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

Hanieh Mirzaie[1], Mahshid Eltmasi*[2], Saieed Habiba[3]

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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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1-Introduction

In the contemporary era, management information systems (MIS) are recognized as one of the main pillars of organizational development and improved decision-making processes. These systems play a vital role in enhancing productivity and competitiveness by facilitating access to information and accelerating organizational processes. However, one of the fundamental challenges in utilizing these systems is the issue of intellectual property rights in data transfer (Ghazalsafloo & Choorli, 2021). Data, as intangible organizational assets, require specific legal protections to safeguard the rights of their producers and owners.

In this study, intellectual property rights in data transmission refer to the set of rules and mechanisms designed to protect the rights of producers and owners of digital data during the process of transmission between information systems. Data as intellectual property includes information that, due to its creative nature or economic value, is protected under copyright laws, trade secrets, or specific regulations such as the General Data Protection Regulation (GDPR). Data governance also refers to the policies and mechanisms that determin data ownership, accountability, and access control at both organizational and supra-organizational levels (Eltemasi, 2023).

Intellectual property rights play a significant role in sustainable development and in attracting both domestic and foreign investments (Mahdavi & Fazlali, 2017). However, within management information systems, data transfer of data between different organizational units or across organizations creates various legal challenges. These challenges often arise from a lack of clarity regarding data ownership and the mechanisms governing data transfer (Sharifi et al., 2021). At the same time, management information systems, as critical organizational infrastructures, require robust governance to ensure data integrity and security. In this context, protecting intellectual property rights is not only a legal obligation but also a strategic necessity for improving organizational governance and supporting effective decision-making (Khodabakhshi Parijan, Zaarei, & Noori, 2021).

In Iran, although intellectual property rights have a historical foundation comparable to the development of modern Iranian law, there are still inadequate laws and regulations to protect these rights in the context of data transfer within management information systems. In contrast, legal frameworks such as the General Data Protection Regulation (GDPR) in the European Union—with its clear definitions of the "right to be forgotten" and the "right to access data"—and China's industrial data ownership laws, which specify the ownership of data generated by artificial intelligence, are successful examples of effective regulation for secure data transfers. Iran, however, remains in the process of developing comprehensive legislation to cover these dimensions (Pilvar, 2021). This gap is particularly evident in organizations that rely on management information systems to support decision-making processes. In domains such as human resources, marketing, sales, and finance, data is considered an intangible organizational asset that entails considerable costs for its collection, processing, and maintenance. Generally, raw data is protected under trade secret provisions, while structured databases may fall under copyright protection. At the same time, regulations such as the GDPR or Iran's draft *Personal Data Protection Law* require that the transfer of sensitive data complies with specific standards that may, at times, conflict with traditional intellectual property principles. It is important to note that in Iran, the information exchanged through management information systems is typically governed by each organization's internal security policies and regulations. Consequently, international

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data governance protocols are seldom applied, which further underscores the need for theoretical and empirical research on the legal and proprietary dimensions of data handling. A review of prior studies indicates that while research such as Yas et al. (2024) has examined the relationship between intellectual property and information security, the specific challenges of data transfer across heterogeneous information systems—arising from discrepancies in legal frameworks, cryptographic technologies, or data standards—have been less explored. Moreover, existing studies tend to emphasize technical concerns, with comparatively little attention paid to the integration of legal, technical, and organizational perspectives.

However, the lack of appropriate legal mechanisms governing the transfer of such data increases the risk of violating intellectual property rights. Given the importance of this issue, the present research aims to address the following questions:

1. What is the current status of intellectual property rights protection in data transfer within management information systems?
2. How do intellectual property rights (IPR) governing data transfer influence organizational governance structures and data-driven decision-making processes within management information systems (MIS)?
3. What components constitute the framework for intellectual property rights in management information systems?
4. How can data be transferred between the management information systems of different organizations while preserving intellectual property rights?

