SCHOOL OF
ECONOMICS AND
MANAGEMENT

Legal Implications of Artificial Intelligence in Cross-Border Transactions

Navigating International Trade Law

Ankita Chandrashekhar Dhabu

DEPARTMENT OF BUSINESS LAW

Master's Thesis in European and International Trade Law

15 ECTS

HARN63

Spring 2024

Contents

Abstract

This study explores the intersection of Artificial Intelligence and cross-border transactions within international trade law, focusing on the associated legal challenges and regulatory considerations. Through an extensive review of academic literature, policy documents, and industry reports, the research identifies primary obstacles such as jurisdictional conflicts, liability frameworks, and data protection concerns inherent in Artificial Intelligence driven transactions. Framing these challenges as research questions, the study investigates proposed strategies and legal frameworks suggested by policymakers and legal scholars to address these complexities.

One line of inquiry examines the predominant legal challenges associated with Artificial Intelligence in cross-border transactions, while the other focuses on proposed strategies and legal frameworks to tackle these challenges. The analysis specifically focuses on the European Union's Artificial Intelligence Act and its implications.

The findings of this study also address the legal complexities surrounding AI in international trade, the need for harmonized regulatory approaches and comprehensive liability frameworks. The Act is one such significant regulatory measure, offering insights into potential global governance implications for cross-border AI transactions. This research also offers valuable insights for policymakers, legal scholars, and practitioners navigating this evolving landscape.

Keywords: Artificial Intelligence, Cross-border Transactions, International Trade Law, Regulatory Frameworks, Jurisdictional Conflicts, Liability, Data Protection, EU AI Act.

Abbreviations

AI	Artificial Intelligence
AI Act	Artificial Intelligence Act
CCPA	California Consumer Privacy Act
CoE	Council of Europe
COPRA	Consumer Online Privacy Rights Act
EU	European Union
GATT	General Agreement on Tariffs and Trade
GDPR	General Data Protection Regulation
ICJ	International Court of Justice
IoT	Internet of Things
ML	Machine Learning
OECD	Organisation for Economic Co-operation and Development
PIL	Private International Law
RACI	Responsibility Assignment Matrix
TFEU	Treaty on the Functioning of the European Union
UN	United Nations
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

1 Introduction

1.1 Background

Artificial Intelligence (AI) involves creating machines that can mimic human intelligence, allowing them to think and act like people.[1] These machines are programmed to perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation. AI systems are powered by algorithms that allow them to learn from data, adapt to new inputs, and improve over time.[2]

AI encompasses a broad range of technologies and techniques, including machine learning, natural language processing, robotics, and computer vision. Machine learning, a subset of AI, involves training algorithms on large datasets to recognize patterns and make predictions or decisions without being explicitly programmed for each task.[3] Natural language processing enables machines to understand and generate human language, facilitating communication between humans and AI systems.[4]

The integration of AI into various sectors has brought about transformative changes, and its impact on international trade, particularly in cross-border transactions, is significant.[5] Cross-border transactions involve the exchange of goods, services, and capital between different countries, and they are crucial for the global economy.

AI is poised to revolutionize international trade by significantly lowering existing barriers and enhancing the efficiency of global commerce. Through applications in data analytics, translation services, and supply chain management, AI optimizes processes, automates tasks, and provides unprecedented insights from vast amounts of data. These advancements are helping businesses operate more effectively in the ever-expanding global marketplace.[6] However, the integration of AI into international trade also presents unique challenges, particularly in legal and regulatory domains.

AI's potential to streamline various aspects of cross-border trade cannot be overstated. Its ability to analyse vast datasets, optimize logistics, and automate complex processes contributes to smoother and more efficient transactions. For

[1] Tencent Research Institute, Artificial Intelligence (Springer Singapore 2021) https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat07147a&AN=lub.7361988&site=eds-live&scope=site accessed 14 May 2024, 3.

[2] RE Neapolitan and X Jiang, Artificial Intelligence: With an Introduction to Machine Learning (2nd edn, CRC Press 2018) https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat07147a&AN=lub.6387411&site=eds-live&scope=site accessed 14 May 2024, 7.

[3] SJ Russell and P Norvig, Artificial Intelligence: A Modern Approach (4th edn, Pearson 2021) https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat07147a&AN=lub.6806195&site=eds-live&scope=site accessed 14 May 2024, 14.

[4] Ibid 15

[5] EB Hunt, Artificial Intelligence (Academic Press 1975) https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat02271a&AN=atoz.ebs2939903e&site=eds-live&scope=site accessed 14 May 2024, 17.

[6] D Darwish, Blockchain and Artificial Intelligence for Business Transformation Toward Sustainability (Springer Nature Singapore 2023) https://doi.org/10.1007/978-981-19-8730-4_8 accessed 14 May 2024, 224.

instance, AI-powered data analytics can predict market trends, identify optimal shipping routes, and manage inventory levels in real time. Translation services powered by AI facilitate communication between trading partners from different linguistic backgrounds, breaking down language barriers and fostering smoother negotiations and transactions.[7]

One of the significant challenges in integrating AI into cross-border transactions is the jurisdictional issues that arise when AI systems located in one jurisdiction interact with parties in another. This interaction raises questions regarding the applicable laws and regulations, especially in cases where AI-generated outcomes lead to adverse consequences.[8] Determining liability in such scenarios is complex, as it involves multiple legal frameworks and the need to attribute fault accurately. Additionally, the cross-border flow of data essential for AI functions amplifies concerns about data protection and privacy, raising issues about data sovereignty and compliance with international standards.[9]

Improving worldwide access to data for AI training is a critical obstacle that international trade norms must address. Access to diverse and high-quality data is crucial for training robust AI systems capable of making accurate predictions and decisions.[10] The European Union's AI Act, which regulates the development and deployment of AI systems within the EU, is a notable example of regulatory measures aimed at addressing the legal implications of AI. This Act serves as a framework that other regions can look to when developing their policies to ensure the ethical and effective use of AI in international trade.[11]

Despite the transformative potential of AI, recent trade disagreements highlight the need to reassess past predictions and their viability. Historical trade data has advanced our understanding of trade variables and the implications of the free flow of goods and services across national borders. However, the accuracy of these predictions is called into question when significant trade disagreements occur. The current global trade environment, characterized by tensions and protectionist policies, necessitates new strategies and methodologies to forecast trade trends accurately.[12]

AI is considered a general-purpose technology that can drive innovation, create new value from data, and reduce trade costs. Its applications are diverse, ranging from intelligent assistants and autonomous vehicles to precision agriculture and robotics. In manufacturing and services, AI enhances productivity and efficiency, leading to

[7] Quentin André and others, 'Consumer Choice and Autonomy in the Age of Artificial Intelligence and Big Data' (2018) 5 Customer Needs and Solutions https://doi.org/10.1007/s40547-017-0085-8 accessed 15 May 2024, 29.

[8] Etinosa Igbinenikaro and Adefolake Olachi Adewusi, 'Navigating the Legal Complexities of Artificial Intelligence in Global Trade Agreements' (2024) 6(4) *International Journal of Applied Research in Social Sciences* https://fepbl.com/index.php/ijarss/article/view/987 accessed 15 May 2024, 490.

