection Law—provides a foundational level of protection. However, participants emphasized that these frameworks remain insufficient for addressing contemporary digital data challenges. A significant gap persists between rapid technological advancement and legal adaptation (P1, P4, P7, P9).
- *Operational Challenges*: Key concerns include ambiguous data ownership boundaries, limitations in lawful data sharing, and inadequate managerial awareness of IPR implications in digital environments (P2, P4, P5, P6, P7, P8).
- *Data Protection Measures*: Although encryption mechanisms and network security protocols are commonly implemented, experts highlighted persistent vulnerabilities, particularly in legacy systems and outdated infrastructures (P1–P9).

- *Technical Infrastructures*: While security tools are widely deployed, deficiencies in access control management and identity governance remain critical weaknesses (P1, P2, P5, P8).
- *Standards and Protocols*: Adoption of international frameworks such as the General Data Protection Regulation (GDPR) is limited, largely due to infrastructural constraints, regulatory incompatibilities, and high implementation costs (P1, P2, P5, P8).
- *Management and Supervision*: A notable misalignment exists between legal obligations and technical execution (P1, P2, P3, P5, P7, P8).
- *Training and Awareness*: The absence of comprehensive data governance policies and insufficient user awareness significantly contribute to IPR violations and compliance risks (P4, P6, P9).

2. Impact on Organizational Governance

Findings indicate that IPR in data transfer substantially influences organizational governance across four primary dimensions:

- *Data Ownership and Access*: Ambiguity in ownership definitions generates interdepartmental conflicts and complicates governance structures (P1, P3–P6, P9).
- *Innovation and Competitive Advantage*: Effective use of data enhances organizations' ability to innovate and strengthens their competitive position (P1, P2, P5, P8).
- *Data-Driven Decision-Making*: Organizations increasingly rely on data analytics for decision-making; however, data quality remains a critical concern (P1-P9).
- *Governance and Compliance*: Regulations like GDPR introduce new compliance requirements and related operational costs (P8, P9).

3. IPR Framework Components

The study identified three essential components of the IPR framework:

- *Information Security Management*: Establishing comprehensive policies and procedures aligned with data privacy laws and regulations (P1, P3-P6, P9).
- *IP Risk Management*: Implementing regular risk assessment programs and awareness training to mitigate intellectual property risks (P1, P2, P5, P8).
- *Emerging Technologies*: Technologies such as blockchain and homomorphic encryption present promising solutions for protecting intellectual property, although they may involve regulatory challenges (P1-P9).

4. Data Transfer Strategies

Two primary strategies facilitate secure inter-organizational data transfer:

- *Data Sharing Agreements*: Formal written agreements specifying data types, usage conditions, and anonymization techniques (P1, P3, P9).
- *Control and Monitoring Measures*: The use of advanced encryption methods and cybersecurity protocols to protect data during transfer and storage (P4, P8, P9).

Expert Profile Summary

The study involved nine experts (77.8% male, 22.2% female) with 5-15+ years of experience in management information systems and intellectual property law, ensuring a comprehensive range of professional perspectives.

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Conclusion: This study demonstrates that the protection of intellectual property rights (IPR) in management information systems requires multidimensional attention across legal, technical, and educational domains. The findings highlight the need to develop comprehensive legal frameworks, strengthen technical infrastructures, and enhance user awareness regarding data protection and intellectual property issues. By implementing the proposed framework and strategies, organizations can utilize data more securely while safeguarding intellectual property rights. This approach can contribute to improved organizational governance and support the development of innovation.

Value: This research contributes to the literature by integrating legal, technical, and organizational perspectives on intellectual property rights (IPR) in management information systems (MIS), with particular attention to the Iranian context. The study provides practical guidance for several stakeholders. For organizations, it highlights the importance of developing internal data governance policies and implementing employee training programs related to data protection and intellectual property. For regulators, it emphasizes the need to establish comprehensive legal frameworks that align with ongoing technological advancements. For system developers, it suggests integrating advanced security technologies, such as blockchain, into MIS infrastructures to enhance the protection of intellectual property.

In addition, the research identifies emerging technologies as important enablers for strengthening future IPR protection and recommends further studies on the application of artificial intelligence in this field, as well as comparative analyses of international regulatory frameworks such as the General Data Protection Regulation (GDPR).

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