By exploring these questions, this study seeks to provide practical and theoretical solutions for improving legal and governance frameworks in management information systems. The goal is to ensure the protection of data producers' intellectual property rights while enabling organizations to fully benefit from MIS capabilities. Ultimately, this research aims to establish a balance between safeguarding intellectual property rights and facilitating efficient data transfer to support sustainable organizational development. Considering the identified gaps, the primary objective of this study is to examine and propose a framework for data transfer within management information systems.

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2- Literature Review

The foundational period of intellectual property rights (IPR) in data governance established several critical theoretical frameworks. O'Sullivan (2000) pioneered early debates on copyright protection in digital environments, emphasizing the challenges of applying traditional copyright principles to internet-based data transfers. More than a decade later, Mahdavi and Fazlali (2017) highlighted the macroeconomic significance of intellectual property protections, demonstrating their essential role in attracting foreign direct investment and supporting sustainable development. Together, these studies laid an important foundation for understanding the organizational value of IPR in contemporary digital ecosystems.

Technical advancements further expanded the discourse. Thinn and Thwin (2020) addressed data transfer confidentiality through a hybrid cryptographic model that combines Public Key Infrastructure (PKI) with modified AES algorithms. Their work marked a pivotal shift toward integrated and sophisticated technical solutions for securing data in motion, reflecting the escalating complexity of data-sharing environments.

Legal frameworks relating to IPR and data protection have also evolved substantially. Pilvar (2021) provided a historical analysis of Iran's IPR regulatory

trajectory, identifying jurisdictional gaps in the protection of digital data when compared to the more advanced regulatory systems of the European Union and China. Complementarily, Zech (2021) and Arnaldos (2021) examined the European legal landscape, revealing a fragmented yet gradually consolidating approach to data exclusivity governed through multiple legal instruments. Expanding this perspective, Bodó et al. (2021) introduced a multi-level governance model, illustrating how organizational data governance mechanisms interact with and are shaped by broader macro-level legal and policy structures.

Further reinforcing the economic dimension, Haj Mohammad et al. (2022) demonstrated the direct relationship between strong IPR systems, technology transfer, and global economic integration. On the organizational side, Maleh, Sahid, and Belaissaoui (2022) recommended the adoption of maturity models anchored in ISO standards (ISO 9001, ISO 14001, ISO/IEC 27000), emphasizing the need to align IPR protection with comprehensive quality, environmental, and information security management. Meanwhile, Hendriyati et al. (2022) provided a practical case study from the academic MIS domain, showing how integrated data management practices operationalize theoretical IPR concepts and significantly improve system effectiveness.

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Subsequent research expanded the conceptual and empirical scope of IPR. Eltemasi (2023) proposed a conceptual model linking information literacy with digital rights, foregrounding the human and organizational dimensions of intellectual property governance. Yas et al. (2024) contributed empirical evidence from the UAE, demonstrating that stronger IPR enforcement correlates with improved information security outcomes. López (2024) articulated a central policy debate concerning the tension between proprietary data ownership, which incentivizes investment, and open access frameworks that promote technological innovation. Eltemasi (2024) further advanced theoretical understandings of information rights, while Shrinivas, Varun, and Thiagarajan (2024) introduced advanced technical solutions combining steganography and encryption for secure data transfer.

More recent studies by Rong et al. (2025) and Wei (2025) analyzed divergent global data governance models across the United States, European Union, and China. Their findings highlight significant regulatory conflicts, interoperability issues, and compliance challenges faced by multinational enterprises—challenges intensified by the growing use of artificial intelligence in cross-border data processing.

Overall, the literature reflects the complexity and diversity of legal, technical, organizational, and global approaches to data governance and security. Legal frameworks for data ownership remain in a dynamic state, with substantial regional variability. Technical approaches to secure data transfer continue to evolve, particularly through hybrid cryptographic and steganographic solutions. Organizational perspectives emphasize the importance of integrating international standards and clarifying governance responsibilities. At the global level, heterogeneous data governance regimes create persistent challenges for organizations operating across multiple jurisdictions.

