

## Data Ownership: Unraveling the Challenges and Remedies in the Era of Big Data

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### Abstract

This article examines the complex issues surrounding data ownership, with a particular focus on the context of Big Data. The rapid advancement of technology and the widespread collection and utilization of vast amounts of data have raised significant legal and ethical questions regarding ownership rights. Through a comprehensive analysis of existing legal approaches and regulations, as well as insights from international organizations and scholarly opinions, this study highlights the ambiguity and complexity of data ownership in the era of Big Data. It explores the challenges and solutions in establishing clear ownership rights, addressing ethical considerations, and navigating the practical and legal implications of data ownership. The research concludes with key findings and recommendations for the effective regulation of data ownership.

**Keywords:** Data Ownership, Big Data, Legal Frameworks, Ethical Considerations, Ownership Rights, Data Governance, Privacy, Intellectual Property, Regulations, Technology

### I. Introduction

The rapid advancement of technology and the widespread use of data-driven systems have led to the emergence of Big Data and the increasing importance of data ownership. In the digital age, the control and ownership of data have become significant issues with legal, ethical, and practical implications. This article aims to explore the complex landscape of property rights over data (Big Data) by analyzing the existing legal frameworks, international conventions, and national



regulations. The relevance of this research is evident in the growing reliance on data-driven technologies in various sectors, including business, healthcare, and governance. As data becomes a valuable asset, questions arise about who owns the data and how it should be protected, shared, and used. Understanding the legal and regulatory aspects surrounding data ownership is essential for ensuring the fair and ethical treatment of data [1].

The primary objective of this study is to examine the existing legal frameworks and international standards concerning data ownership. By reviewing relevant legal acts, such as the General Data Protection Regulation (GDPR), the Data Protection Act, and international initiatives like the Organization for Economic Cooperation and Development (OECD) Guidelines, we aim to provide a comprehensive overview of the legal landscape. To achieve this, an extensive review of literature will be conducted, encompassing scholarly articles, books, legal texts, reports from international and national organizations, and expert opinions. This literature review will serve as a foundation for our analysis, enabling us to understand the current state of data ownership, identify challenges, and explore potential solutions [2].

## **II. Methods**

The methodology employed in this study encompasses a thorough examination of existing legal approaches to regulating data ownership (Big Data) and an in-depth analysis of relevant legal acts and initiatives concerning data rights. To gain a comprehensive understanding of the legal frameworks surrounding data ownership, a review of existing laws, regulations, and international conventions will be conducted. This review will include prominent legal acts such as the General Data Protection Regulation (GDPR), the California Consumer Privacy Act (CCPA), and the European Convention on Human Rights



(ECHR). Additionally, relevant legal initiatives by organizations such as the International Association of Privacy Professionals (IAPP), the World Intellectual Property Organization (WIPO), and the International Data Corporation (IDC) will be examined [3].

The study will also involve analyzing court cases and legal precedents related to data ownership and exploring the evolving jurisprudence in this field. This will provide insights into the application of existing legal frameworks and their interpretations by the judiciary. Furthermore, academic research and scholarly articles will be reviewed to understand the perspectives and opinions of experts in the field of data ownership. This will include opinions from legal scholars, researchers, and practitioners who have contributed to the discourse on data ownership and its implications. The incorporation of expert opinions will enhance the analysis and provide diverse insights into the complexities of data ownership [4].

### **III. Results**

The analysis of data ownership in the era of Big Data reveals significant challenges and complexities surrounding this concept. This section aims to provide a comprehensive examination of the key problems and issues associated with data ownership. The first issue that arises is the ambiguity surrounding the definition and scope of data ownership. In the context of Big Data, where data is generated from multiple sources and can be combined and analyzed in various ways, determining who owns the data becomes a complex task. Legal frameworks often lack clear definitions and guidelines on data ownership, leading to uncertainty and disputes. Another challenge is the identification and protection of intellectual property rights within data. As data becomes a valuable asset, issues related to copyright, patents, and trade secrets emerge. Organizations and individuals face



difficulties in safeguarding their rights over data, especially when it is shared or utilized by multiple parties [5].

Additionally, the issue of consent and control over personal data arises in the context of data ownership. Individuals may unknowingly or involuntarily contribute their personal information to Big Data systems, raising concerns about privacy and control. The rapid advancement of technology and the proliferation of data collection practices further complicate the issue of obtaining informed consent and maintaining control over personal data. Moreover, the international dimension of data ownership poses challenges in terms of cross-border data flows, jurisdictional conflicts, and harmonization of regulations. Differences in legal frameworks across countries and regions create barriers to effective data governance and complicate the determination of ownership rights [6].