[9] Ibid 492.

[10] Damião Ribeiro de Almeida and others, 'A Survey on Big Data for Trajectory Analytics' (2020) 9(2) ISPRS *International Journal of Geo-Information* https://www.mdpi.com/2220-99 64/9/2/88 accessed 15 May 2024, 16.

[11] C Novelli, F Casolari, A Rotolo and others, 'Taking AI Risks Seriously: A New Assessment Model for the AI Act' (2023) *AI & Society* https://doi.org/10.1007/s00146-023-01723-z accessed 15 May 2024, 11.

[12] Martin Krzywdzinski, Detlef Gerst and Florian Butollo, 'Promoting Human-Centred AI in the Workplace: Trade Unions and Their Strategies for Regulating the Use of AI in Germany' (2023) 29(1) *European Review of Labour and Research* https://doi.org/10.1177/10242589221142273 accessed 15 May 2024, 53.

cost savings and improved quality.[13] For instance, in precision agriculture, AI-powered systems analyse data from various sources to optimize planting schedules, irrigation, and pest control, resulting in higher yields and reduced resource use.

The economic and societal impacts of AI are attracting significant attention, highlighting the need for appropriate trade policies and regulatory frameworks. The rapid pace of AI advancements often surpasses the capacity of local legal frameworks and policy decisions to keep up.[14] While the World Trade Organization (WTO) has provided insights through its case laws on distinguishing between goods and services, it has yet to address the complexities introduced by AI comprehensively.[15] The WTO's Joint Statement Initiative on e-commerce is working on issues like electronic signatures and spam but has not yet tackled AI, cryptocurrencies, non-fungible tokens, and blockchain technologies.[16] Relying solely on national or regional settings for AI policy evolution is deemed imprudent given the global nature of trade.

In the absence of hard law rules, the WTO may play an active role in addressing AI-related policy concerns through the implementation of soft law, unwritten standards, and conventions. Soft trade law approaches have historically been effective in other areas of international policy-making and could serve as provisional measures before firmer legal commitments are established.[17] Given the significant growth of AI usage in the global economy and trade, global coordination is essential. An innovative approach to addressing the policy challenges posed by AI could underscore the enduring importance of the WTO, particularly at a time when WTO reform is a key focus for many trade diplomats.[18]

Natural disasters, disease outbreaks, or market disruptions, such as recent trade tensions between the United States and China, can lead to uncertainty, triggering price adjustments, changes in consumer and producer behaviour, logistical challenges, and worker welfare issues.[19] During such events, real-time analysis and on-demand analytics are essential for making timely decisions. AI methods are particularly effective in these scenarios, providing policymakers with timely information and aiding in understanding the effects of uncertainty or outliers.[20]

---

[13] Neapolitan (n 2) 37.

[14] Mohammad Abualethem Nsour, 'The WTO and Using Digital Economy Technologies: Surviving the Race with Preferential Trade Agreements' (2023) 57(5) *Journal of World Trade* https://kluwerlawonline.com/journalarticle/Journal+of+World+Trade/57.5/TRAD2023031 accessed 15 May 2024, 763.

[15] Fiona Smith and Lorna Woods, 'A Distinction Without a Difference: Exploring the Boundary Between Goods and Services in the World Trade Organization and the European Union' (2005) 12(1) *Columbia Journal of European Law* accessed 15 May 2024, 1.

[16] World Trade Organization, 'Joint Statement on Electronic Commerce' (25 January 2019) WT/L/1056 https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/L/1056.pdf&Open=True accessed 15 May 2024.

[17] Daniel J Gervais, 'Towards an Effective Transnational Regulation of AI' (2023) 38 *AI & Society* https://doi.org/10.1007/s00146-021-01310-0 accessed 15 May 2024, 393.

[18] Ibid 403

[19] Nils von Ingersleben-Seip, 'Competition and Cooperation in Artificial Intelligence Standard Setting: Explaining Emergent Patterns' (2023) 40 *Review of Policy Research* https://doi.org/10.1111/ropr.12538 accessed 15 May 2024, 783.

[20] Ibid 785.

China has been a significant topic of global discussion, especially concerning its protectionist policies that hinder the entry of innovative American companies like Google and Amazon into the Chinese market. China has demonstrated significant commercial AI capabilities through companies like Baidu, Alibaba, and Tencent. These companies have flourished due to protective measures within China's AI sector. While Chinese AI companies currently lack global recognition, this is expected to change. Differing regulatory standards across national borders may facilitate the entry of Chinese enterprises into markets like the United States and Canada.[21] China's advancements in guided-missile systems highlight its potential to reshape contemporary warfare and the global balance of power. These AI breakthroughs could extend beyond the military sector, benefiting China globally.[22]

As AI development progresses rapidly, concerns about its impact on various aspects of society have emerged. Developing appropriate regulations and legal frameworks to address these challenges is complex and requires careful consideration. AI legislation is still evolving, with ongoing discussions about the best approach. Stakeholders, governmental agencies, and lawmakers are continually striving to balance promoting innovation, protecting society, and ensuring ethical AI practices. Transparency and public involvement are crucial elements of the regulatory process to effectively address these issues.[23]

AI's integration into international trade holds significant promise but also requires careful consideration of legal, regulatory, and policy challenges. By addressing these issues through coordinated efforts and innovative approaches, the global community can harness AI's potential to enhance trade while ensuring ethical and equitable practices.[24] The rapid pace of AI advancements necessitates a proactive approach in developing policies and regulations that can keep up with technological changes. International collaboration and the sharing of best practices will be vital in creating a cohesive framework that supports the sustainable growth of AI in trade.[25]

The potential for AI to revolutionize trade is immense, but it also brings to the forefront the need for robust governance structures that can manage its complexities.[26] As countries navigate the evolving landscape of AI, it is essential to consider both the opportunities and challenges it presents. The development of AI-specific trade policies, international agreements, and regulatory frameworks will play a crucial role in shaping the future of global commerce. Ensuring that these policies are inclusive, transparent, and adaptable will help maximize the benefits of AI while mitigating potential risks.[27]

---

[21] Ying Qian and others, 'Can Artificial Intelligence Improve Green Economic Growth? Evidence from China' (2023) 30 *Environmental Science and Pollution Research* https://doi.org/10.1007/s11356-022-23320-1 accessed 15 May 2024, 16423.

[22] Wyatt Hoffman and Heeu Millie Kim, *Reducing the Risks of Artificial Intelligence for Military Decision Advantage* (Center for Security and Emerging Technology) 12.

[23] Jan Schuett, 'Defining the Scope of AI Regulations' (2023) 15(1) *Law, Innovation and Technology* https://doi.org/10.1080/17579961.2023.2184135 accessed 15 May 2024, 67.

[24] Ibid 63

[25] Joran Mökander and Luciano Floridi, 'Operationalising AI Governance Through Ethics-Based Auditing: An Industry Case Study' (2023) 3 *AI Ethics* https://doi.org/10.1007/s43681-022-00171-7 accessed 15 May 2024, 452.

[26] Ibid 453.

[27] Schuett (n 23) 77.