Despite these advancements, most existing studies have paid limited attention to the practical challenges of implementing intellectual property protections within management information systems. Consequently, further research is needed to explore the interactions between IPR frameworks and emerging technologies, including MIS. Positioned within this gap, the present study offers a comprehensive and multidimensional investigation of legal frameworks and their implications for

management information systems, contributing to the broader understanding of intellectual property rights in contemporary organizational contexts.

3- Methodology

This research adopts an interpretive philosophical stance, as it seeks to uncover the components of an intellectual property rights (IPR) framework based on subjective interpretations derived from scholarly literature and expert insights. The research approach is predominantly inductive, moving from specific observations to broader conceptual generalizations. Aligned with its objectives, the study is applied and developmental in nature, aiming to construct a practical framework for improving data transfer processes within management information systems (MIS).

A qualitative research method was employed, utilizing thematic analysis to address the research questions. The study is cross-sectional, as it explores the phenomenon within a specific time period without examining changes over time. Data were collected through semi-structured interviews with domain experts.

The target population comprised experts in intellectual property and management information systems. Because the size of this population could not be precisely determined, non-probability purposive snowball sampling was used. Initially, individuals with at least five years of operational experience in IPR, MIS, or related fields were identified. Two specialists were invited to participate and subsequently recommended additional participants, resulting in a final group of eleven experts—six in intellectual property and five in information systems.

Interviews were conducted in person, allowing participants the freedom to elaborate on their perspectives. Interviews continued until theoretical saturation was achieved, and the process was closely monitored to ensure clarity and depth of understanding. The face validity of the interview guide was confirmed by three experts prior to data collection; their recommended revisions were incorporated to enhance question validity. The refined interview questions were then provided to the final participants.

The data analysis followed a thematic analysis approach, beginning with open coding of interview transcripts. Codes were then refined, categorized, and interpreted to identify emerging themes related to IPR challenges in data transfer. Reliability of the coding process and resulting themes was assessed, with details provided in the subsequent section outlining the step-by-step analytic procedure.

In summary, this qualitative study employed thematic analysis to investigate intellectual property rights challenges in data transfer within MIS. Semi-structured interviews were conducted with nine experts—five management information systems specialists and four intellectual property lawyers—selected through snowball sampling. Participants consisted of 77.8% male and 22.2% female professionals, each possessing between 5 and more than 15 years of relevant professional experience.

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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	Male
P9	Intellectual Property Law & Technology	10-15 years	Male

The interview question design process was grounded in an extensive literature review and consultation with three domain experts, including two MIS specialists and one legal expert. Following the initial design, pilot interviews were conducted with two participants to further refine the clarity, relevance, and structure of the questions. Based on these refinements, the final interview guide was developed. Inter-coder reliability was assessed using Cohen's Kappa coefficient ($\kappa = 0.82$), indicating strong agreement and satisfactory reliability of the coding instrument. Each interview lasted approximately 20 to 35 minutes and continued until theoretical saturation was achieved, meaning no new substantive themes emerged from subsequent interviews.

The collected data were analyzed using MAXQDA software through a systematic three-stage coding procedure: open, axial, and selective coding. In the open coding phase, 127 primary codes were extracted from the interview transcripts. During axial coding, related codes were grouped into conceptual categories, and in the selective coding stage, these categories were integrated into seven overarching themes, including legal challenges, technical solutions, and organizational requirements.

To enhance the credibility and validity of the findings, several rigor strategies were employed. These included source triangulation, peer review of coding

outcomes, and member checking, whereby selected participants reviewed and confirmed the interpretations of their responses. Findings were interpreted inductively through constant comparison with relevant theoretical and regulatory frameworks, including international standards such as the General Data Protection Regulation (GDPR). All stages of the research adhered to established ethical principles. Participants provided informed consent prior to participation, confidentiality of responses was strictly maintained, and participants retained the right to withdraw at any stage of the study. Detailed documentation of each research step was maintained to ensure transparency and auditability.