To address these challenges, various solutions have been proposed. These include the development of comprehensive data governance frameworks, clear and standardized data ownership agreements, enhanced transparency and accountability mechanisms, and the establishment of international collaborations to harmonize data protection regulations. The analysis presented in this section highlights the complex nature of data ownership in the era of Big Data. It emphasizes the need for a multidimensional approach that incorporates legal frameworks, international organizations, academic research, and expert opinions to navigate the challenges and find viable solutions [7].

One of the primary legal approaches is the implementation of data protection and privacy regulations. Various countries and regions have enacted laws and regulations that aim to safeguard individuals' rights to their personal data and provide guidelines for data collection, storage, and processing. Examples include the General Data Protection Regulation (GDPR) in the European Union, the



California Consumer Privacy Act (CCPA) in the United States, and the Personal Data Protection Act (PDPA) in Singapore. These legal acts outline principles and requirements for data ownership, consent, transparency, and accountability. International organizations play a crucial role in shaping legal approaches to data ownership. The International Organization for Standardization (ISO) has developed standards such as ISO/IEC 27001 for information security management systems and ISO/IEC 27701 for privacy information management systems. These standards provide guidelines for organizations to establish robust data governance frameworks and ensure compliance with data protection regulations [8].

Furthermore, scholarly research and opinions contribute valuable insights to the analysis of legal approaches. Researchers have explored various legal theories and frameworks to address the complexities of data ownership, including property rights theories, contract law principles, and intellectual property frameworks. Their contributions shed light on the conceptual foundations of data ownership and provide suggestions for legal reforms. While existing legal approaches have made significant strides in addressing data ownership issues, challenges and gaps remain. Ambiguities in legal definitions and frameworks, jurisdictional conflicts, and the global nature of data flows pose ongoing challenges. Additionally, the rapid pace of technological advancements requires continual updates to legal frameworks to keep pace with emerging data-related issues [9].

To enhance the effectiveness of legal approaches, several recommendations emerge from the analysis. These include the need for harmonization of data protection regulations at the international level, the development of standardized data ownership agreements, the establishment of clear mechanisms for data valuation, and increased collaboration between legal experts, policymakers, and technology stakeholders. By critically analyzing existing legal approaches and



considering the insights provided by normative acts, international organizations, and scholarly opinions, this section provides a comprehensive assessment of the strengths and weaknesses of current approaches to data ownership in the era of Big Data. This analysis serves as a foundation for the subsequent discussions on proposed solutions and recommendations [10].

In this section, we critically review the measures and recommendations that have been implemented to address the challenges of data ownership in the era of Big Data. By examining the effectiveness and implications of these measures, we aim to provide a comprehensive assessment of their impact on data ownership rights and the overall data ecosystem. One of the key measures that has been implemented is the establishment of data protection authorities and regulatory bodies at both national and international levels. These entities, such as the Information Commissioner's Office (ICO) in the United Kingdom and the Federal Trade Commission (FTC) in the United States, play a crucial role in enforcing data protection regulations and ensuring compliance. They provide guidance to organizations and individuals on their rights and obligations regarding data ownership [11].

Additionally, legal acts and regulations have been introduced to address specific aspects of data ownership, such as intellectual property rights, contractual agreements, and data sharing frameworks. For example, the European Union Intellectual Property Office (EUIPO) provides guidelines on protecting intellectual property rights over data, while the General Data Sharing Agreement (GDSA) sets out principles for data sharing between organizations. International organizations, such as the United Nations (UN) and the Organisation for Economic Co-operation and Development (OECD), have also issued recommendations and guidelines to address data ownership issues. The UN's Guiding Principles on Business and



Human Rights emphasize the importance of respecting human rights in the context of data collection and use. The OECD's Privacy Guidelines provide a framework for ensuring the protection of individuals' privacy rights in the digital age [12].

Furthermore, scholars and experts have offered valuable insights and recommendations to enhance data ownership rights and address the challenges posed by Big Data. Their perspectives encompass various disciplines, including law, ethics, economics, and technology. These insights highlight the need for transparent and accountable data governance frameworks, increased individual control over personal data, and the development of data trust models to facilitate responsible data sharing. Despite the implementation of measures and recommendations, several critical issues persist. These include the complexity of cross-border data transfers, the evolving nature of data technologies, and the power dynamics between data owners and data users. Additionally, the rapid pace of technological advancements requires ongoing adaptation and updates to legal frameworks and regulatory measures [13].

To address these challenges, further recommendations emerge from the critical review. These include the need for international collaboration and standardization efforts, the promotion of data ethics and responsible data practices, and the development of mechanisms for data valuation and fair compensation. By critically reviewing the implemented measures and recommendations, this section provides an evaluation of their effectiveness and identifies areas for improvement in addressing data ownership challenges in the era of Big Data. This analysis sets the stage for the subsequent discussions on proposed solutions and their implications [14].