Ultimately, the integration of AI into international trade represents a significant step forward in the digital transformation of the global economy. It offers the promise of enhanced efficiency, innovation, and economic growth. However, achieving these outcomes will require a concerted effort from all stakeholders involved, including policymakers, industry leaders, and the international community. By working together, we can create a future where AI not only drives trade but also contributes to a more interconnected and prosperous world.

This thesis explores the multifaceted impact of AI on cross-border transactions, examining both the opportunities and challenges it presents. By analyzing the ways in which AI is transforming international trade, this study aims to provide insights into how businesses and policymakers can navigate the evolving landscape of global commerce in the age of AI.

1.2 Purpose and research questions

Purpose

The purpose of this study is to examine the legal challenges and regulatory considerations associated with the integration of artificial intelligence (AI) into cross-border transactions within the framework of international trade law. By analysing existing literature, policy documents, and legislation, the study aims to identify key obstacles and explore the new legal frameworks to address these challenges. Additionally, the study seeks to provide insights for policymakers, legal scholars, and practitioners navigating the legal implications of AI in international trade.

Research Questions

1. What are the primary legal obstacles and regulatory considerations arising from the incorporation of artificial intelligence in cross-border transactions within the realm of international trade law?

2. What are the implications of regulatory measures such as the EU's AI Act for cross-border transactions, and how do they align with global regulatory trends?

3. How can global coordination be achieved to address the legal challenges posed by the integration of AI into cross-border transactions, and what role can international organizations such as the World Trade Organization (WTO) play in this regard?

1.3 Delimitations

This study delimits its focus primarily to the examination of the legal implications of artificial intelligence (AI) in cross-border transactions within the context of international trade law. While insights may be drawn from various jurisdictions, the research does not aim to provide an exhaustive analysis of the legal landscape in

every country or region. This limitation ensures that the study focuses on the legal challenges and regulatory considerations pertinent to AI in cross-border transactions, without becoming overly broad in scope.

Furthermore, the study is delimited to the analysis of legal frameworks directly relevant to AI in cross-border transactions only. While other legal domains, such as intellectual property law or data protection law, may intersect with these issues, they are not the primary focus of this research.

In terms of timeframe, the analysis is delimited to the existing literature, policy documents, and industry reports available up to the specified cut-off date i.e., 22nd May 2024 in this case. Any developments or changes in the legal landscape beyond this timeframe are not within the scope of this study. By setting a clear timeframe, the study ensures a comprehensive yet manageable analysis of the existing legal frameworks.

Moreover, while AI applications span various sectors, this study does not deep-dive into sector-specific legal hurdles. This delimitation allows for a comprehensive examination of the challenges irrespective of sectors, while avoiding the need for extensive sector-specific analysis.

Finally, while the study aims to provide insights for policymakers, scholars, and practitioners, it does not explicitly prescribe specific policy recommendations. Instead, it aims to identify key challenges and explore proposed strategies and legal frameworks to address these challenges, leaving policy formulation to the discretion of relevant stakeholders.

1.4 Method and materials

This research utilizes a dogmatic legal methodology alongside a comprehensive literature review to meticulously examine the intersection of Artificial Intelligence (AI) and international trade laws, a choice driven by the necessity to interpret complex legal norms and frameworks accurately. The dogmatic approach is pivotal for a focused examination of statutory texts and judicial rulings, allowing for an in-depth interpretation of how current international trade laws accommodate emerging AI technologies. This method is particularly suited to revealing the adaptability of established legal frameworks to innovative technologies, ensuring that the analysis remains rooted in actual legal stipulations.[28]

Additionally, the literature review broadens the scope of analysis by incorporating a diverse array of sources, including scholarly articles, policy papers, and industry reports, which discuss the implications, challenges, and opportunities presented by AI in international trade. This review is essential for situating the legal analysis

[28] Anupam Chander, 'Artificial Intelligence and Trade' in Paolo Farah and Elena Cima (eds), *Artificial Intelligence and International Economic Law* (Cambridge University Press 2021) https://doi.org/10.1017/9781108919234.008 accessed 19 June 2024, 4.

within the broader academic and industrial contexts, providing a balanced perspective that captures both theoretical debates and practical considerations.

Data collection for this research employs advanced tools and strategic sampling techniques. Legal documents are accessed through comprehensive databases such as LexisNexis and Westlaw, which provide pivotal international agreements, WTO documents, regional trade agreements, and relevant case law. Academic literature is meticulously sourced from databases like JSTOR and Google Scholar, using a purposive sampling method to select materials that specifically address the integration of AI within international trade frameworks. This technique ensures the relevance and applicability of the data to the research questions posed.

The administration of these data collection tools is methodically planned. Legal texts are reviewed for specific references to AI, while the literature review is conducted through a systematic search using keywords related to AI, international trade, and regulatory frameworks. Filters such as publication date and citations are applied to refine the search results, ensuring that the review encompasses the most pertinent and influential sources.

Overall, this methodology combines rigorous legal analysis with an expansive review of interdisciplinary literature, offering a robust framework for understanding the complex dynamics at play between AI and international trade laws. By integrating these approaches, the research aims to provide well-grounded conclusions and recommendations that address existing regulatory gaps, promote legal certainty, and facilitate the responsible integration of AI in global trade practices.

1.5 Outline

The thesis initiates by examining the impact of artificial intelligence (AI) on cross-border transactions in the Introduction chapter. It traces the evolution of AI in international trade and highlights the need to address its legal implications. Chapter 2, explores the challenges and considerations associated with cross-border AI transactions, including jurisdictional issues, liability frameworks, and data privacy concerns. Chapter 3, focuses on the European Union's AI Act and its effects on cross-border transactions, analysing its alignment with global regulatory trends and presenting practical case studies. Moving forward, Chapter 4, discusses the importance of global cooperation in addressing legal challenges, emphasizing the role of international organizations such as the World Trade Organization and proposing initiatives for harmonization in AI regulation on a global scale. Concluding the arguments with Chapter 5, which brings the dissertation to a close by summarizing key findings and suggesting potential avenues for future research and policy development.

2 Legal Obstacles and Regulatory Considerations

Building on the foundation laid in the Introduction, where we explored the transformative impact of AI on international trade, this chapter delves into the specific legal obstacles and regulatory considerations that arise from integrating AI into cross-border transactions. The background and research questions outlined earlier highlight the need to address these complexities. Here, we will examine the jurisdictional challenges, liability frameworks, and data privacy concerns that must be navigated to effectively incorporate AI within the realm of international trade law.