Overall, this methodological approach enabled the integration of both technical and legal expert perspectives, providing a comprehensive understanding of data ownership complexities within management information systems. The qualitative analysis not only identified prevailing challenges but also generated practical and context-sensitive solutions for organizational implementation.

4- Findings

Question 1: What is the current status of intellectual property rights protection in data transfer within management information systems?

The findings from expert interviews are summarized in Table 2. In the analysis process (in all queations), open codes (key phrases from the interviews) were first extracted, then, similar codes were linked to form core categories (e.g., “technical challenges” or “legal barriers”). Finally, by integrating related categories at a more abstract level, final themes (e.g., the “need for integrated data governance”) were extracted. This process was carried out through continuous comparison of data and repeated revision of themes.

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Table 2. Current Status of Intellectual Property Preservation in Data Transfer within Management Information Systems

Theme	Component	Basic Component	An example of a direct quote from interviewees	Interviewee code
Laws and Regulations	Intellectual Property Laws, Supportive Laws, Copyright	In many countries, laws protecting intellectual property in management systems are developing. In Iran, the Copyright Law and Trade Secrets Protection Law have taken steps toward protecting intellectual property in information technology, but comprehensive laws are still needed.	"Our legal framework is ten years behind technological advancements. We're trying to protect cloud data with laws written for physical documents."	P1, P4, P7, P9
Operational Challenges	Lack of Infrastructure, Managerial Awareness, Technical Knowledge	The increasing use of management information systems has raised operational challenges for intellectual property protection. Issues such as data ownership boundaries and sharing limitations require further attention.	"Last year, we lost a major contract because our executives couldn't distinguish between data ownership and usage rights during negotiations."	P2, P4, P5, P6, P7, P8
Data Protection	Data Encryption, Access Levels, Network Security	The use of advanced encryption methods and network security measures for protecting intellectual property in management systems is common and necessary. However, weaknesses in security infrastructures still exist.	"We implemented end-to-end encryption, but legacy systems from 2015 still create vulnerabilities in our supply chain data transfers."	P1-P9
Technical Infrastructures	Encryption and Security Tools, Access Control Management	The use of security tools for protecting intellectual property data is prevalent, but strengthening technical infrastructures for access control remains necessary.	"Our access control system can't handle hybrid cloud environments - we're constantly overriding permissions just to keep workflows moving."	P1, P2, P5, P8
Standards and Protocols	Data Transfer Security Protocols, Alignment Standards	Adhering to global standards and security protocols for data transfer is beneficial, although implementation in Iran is still limited.	"GDPR compliance would cost us 40% more in infrastructure, but not complying costs us international partnerships."	P1, P2, P5, P8
Management and Supervision	Aligning Standards with Technical Requirements, Strengthening Oversight	Aligning standards with existing laws and strengthening oversight of intellectual property protection are crucial actions.	"Our legal team speaks 'law', IT speaks 'technology', and neither understands the other's requirements for data governance."	P1, P2, P3, P5, P8, P7
Training and Awareness	Data Management Policy Development, User Awareness and Training	Challenges in defining data ownership and sharing limitations persist, highlighting the need for clear policies and user training.	"After three data leaks, we realized our staff were sharing passwords because 'it's just internal data' - they didn't see it as intellectual property."	P4, P6, P9

Seven final themes were identified regarding the current status of intellectual property rights in management information systems, reflecting the challenges and describing the existing situation from the experts' perspectives.

Question 2: How do intellectual property rights in data transfer affect organizational governance and decision-making through management information systems?

The findings from expert interviews are summarized in Table 3.