#### **IV. Discussion**



In this section, we engage in a critical analysis of the research findings related to data ownership in the context of Big Data. We examine the ethical, technical, and legal aspects surrounding data ownership and explore the practical and legal implications of regulating data rights. Ethical considerations play a significant role in the discussion of data ownership. The collection, analysis, and use of large-scale data raise concerns about privacy, consent, and the potential for exploitation. It is essential to address these ethical concerns and ensure that individuals have control over their personal data. The principle of informed consent and the right to data privacy are crucial in shaping ethical frameworks for data ownership [15].

From a technical perspective, data ownership is closely linked to data governance and control mechanisms. The design of data infrastructures, data storage systems, and access controls all impact data ownership. Technological advancements such as blockchain technology offer potential solutions for enhancing data ownership and control, providing transparent and secure data management. However, challenges remain, including the need for interoperability, scalability, and standardized protocols. The legal aspects of data ownership encompass a complex landscape of national and international laws, regulations, and agreements. Intellectual property rights, contractual agreements, and data protection laws all intersect in shaping data ownership rights. Legal frameworks need to strike a balance between protecting individual rights and fostering innovation and economic development. Harmonization of laws across jurisdictions and addressing legal ambiguities is essential for establishing clear guidelines for data ownership [16].

The regulation of data ownership has both practical and legal implications. From a practical standpoint, effective regulation can promote trust and confidence





in data-driven activities, encourage data sharing and collaboration, and spur innovation. Clear rules and regulations provide guidance to organizations and individuals on data ownership rights and responsibilities, fostering a more transparent and accountable data ecosystem. On the legal front, the regulation of data ownership can have far-reaching consequences. It affects intellectual property rights, contractual agreements, data access and sharing, liability frameworks, and cross-border data transfers. Developing comprehensive and adaptable legal frameworks that address these aspects is crucial to ensure a fair and equitable data ownership landscape [17].

Moreover, regulating data ownership raises important policy considerations. Balancing the interests of data owners, data users, and the broader public is a complex task. It requires policymakers to consider factors such as competition, innovation, national security, and individual privacy rights. Engaging in multi-stakeholder dialogues and adopting a collaborative approach to policy development can lead to more effective and inclusive regulatory frameworks. The discussion of data ownership in the context of Big Data involves critical analysis of ethical, technical, and legal aspects. It highlights the need for robust ethical frameworks, technological solutions, and comprehensive legal regulation to address the challenges and implications of data ownership. Balancing individual rights, innovation, and societal interests is key to fostering a data-driven environment that promotes trust, accountability, and responsible data practices [18].

### **Conclusion**

This study has delved into the complex and evolving landscape of data ownership, particularly in the context of Big Data. We have examined the problem of ambiguity and complexity surrounding data ownership, analyzed existing legal approaches, critically reviewed the implemented measures and recommendations,



and discussed the ethical, technical, and legal aspects of data ownership. The findings of this research highlight the challenges and implications associated with data ownership. It is evident that the rapid advancement of technology and the widespread collection and utilization of data have raised fundamental questions about who owns and controls the vast amounts of information generated. The lack of clear and consistent legal frameworks, coupled with the ethical concerns surrounding data privacy and consent, exacerbates the problem.

From our analysis, it is apparent that a multifaceted approach is needed to address the issues surrounding data ownership. Ethical frameworks should prioritize informed consent, privacy protection, and respect for individuals' rights over their own data. Technological solutions such as blockchain technology hold promise in enhancing data ownership and control mechanisms. However, further research and collaboration are necessary to develop scalable and interoperable solutions. Legally, there is a need for harmonization and adaptation of existing laws to regulate data ownership effectively. Intellectual property rights, data protection regulations, and contractual agreements should be refined to provide clear guidelines on data ownership rights and responsibilities. Policymakers and legal experts should work towards creating comprehensive and adaptable legal frameworks that strike a balance between protecting individual rights and promoting innovation and economic growth.

The significance of this study lies in its contribution to the field of legal regulation of data ownership. By addressing the challenges and implications of data ownership, this research provides insights and recommendations for policymakers, organizations, and individuals involved in data-driven activities. It emphasizes the importance of establishing transparent, accountable, and fair data ecosystems that foster trust and encourage responsible data practices. In light of the

rapid advancement of technology and the increasing reliance on data, it is crucial to prioritize the development of robust legal frameworks that ensure individuals' rights are respected, promote innovation, and support societal well-being. Continued research, collaboration, and engagement with relevant stakeholders are essential for navigating the evolving landscape of data ownership and safeguarding the interests of all parties involved.

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