2.1 Jurisdictional challenges in the era of AI

AI's rapid progression has introduced significant changes and complexities to various sectors, including the legal framework's jurisdictional aspects. The integration of AI holds promise for transforming traditional methods of legal research and case analysis. Leveraging natural language processing algorithms, AI can swiftly analyse extensive legal texts, statutes, and court rulings, furnishing legal practitioners with pertinent information and insights essential for informed decision-making. Furthermore, predictive analytics powered by AI offer the potential to forecast case outcomes, aiding in efficient resource allocation within legal entities.[29]

Yet, amidst these advancements lie notable risks. One of the major concerns is the possibility of AI algorithms perpetuating biases and prejudices inherent in historical data. This can potentially lead to skewed judgments and disparities in legal decision-making. Moreover, the opacity and lack of explainability in certain AI systems pose significant challenges, hindering comprehension of the rationale behind AI-driven decisions and impeding the assessment of their reliability, thereby undermining principles of due process.[30]

Another key issue revolves around delineating responsibility between humans and AI entities.[31] For instance, in scenarios involving autonomous vehicles, determining culpability in the event of accidents raises questions about accountability — whether it rests with the vehicle manufacturer, software developer, or human occupant. Additionally, the inherent 'black box' nature of AI complicates efforts to elucidate the decision-making process or trace the specific factors influencing outcomes. This

[29] Y Wang, Y Pan, M Yan, Z Su, and TH Luan, 'A Survey on ChatGPT: AI–Generated Contents, Challenges, and Solutions' (2023) 4 IEEE Open Journal of the Computer Society 280, DOI: 10.1109/OJCS.2023.3300321, accessed 15 May 2024, 282.

[30] N Lucchi, 'ChatGPT: A Case Study on Copyright Challenges for Generative Artificial Intelligence Systems' (2023) European Journal of Risk Regulation 1, DOI: 10.1017/err.2023.59, accessed 15 May 2024, 3.

[31] M Coeckelbergh, 'Narrative Responsibility and Artificial Intelligence' (2023) 38 AI & Society 2437, https://doi.org/10.1007/s00146-021-01375-x, accessed 15 May 2024, 2438.

lack of transparency raises concerns about fairness and transparency, particularly in critical domains such as loan approvals or hiring processes.[32]

AI advancement frequently outpaces the development of corresponding legal frameworks and regulations, exacerbating the difficulty of establishing clear accountability rules. In adapting AI within existing legal and political boundaries, the global nature of the internet and the fluid exchange of information challenge conventional jurisdictional concepts.[33] Legal cases involving AI often traverse multiple jurisdictions, leading to conflicts stemming from territorial, national, or cross-border actions and effects. Consequently, determining the relevant jurisdiction becomes intricate when AI systems operate internationally, posing challenges to maintaining legal standards and resolving disputes.[34]

Encouraging the utilisation of arbitration and alternative dispute resolution mechanisms may offer flexible and efficient avenues for addressing cross-border disputes arising from AI-related matters. By providing adaptable approaches, these methods can navigate the complexities of traditional jurisdictional boundaries more effectively.

2.1.1 Determining jurisdiction

Jurisdictional considerations are pivotal in legal proceedings, typically encompassing three key aspects: procedural jurisdiction, substantive jurisdiction, and enforcement jurisdiction.[35] Determining jurisdiction involves establishing which court or state authority possesses the appropriate authority, which rules should apply, and how court decisions are implemented.

Several criteria dictate jurisdiction in specific cases, including:

1. Territorial Principle

   Territoriality is fundamental to the international law of prescriptive jurisdiction, closely linked to the principle of territorial sovereignty. This principle justifies itself on the basis that crimes or deviant activities primarily disrupt the public order of the state where they occur, and it is more likely that the evidence of such activity is found in that state. Consequently, territorial jurisdiction is generally straightforward and less prone to disputes.[36]

   While the legitimacy of territorial jurisdiction is widely accepted, the specific territorial connections required for its valid exercise remain ambiguous. A key issue is whether minimal or incidental connections of

[32] M Bearman and R Ajjawi, 'Learning to Work with the Black Box: Pedagogy for a World with Artificial Intelligence' (2023) *British Journal of Educational Technology*, https://doi.org/10.1111/bjet.13337, accessed 18 May 2024, 1162.

[33] Coeckelbergh (n 31) 2439.

[34] Mira Burri, 'Trade Law 4.0: Are We There Yet?' (2023) *Journal of International Economic Law*, https://doi.org/10.1093/jiel/jgac053, accessed 18 May 2024, 93.

[35] C Ryngaert, 'International Jurisdiction Law' in Cedric Ryngaert (ed), *Handbook on Extraterritoriality in International Law* (Edward Elgar Publishing 2023) https://doi.org/10.4337/9781800885592.00008, accessed 18 May 2024, 12.

[36] Ibid 14.

transnational offenses to a state's territory can justify territorial jurisdiction. If even a slight territorial impact is deemed sufficient, territorial jurisdiction could overshadow other forms of jurisdiction, effectively becoming a tool for extraterritoriality. [37]

International law does not define the elements of offenses, leaving this to individual states with their own criminal laws and definitions. However, international law likely sets boundaries on what is permissible, preventing states from defining offenses in a way that allows for territorial jurisdiction without a genuine connection to the state. For instance, asserting territorial jurisdiction based on a mere territorial effect of extraterritorial conduct is not permissible. Additionally, from the perspective of individual rights, such tenuous connections can violate proper notice, catching defendants unaware and unable to foresee the application of a state's laws.[38]

The exercise of territorial jurisdiction over internet content accessed in a state's territory, but not specifically targeted at its users, illustrates this problem. The content creator cannot be expected to know all global criminal laws. Similarly, asserting territorial jurisdiction over activities like sending an email through a local server or processing a financial transaction through a local bank can be problematic due to the complexity of international systems, making it hard for individuals to foresee the application of a state's laws. Variations in national approaches to participation and inchoate offenses also create notice issues. Despite these concerns, international protest such jurisdictional assertions has been minimal.

In contrast, traditional territorial jurisdiction in criminal law has faced little international opposition. However, this changes in the context of economic regulation. When states use territorial connections to regulate transnational or global business activities, other states may view this as encroachment on their regulatory prerogatives. This is particularly evident in antitrust or competition law. Exporting states may tolerate restrictive business practices that boost national welfare, while importing states may oppose these practices to protect their own welfare.[39] The latter may adopt expanded territoriality principles, like territorial effects or implementation doctrines, to assert jurisdiction over cartels harming their economies.

Recently, Western states have begun leveraging territoriality to influence extraterritorial change, using terms like 'territorial extension' or the 'Brussels Effect'. These refer to using territorial connections, such as product importation or service provision, to regulate transnational business activities domestically. Large markets like the EU and the US use this technique to impact global activities.[40] These strategies leverage territoriality to exert global governance, raising jurisdictional concerns and

[37] United States v Zarrab, No 15-cr-867, 2016 WL 6820737 (SDNY 2016), 15 (a US court considered using a US correspondent bank account as exporting services from the US, aligning with the principle of territoriality in the context of enforcing US sanctions regulations), accessed 18 May 2024.

[38] Julia Hörnle, *Internet Jurisdiction: Law and Practice* (OUP 2021), 143.

[39] United States v Aluminum Corp of America 148 F 2d 416, 443 (2d Cir 1945).