Table3. The impact of transferred intellectual property rights on organizational governance

Theme	Component	Basic Component	An example of a direct quote from interviewees	Interviewee code
Data Ownership and Access	Clarity of Ownership and Access, Data Responsibility	Determining ownership and access settings for data collected by MIS presents complex legal and ethical challenges. Organizations must clearly define data ownership and responsibilities while balancing privacy and innovation.	"We have cases where three departments claim ownership of the same dataset—legal says it's theirs, marketing says they collected it, and IT says they maintain it. Nobody knows who really owns it."	P1, P3-P6, P9
Innovation and Competitive Advantage	Data as an Asset, Role in Innovation and Competition	Data plays a central role in innovation and the development of new products and services. Organizations effectively using data in R&D can gain a competitive advantage.	"Last year, we monetized our customer behavior data by creating a new AI service—it's now our fastest-growing revenue stream."	P1, P2, P5, P8
Data-Driven Decision-Making	Informed Decision-Making, Data Extraction	Relying on data analysis for informed decision-making is becoming common. However, data quality is critical, as incorrect data can lead to poor decisions.	"We abandoned a product launch after the data team found flaws in our market research—saved us $2M in potential losses."	P1-P9
Governance and Compliance Challenges	Privacy Legal Challenges, Compliance Issues	Data privacy laws introduce new challenges for organizational governance, necessitating compliance efforts and appropriate privacy policies.	"GDPR audits forced us to rebuild our entire data architecture—we now spend 30% more on compliance than two years ago."	P8, P9

Experts believe that intellectual property rights in data transfer play a significant role in organizational governance, summarized in three main roles, alongside a general challenge.

Question 3: What components comprise the framework for intellectual property rights in management information systems?

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Expert interviews were conducted to explore this framework, yielding responses from five out of nine experts. The components identified are presented in Table 4.

Table 4 .The components identified for the Framework of Intellectual Property Rights in Management Information Systems

Theme	Component	Basic Component	An example of a direct quote from interviewees	Interviewee code
Information Security Management	Policies and Procedures, Technical and Organizational Controls	Clear and documented policies regarding the ownership, access, and use of data are essential. These policies must align with data privacy laws. Strong security measures must also be implemented to protect data from unauthorized access.	"Our access control system failed last quarter because the policy didn't account for third-party vendors—we learned the hard way when a contractor leaked sensitive R&D data."	P1, P3-P6, P9
Intellectual Property Risk Management Processes	Risk Assessment and Identification, Awareness and Training	Identifying and assessing risks related to intellectual property rights should be regular. Comprehensive management programs for mitigating these risks must also be developed and implemented.	"We now run quarterly IP audits after losing a patent lawsuit. Turns out, 40% of our 'proprietary' code was copied from open-source libraries."	P1, P2, P5, P8
Emerging Technologies	Role of Emerging Technologies	Technologies such as blockchain and homomorphic encryption can enhance data security and support secure data sharing.	"Blockchain proof-of-concept reduced contract disputes by 60%, but legal won't approve it until regulators catch up."	P1-P9

As indicated by the findings in Table 4, experts identified eight components essential for intellectual property rights in management information systems, underscoring the importance of preserve these rights.

Question 4: How is it possible to transfer data between management information systems of different organizations while preserving intellectual property rights?

The results derived from expert interviews are summarized in Table 5.

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Table 5. The results from expert interviews on Secure Data Transfer While Preserving Intellectual Property Rights

Theme	Component	Basic Component	Interviewee code
Data Sharing Agreements	Written Inter-Organizational Contracts, Data Anonymization Technologies	Written contracts between organizations should clearly define data-sharing conditions, including the types of data exchanged, permitted uses, and required security measures. Anonymization techniques can also be applied to reduce privacy and intellectual property risks.	P1, P3, P9
Control and Monitoring Measures	Encryption, Cybersecurity	Data must be encrypted during both transfer and storage to prevent unauthorized accessRobust cybersecurity measures are essential to protect management information systems from potential threats.	P4, P8, P9

Based on the experts' opinions, organizations can share data between management information systems while safeguarding their intellectual property rights by implementing the components outlined in Table 5.