[40] Anu Bradford, *The Brussels Effect: How the European Union Rules the World* (OUP 2020), 13.

accusations of imposing the values of economically advanced nations on less developed ones, reminiscent of colonialism. Despite these concerns, international protest has been relatively limited, possibly due to the global benefits of these regulations and their considerate design, which may include exemptions and respect for local regulations.[41]

2. Nationality Principle

Also known as the personality principle, this grants a state jurisdiction over its citizens regardless of their location. This principle ensures that citizens remain subject to their home country's laws even when they are abroad.[42] The nationality principle extends beyond criminal law into other fields, notably economic law, where states use it to regulate the extraterritorial activities of domestically incorporated firms. This is particularly evident in the context of home state control or regulation, where several states have imposed due diligence requirements on these firms concerning human rights and environmental risks in their global supply chains.[43] Despite necessitating significant extraterritorial structural reforms, these initiatives have largely avoided international protest, likely because they align with globally shared values and because victims in host states may reasonably expect home states to take some responsibility for their corporations' actions and omissions, reflecting an 'extraterritorial duty to protect'.[44]

In private international law, the nationality principle is seldom used as a jurisdictional basis.[45] Jurisdiction is more commonly based on the defendant's residence or domicile, blending elements of territoriality and nationality, as it does not strictly require citizenship. This principle is fundamental in civil law countries, where jurisdiction often depends on the defendant's residence.[46] Some states have begun using domicile or residence as a jurisdictional connection in criminal law, a shift that has not faced international opposition.[47] Additionally, some states extend the nationality principle to foreign entities controlled by their nationals, such as foreign subsidiaries of domestic companies. The US, notably, applies the control theory in its international sanctions regulations, a practice that has sparked international protest but has not been rescinded by the US.[48]

3. Universality Principle

A crucial addition to modern international law is the concept of universal jurisdiction. Universal jurisdiction covers two types of offenses: core crimes

[41] Joanne Scott, 'Extraterritoriality and Territorial Extension in EU Law' (2014) 62(1) *American Journal of Comparative Law* https://ssrn.com/abstract=2276433 accessed 18 May 2024, 87.

[42] Ryngaert (n 35) 19.

[43] G Lythgoe, 'Eradicating the Exceptional: The Role of Territory in Structuring International Legal Thought' (2023) *Leiden Journal of International Law* 10.1017/S0922156523000675, accessed 18 May 2024, 03.

[44] Ibid 17

[45] As in Article 15 French Civil Code.

[46] As in Article 2 of the EU Brussels Regulation.

[47] As in Article 7(3) Dutch Penal Code.

[48] European Community: Note and Comments on the Amendments of 22 June 1982 to the Export Administration Act, 12 August 1982, (1982) 21 ILM 891, 894.

against international law (such as war crimes, genocide, crimes against humanity, and torture, which are serious violations of international human rights law) and crimes against the international community (such as piracy and terrorism). The underlying motivation for universal jurisdiction in both cases is to prevent impunity and deter future crimes.[49]

While the permissive principles of jurisdiction rely on a connection to the state, universality, in its purest form, does not require any such link. Instead, it is based solely on the severity of the offense, irrespective of where or by whom it is committed.[50] Therefore, universal jurisdiction is one of the broadest forms of extraterritorial jurisdiction. Over the years, it has sparked significant interest among scholars and civil society. However, actual prosecutions, let alone trials based on universal jurisdiction, are relatively rare, although their frequency appears to be increasing somewhat recently.[51]

Universal jurisdiction exists in both criminal and civil forms. Universal criminal jurisdiction involves prosecuting international criminals, while universal civil jurisdiction pertains to private lawsuits for damages initiated by victims. The latter is less widely accepted internationally.[52]

Universal criminal jurisdiction can be derived from either customary international law or treaty law. Most treaties that provide for universality do so through an aut dedere aut judicare clause, requiring states to either prosecute or extradite an alleged offender present in their territory. In the case of Belgium v Senegal, the ICJ interpreted the aut dedere aut judicare clause in the UN Torture Convention as mandating states to prosecute and optionally extradite.[53] Typically, this obligation applies only between the parties to the treaty and cannot be invoked for nationals of non-ratifying states, and it may not constitute customary international law due to a lack of widespread state practice and opinio juris.[54] However, states implementing the clause domestically do not always distinguish between treaty parties and non-parties.[55]

In the absence of a treaty clause on universality, customary international law might permit, but not require, the exercise of universal jurisdiction. State legal practices, particularly in their domestic codes, suggest that such authorizations exist for certain core international crimes, though not necessarily all.[56] Most domestic codes stipulate that the offender must be present for universal jurisdiction to be exercised, although it is unclear

[49] Wolfgang Friedmann, 'The Position of Underdeveloped Countries and the Universality of International Law' (1961)1(2)78, https://heinonline.org/HOL/LandingPage?handle=hein.journals/cjtl1&div=11&id=&page=, accessed 18 May 2024, 81.

[50] JI Charney, 'Universal International Law' (1993) 87(4) *American Journal of International Law* 10.2307/2203615, accessed 18 May 2024, 532.

[51] Ernst Sauer, 'Universal Principles in International Law' (1956) 42 *Transactions of the Grotius Society* http://www.jstor.org/stable/743133 accessed 18 May 2024, 187.

[52] Charney (n 50) 537.

[53] Belgium v Senegal (Judgment) [2012] ICJ Rep 422, paras 94–95.

[54] Article 34 Vienna Convention on the Law of Treaties (1969).

[55] ILC Final Report, 'Obligation to Extradite or Prosecute' (2014) UN Doc A/CN.4/L.844, paras 50–51.

[56] CW Jenks, 'The Challenge of Universality' (1959) 53 *Proceedings of the American Society of International Law at Its Annual Meeting* 10.1017/S0272503700023296, accessed 18 May 2024, 87.

whether this requirement stems from a sense of legal obligation (opinio juris).[57]

Universal jurisdiction, particularly its scope and application, has faced considerable international resistance. This has led some Western states to reduce the scope of their universality laws. Research indicates that most prosecutions under the universality principle involve lower- or mid-level offenders who have fled the crime scene and sought refuge in another state, thereby reducing the risk of diplomatic tensions. This trend suggests that universality will remain a highly exceptional form of extraterritorial jurisdiction.[58]

Conflict of jurisdiction arises when multiple states claim jurisdiction over a particular legal case, typically involving an extraterritorial component or international transactions. Territoriality, nationality, or the effects of actions establish the relevant jurisdiction. In the context of online interactions, nearly every internet activity possesses an international aspect, potentially leading to multiple jurisdictions or a 'spill-over' effect.[59]

Historical legal cases exemplify the challenges posed by multiple jurisdictions. For instance, the 2001 Yahoo! case in France addressed the display of Nazi objects on the Yahoo.com auction website, hosted in the USA, where such displays were legal.[60] Similarly, the EU's right to be forgotten ruling imposed obligations on search engines to accommodate European users' requests to remove certain search results.[61]

A recent example is the CJEU's decision in Eva Glawischnig-Piesczek v Facebook Ireland Limited, where Facebook was ordered to globally remove or block defamatory content. The ruling underscores the complexities of jurisdiction and the internet's global reach, prompting legal and technical solutions to navigate jurisdictional challenges effectively.[62]

Understanding these principles and their implications is essential for navigating the complex landscape of jurisdiction in an increasingly interconnected world. By recognizing the interplay between territoriality, nationality, and the effects of actions, legal practitioners can better address jurisdictional issues and uphold the principles of justice and accountability in cross-border contexts.

[57] Ibid 93.

[58] Kenneth C Randall, 'Universal Jurisdiction under International Law' (1987) 66 *Tex L Rev*, https://heinonline.org/HOL/LandingPage?handle=hein.journals/tlr66&div=39&id=&page=, accessed 18 May 2024, 787.

[59] Kenneth S Carlston, 'Universality of International Law Today: Challenge and Response' (1962) 8 *Howard LJ*, https://heinonline.org/HOL/LandingPage?handle=hein.journals/howlj8&div=15&id=&page=, accessed 18 May 2024, 81.

[60] *LICRA and UEJF v Yahoo! Inc and Yahoo! France*, Tribunal de grande instance de Paris, Ordonnance de référé, 22 May 2000, No RG: 00/05308.

[61] *Google Spain SL and Google Inc v Agencia Española de Protección de Datos (AEPD) and Mario Costeja González* (Case C-131/12) [2014] ECLI :EU:C:2014:317, 339.

[62] *Eva Glawischnig-Piesczek v Facebook Ireland Limited* (Case C-18/18) [2019] ECLI:EU:C: 2019:821, 827.

2.1.2 AI and EU Private International Law

There are two primary considerations when applying EU Private International Law (PIL) to cross-border private law claims involving AI systems. Firstly, whether existing EU PIL legislation can address claims arising from AI usage, and secondly, how the EU might develop new PIL laws to support its AI policy goals.

To determine which country's private law applies to cross-border AI-related claims, the main instruments are the Rome I and Rome II Regulations. Rome I deals with contractual obligations, including contract formation, while Rome II addresses non-contractual obligations.[63] These regulations are crucial in deciding the applicable law for private and commercial relationships involving AI systems. It's important to note that these regulations apply only within EU Member States bound by them.

The distinction between contractual and non-contractual claims is fundamental. Contractual claims related to AI applications are governed by Rome I, whereas non-contractual claims fall under Rome II.[64] Both regulations are technology-neutral, meaning they are designed to be adaptable to technological advancements, including AI. However, they do contain specific conflict rules for certain cases, such as consumer and employment contracts under Rome I, and product liability and unfair market practices under Rome II, which are particularly relevant for AI-related issues.[65]

Two recent cases illustrate how Rome I and II can be applied to AI-related claims. The first involves non-contractual harm from discriminatory CV screening algorithms, like Amazon's software, which showed bias against women. If a job applicant pursued pre-contractual damages for discrimination, Article 12 of Rome II would apply, referring to the law that would govern the employment contract as determined by Article 8 of Rome I.[66]

In a contractual context, the Deliveroo case in Italy highlighted issues with an algorithm used to allocate delivery runs. This algorithm, which penalized riders for not canceling shifts in advance regardless of the reason, was successfully challenged for its discriminatory nature. Such a case would be governed by the law applicable to employment contracts, often the law of the habitual place of employment or the law chosen by the parties.[67]

Certain sector-specific EU laws also affect AI-related claims. For example, the GDPR's Article 2 sets the territorial scope for data protection claims, overriding general rules in Rome I and II.[68] Similarly, the 1971 Hague Traffic Accident Convention impacts the liability of autonomous vehicle drivers, and the e-Commerce

[63] Regulation (EC) No 593/2008 on the law applicable to contractual obligations (Rome I) [2008] OJ L177/6; Regulation (EC) No 864/2007 on the law applicable to non-contractual obligations (Rome II) [2007] OJ L199/40.

[64] Ibid

[65] Regulation (EC) No 864/2007 (Rome II), art 12; Regulation (EC) No 593/2008 (Rome I), art 8.

[66] Miller v Amazon.com Inc [2021] EWHC 479 (QB).

[67] Tribunale Ordinario di Bologna, Judgment No. 2949/2020.

[68] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation) [2016] OJ L119/1, art 2.

Directive's place-of-origin principle can override Rome I and II for information society service providers.[69]

Practical issues in applying existing EU PIL to AI include the extent of party autonomy in choosing applicable law, whether AI systems qualify as products under product liability rules, and the application of foreign law vis-à-vis public policy.[70] Party autonomy allows parties to choose the applicable law, but this is limited by mandatory laws protecting collective interests, such as non-discrimination and data protection.[71]

There are questions about AI systems and product liability under Article 5 of Rome II, which favors producers. The application of foreign law can be barred by public policy if it contradicts fundamental EU values. The most fundamental issue is the potential legal personality of advanced AI systems.[72] If AI systems act autonomously, questions about their habitual residence for PIL purposes will arise, challenging the current frameworks.

The existing EU PIL framework can accommodate AI-related cross-border civil liability cases. However, several questions need addressing: the extent of party autonomy, the classification of AI as products for liability purposes, the application of foreign law, and the potential legal personality of AI systems. Addressing these will ensure that EU PIL remains effective in the evolving landscape of AI technology.

2.2 Liability Frameworks: Assessing Accountability for AI Outcomes

Accountability holds a paramount position in ethical considerations, emphasising responsibility and legal liability. The question of accountability becomes even more vital when AI systems malfunction, necessitating reparation, redress, restitution, or punishment. Presently, with the exception of the humanoid Sophia, AI lacks legal personality.

The Organisation for Economic Co-operation and Development (OECD) defines 'accountability' as an ethical and moral expectation guiding individuals or organizations to explain their decisions and actions while taking measures for improved outcomes.[73] 'Liability' pertains to the legal consequences of actions or inaction, while 'responsibility' encompasses ethical expectations and the causal links between actors and outcomes. In this context, 'accountability' best embodies the principle discussed, emphasising the expectation for organizations and individuals to ensure the proper functioning of AI systems in alignment with their roles along

[69] 1971 Hague Convention on the Law Applicable to Traffic Accidents; Directive 2000/31/EC on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (e-Commerce Directive) [2000] OJ L178/1, art 3(2).

[70] AI Act, Art 25.

[71] AI Act, Art 3 and Art 6.

[72] AI Act, Art 25; Regulation (EC) No 864/2007 of the European Parliament and of the Council of 11 July 2007 on the Law Applicable to Non-Contractual Obligations (Rome II) [2007] OJ L199/40, Art 5.

[73] Organisation for Economic Co-operation and Development (OECD), 'Public Integrity Handbook' (OECD Publishing, 2021).

with applicable laws and regulations, and must be demonstrated through decision-making processes, actions and documentation.[74]

Principle 9 of the Montreal Declaration for responsible development of artificial intelligence asserts that only human beings should be held responsible for decisions resulting from recommendations made by AI systems and the subsequent actions taken.[75] When decisions significantly impact an individual's life, well-being, or reputation, the final decision should be made by a human, based on freedom and informed judgment. However, as we anticipate the arrival of general artificial intelligence, capable of human-like speech, thought, and action, the situation may evolve. The principle of 'capability caution' underscored in paragraph 19 of the Asilomar AI Principles urges us to carefully consider that since there is no consensus on the limits of artificial intelligence, we should not assume any.[76]

The source of responsibility and accountability risks in AI deployment stems from various factors:

Use of Third-Party Components

Relying on third-party products, including pre-trained models or datasets, introduces potential issues if the product does not meet organizational standards or align with risk management processes. Closed-source proprietary information and solutions further complicate accountability, as understanding potential issues or assigning responsibility becomes much more challenging.[77]

Let's delve deeper into the challenges posed by third-party components in AI systems. Organizations often opt for pre-trained models or datasets to expedite the development process and leverage existing expertise. However, this reliance on third-party components can lead to loss of control over various aspects, such as development, testing, and maintenance, which can impact accountability. Moreover, the use of closed-source proprietary solutions adds to the accountability challenges, as it becomes difficult to assess potential issues or assign responsibility.[78] In such cases, organizations may find themselves in a fix, particularly if the third-party product fails to meet their standards or align with their risk management processes.