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5- Discussion & Conclusion

This study analyzed the status of intellectual property rights in data transfer within management information systems, exploring the associated challenges, impacts, and solutions. The findings indicate that intellectual property rights in management information systems are crucial and require focused attention across legal, technical, managerial, and educational dimensions. The key results of this study are summarized as follows:

1. Current Status of Intellectual Property Rights Protection:

Although existing laws provide some protection, significant implementation challenges remain. Comprehensive laws are needed to address issues such as data ownership boundaries and user awareness.

2.. Impact of Intellectual Property Rights on Organizational Governance:

Intellectual property rights significantly impact governance and decision-making, necessitating a balance between privacy and innovation. Data quality is critical for effective decision-making.

3. Framework for Intellectual Property Rights:

The proposed framework includes key components such as policies, technical controls, and the role of emerging technologies. Regular monitoring and compliance checks are essential.

4. Strategies for Data Transfer While Preserving Intellectual Property Rights:

Effective strategies include establishing data-sharing agreements and implementing security measures to protect intellectual property rights.

This study aligns with previous research emphasizing the importance of intellectual property in management information systems. To achieve improvement, comprehensive laws, enhanced infrastructures, user education, and appropriate legal frameworks are essential. By adopting these strategies, organizations can utilize data securely and legally while protecting their intellectual property rights, ultimately enhancing governance and fostering innovation.

Comparative Analysis with Existing Literature and Systematic Comparison of Key Findings

1. Current status of intellectual property rights protection in data transfers: Studies such as those by Yas et al. (2024) and Pilvar (2021) have also emphasized the lack

of comprehensive laws in Iran and the need to develop technical and legal infrastructure. However, while some research (e.g., Zech, 2021) focuses on regional differences in the definition of data ownership, the present study places greater emphasis on domestic challenges in Iran, such as low user awareness and technical weaknesses.

2. Impact of intellectual property rights on organizational governance: Studies such as that by Hendriyati et al. (2022) have shown that data, as intangible assets, play a key role in decision-making and innovation. In contrast, this study highlights specific challenges such as the conflict between privacy laws (e.g., GDPR) and intellectual property rights, an issue that has received less attention in previous research.

3. Intellectual Property Rights Framework in Management Information Systems: Research by Maleh et al. (2022) similarly emphasizes the need to integrate international standards (e.g., ISO) with technical controls. However, while previous studies have focused more on traditional methods, this study highlights the role of emerging technologies such as blockchain and homomorphic encryption.

4. Data transfer solutions while preserving intellectual property rights: Shrinivas et al. (2024) also suggest the use of encryption and written contracts. Nevertheless, it is important to note that this study emphasizes the need for user education and the development of internal organizational policies, whereas previous research has focused more on technical aspects.

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Theoretical Frameworks Justifying the Findings

Two theoretical frameworks support the findings of this study:

- Data governance theory: This study shows that integrating intellectual property rights with data management requires a multidimensional framework encompassing legal, technical, and organizational dimensions.
- Open innovation theory: This theory emphasizes that data protection should not hinder sharing and collaboration between organizations.

Practical Implications

This study has several practical implications:

- For organizations: The need to develop internal policies defining data ownership and to train employees.
- For regulators: The need to develop comprehensive laws aligned with emerging technologies and organizational needs.
- For system developers: The need to integrate security technologies such as blockchain into management information systems.

Suggestions for Future Research

- Compare the impact of different legal frameworks (e.g., GDPR vs. Iranian laws) on data transfer.
- Investigate the practical applications of artificial intelligence and blockchain in the protection of intellectual property rights.
- Evaluate the long-term impact of legal and technological changes on organizational behavior.

Overall Conclusion

Overall, this study aligns with the existing literature regarding the importance of intellectual property rights and data transfer challenges. However, by focusing on the specific circumstances of Iran and emphasizing emerging technologies, it contributes to expanding the literature. Its practical implications also provide guidance for organizations and regulators.

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