Automation Bias

This bias refers to the tendency of individuals to rely on decisions made by automated systems, even when they may be incorrect or contradicts human

[74] Z Tóth, R Caruana, T Gruber et al., 'The Dawn of the AI Robots: Towards a New Framework of AI Robot Accountability' (2022) 178 *J Bus Ethics* https://doi.org/10.1007/s10551-022-05050-z, accessed 18 May 2024, 899.

[75] Montreal Declaration for a Responsible Development of Artificial Intelligence (2018), Principle 9.

[76] Asilomar AI Principles (2017), paragraph 19.

[77] A Koene, C Clifton, Y Hatada, H Webb, and R Richardson, *A Governance Framework for Algorithmic Accountability and Transparency* (European Parliamentary Research Service 2019), accessed 18 May 2024. 17.

[78] TS Cabral, 'Liability and Artificial Intelligence in the EU: Assessing the Adequacy of the Current Product Liability Directive' (2020) 27(5) *Maastricht Journal of European and Comparative Law* https://doi.org/10.1177/1023263X20948689, accessed 18 May 2024, 620.

judgment. Automation bias can lead to complacency and a lack of critical evaluation of automated decisions, posing accountability risks.[79]

Automation bias is a significant concern in the deployment of AI systems, as it can undermine human judgment and decision-making processes. Individuals may defer to automated systems without adequately assessing the accuracy or reliability of their decisions, leading to unintended consequences and accountability challenges. For instance, pilots trusting autopilot systems without monitoring or drivers over-trusting autonomous vehicles are examples of automation bias in action.[80] Addressing automation bias requires a concerted effort to promote critical thinking and scepticism when interacting with AI systems, ensuring that individuals remain vigilant and actively engage in decision-making processes.

Out-of-the-Court Judgments

Decisions with significant consequences to personal liberty made outside legal authority pose accountability risks. Systems implementing such decisions, whether directly or indirectly, can infringe upon individual liberties outside the boundaries of the law.

Out-of-the-court judgments represent a significant accountability risk in AI deployment, particularly when decisions with far-reaching consequences are made without proper legal authority.[81] These decisions, whether implemented directly by AI systems or indirectly through automated processes, can impinge upon individual liberties and rights without due process. Such actions undermine the principles of justice and fairness, raising concerns about accountability and oversight.[82] It is essential to establish clear legal frameworks and mechanisms to ensure that decisions affecting personal liberties are made within the bounds of the law, with proper safeguards in place to protect individual rights and interests.

To mitigate these risks, industry best practices include:

Governance Structure

Establishing robust governance structures that define the rights and responsibilities of stakeholders and ensure accountability in carrying out tasks is crucial for ethical AI deployment.

Effective governance structures provide the framework for decision-making and oversight, delineating the roles and responsibilities of key stakeholders within the organization. By clearly defining accountability mechanisms and reporting lines, governance structures help ensure transparency and accountability in AI deployment

[79] Hannah Ruschemeier, 'The Problems of the Automation Bias in the Public Sector – A Legal Perspective' (May 8, 2023) *Weizenbaum Conference proceedings 2023* https://ssrn.com/abstract=4521474, accessed 18 May 2024, 4.

[80] Ibid 7.

[81] Lyria Bennett Moses, 'Artificial Intelligence in the Courts, Legal Academia and Legal Practice' (2017) 91 ALJ 561, https://heinonline.org/HOL/LandingPage?handle=hein.journals/aslnlwjunl91&div=99&id=&page=, accessed 18 May 2024, 563.

[82] Frank Fagan and Saul Levmore, 'The Impact of Artificial Intelligence on Rules, Standards, and Judicial Discretion' (2019) *Coase-Sandor Working Paper Series in Law and Economics, University of Chicago Law School*, https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2658&context=law_and_economics, accessed 18 May 2024, 17.

processes.[83] They also facilitate alignment with organizational objectives and regulatory requirements, fostering trust and confidence in AI systems among stakeholders.

Responsibility Assignment Matrix (RACI)

By clearly defining and assigning responsibilities to relevant stakeholders throughout the project life cycle, a RACI matrix maps tasks and milestones to specific roles and their corresponding responsibilities.

A responsibility assignment matrix (RACI) is a valuable tool for clarifying roles and responsibilities within AI deployment projects, ensuring that tasks are allocated appropriately, and accountability is upheld. By identifying key stakeholders and their respective roles in project execution, the RACI matrix helps prevent confusion and ambiguity, promoting accountability and transparency.[84] It promotes effective communication and collaboration among team members, enhancing overall project success and mitigating risks.

Policies

Well-written policies, such as ethics and conduct policies, cyber-security policies, and data protection policies, inform stakeholders of their responsibilities, promote consistent behavior, and enable fair assignment of blame or liability in case of incidents.

Policies serve as guiding principles for ethical conduct and behavior within organizations, providing a framework for decision-making and action. By articulating expectations and standards for ethical conduct, policies help promote accountability and integrity across all levels of the organization. Moreover, they serve as a reference point for employees, guiding their actions and decisions in alignment with organizational values and regulatory requirements. Effective policy implementation requires clear communication, training, and enforcement mechanisms to ensure compliance and accountability.[85]

Document Design & Auditing Process

Comprehensive documentation in the design process of data-driven projects facilitates monitoring, identification of success or failure factors, and continual improvement. Similarly, documenting the auditing process ensures consistent application of audits and holds auditors accountable for their findings.

Documentation plays a crucial role in ensuring transparency and accountability in AI deployment processes, providing a record of decisions, actions, and outcomes. By documenting key aspects of the design and implementation process, organizations can track progress, identify areas for improvement, and ensure

[83] P Tambe, P Cappelli, and V Yakubovich, 'Artificial Intelligence in Human Resources Management: Challenges and a Path Forward' (2019) 61(4) *California Management Review* https://doi.org/10.1177/0008125619867910, accessed 18 May 2024, 37.

[84] Matthew U Scherer, 'Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies' (2015) 29 *Harv JL & Tech* https://doi.org/10.1177/0008125619867910, accessed 18 May 2024, 176.

[85] Ibid 181.

compliance with regulatory requirements.[86] By adhering to document design best practices and establishing robust auditing procedures, organizations can enhance accountability and trust in AI deployment processes.

True accountability should be placed on human beings, and firms and governments should not deflect responsibility by attributing blame solely to AI systems. Establishing effective governance structures and adhering to industry best practices are essential for ensuring accountability in AI deployment.[87]

2.3 Safeguarding Data Privacy and Protection in AI Transactions

As businesses harness the power of AI to revolutionise operations and decision-making processes, they must navigate the intricate interplay between technological progress and individual privacy rights, particularly concerning privacy and data protection.

One of the foremost concerns in the realm of AI is the potential for algorithms to perpetuate biases inherent in the data they analyse. Historical data often reflects societal biases and inequalities, which can be amplified by AI algorithms, leading to discriminatory outcomes. For instance, AI-powered hiring tools may inadvertently discriminate against certain demographic groups if trained on biased datasets. To address this issue, businesses must implement robust measures to detect and mitigate bias in AI algorithms, ensuring fairness and equity in decision-making processes.[88] This includes conducting regular audits of AI systems, diversifying training datasets, and incorporating fairness metrics into algorithmic design.

Furthermore, the proliferation of AI-powered Internet of Things (IoT) devices has expanded the scope of data collection, raising concerns about unauthorized surveillance and privacy breaches. These devices, ranging from smart thermostats to wearable fitness trackers, gather vast amounts of personal data from homes, workplaces, and public spaces.[89] This unprecedented collection of data poses significant privacy risks, as it provides insights into individuals' behaviours, preferences, and activities. To mitigate these risks, businesses must implement stringent security protocols to protect sensitive information from cyber threats and privacy violations.[90] This includes encrypting data both in transit and at rest, implementing multi-factor authentication mechanisms, and regularly updating software to patch vulnerabilities.

---

[86] Harry Surden, 'Machine Learning and Law: An Overview' in Roland Vogl (ed), *Research Handbook on Big Data Law* (Edward Elgar Publishing 2021) 171, https://scholar.law.colorado.edu/cgi/viewcontent.cgi?article=1088&context=faculty-articles, accessed 18 May 2024, 177.

[87] A Jobin, M Ienca, and E Vayena, 'The Global Landscape of AI Ethics Guidelines' (2019) 1 *Nat Mach Intell* https://doi.org/10.1038/s42256-019-0088-2, accessed 18 May 2024, 391.

[88] U Peters, 'Algorithmic Political Bias in Artificial Intelligence Systems' (2022) 35 Philos Technol 25, https://doi.org/10.1007/s13347-022-00512-8, accessed 18 May 2024, 3.

[89] Ashish Ghosh, Debasrita Chakraborty, and Anwesha Law, 'Artificial Intelligence in Internet of Things' (2018) *CAAI Transactions on Intelligence Technologies* https://doi.org/10.1049/trit.2018.1008, accessed 18 May 2024, 5.

[90] Cristian González García and others, 'A Review of Artificial Intelligence in the Internet of Things' (2018) *MDE Research Group, Department of Computer Science, University of Oviedo*, https://digibuo.uniovi.es/dspace/bitstream/handle/10651/52310/A%20Review.pdf accessed 18 May 2024, 12.

The use of facial recognition and biometric technologies in AI systems presents additional privacy challenges. Biometric data, such as facial features or fingerprints, is inherently personal and immutable, making it susceptible to misuse and unauthorized access. While these technologies offer benefits such as enhanced security and convenience, they also raise concerns about privacy infringement and potential misuse.[91] To address these concerns, companies must implement robust security measures and obtain explicit user consent when collecting and processing biometric data. Additionally, they should adhere to strict data retention policies and provide users with clear information about how their biometric data will be used and protected.[92]

Moreover, the ambiguous nature of AI decision-making processes poses challenges for accountability and transparency. Traditional machine learning algorithms often operate as 'black boxes', making it difficult for stakeholders to understand how decisions are made. This lack of transparency can erode trust in AI systems and hinder the ability to address issues such as bias and discrimination. To enhance transparency and accountability in AI, businesses should prioritize the adoption of explainable AI techniques that provide insights into the decision-making process.[93] This includes techniques such as model interpretability, which allows stakeholders to understand the factors influencing algorithmic outcomes, and algorithmic auditing, which involves evaluating the fairness and accuracy of AI systems through independent review.

While AI offers unprecedented opportunities for innovation and efficiency, businesses must prioritize privacy protection to maintain customer trust and regulatory compliance. By implementing robust privacy measures, addressing algorithmic bias, and fostering transparency in AI processes, companies can navigate the complexities of AI privacy while upholding ethical standards and legal obligations.[94] As technology continues to advance and AI becomes increasingly pervasive in our daily lives, safeguarding privacy rights remains paramount in ensuring a future where individuals can benefit from AI's transformative power without sacrificing their fundamental right to privacy.

The intersection of AI and privacy presents a global challenge, prompting nations worldwide to adopt diverse measures to safeguard their citizens' privacy. In the United States, the California Consumer Privacy Act (CCPA) stands out as a comprehensive privacy law, granting Californians the right to understand the personal information collected by companies and request its deletion.[95] Additionally, several bills introduced by the US government, such as the Consumer Online Privacy Rights Act (COPRA) and the SAFE DATA Act, aim to further enhance consumer privacy protection.

---

[91] P Kaur, K Krishan, SK Sharma, and T Kanchan, 'Facial-Recognition Algorithms: A Literature Review' (2020) 60(2) *Medicine, Science and the Law* 10.1177/0025802419893168, accessed 18 May 2024, 133.

[92] Ibid 135.

[93] A Adadi and M Berrada, 'Peeking Inside the Black-Box: A Survey on Explainable Artificial Intelligence (XAI)' (2018) 6 *IEEE Access* 10.1109/ACCESS.2018.2870052, accessed 18 May 2024, 52149.

[94] M Carabantes, 'Black-Box Artificial Intelligence: An Epistemological and Critical Analysis' (2020) 35 *AI & Soc* https://doi.org/10.1007/s00146-019-00888-w, accessed 18 May 2024, 312.

[95] California Department of Justice, 'California Consumer Privacy Act (CCPA)' (2020).

Across the Atlantic, the General Data Protection Regulation (GDPR) emerges as the most influential privacy regulation, setting a benchmark for global privacy standards. It delineates a framework of regulations to shield the personal data of EU citizens, applicable to all entities operating within the EU's jurisdiction.[96] For instance, in 2020, the French data protection authority imposed a 50 million euros fine on Google for GDPR violations.[97] Moreover, the European Union's proposal for the Digital Services Act seeks to bolster online privacy and empower users with greater control over their data.[98]

China has implemented various measures to uphold citizens' privacy, including the Cybersecurity Law mandating companies to safeguard personal information and granting citizens the right to comprehend the usage of their data. Despite these efforts, criticisms have arisen regarding the Chinese government's utilization of AI for citizen surveillance and dissent suppression. In response, the National People's Congress passed a new personal information protection law in 2020, effective from November 2021. This law imposes stricter regulations on companies collecting and processing personal information, with penalties for non-compliance.[99]

In Australia, the Privacy Act 1988 regulates the management of personal data by governmental bodies and private organizations, affording citizens rights to access and rectify their personal information. Nonetheless, critics argue that the Privacy Act lacks adequacy in addressing emerging privacy concerns due to AI. Consequently, the Australian government released a discussion paper in late 2022 outlining proposed Privacy Act reforms, including heightened penalties for breaches and a mandatory requirement for privacy impact assessments.[100]

Numerous other nations are pursuing distinct approaches to safeguard their citizens' privacy amid the AI era, with the development of privacy laws remaining an ongoing process likely to witness changes and updates.[101]

While the duty to protect privacy extends to various entities, including governments, corporations, and individuals, consumers play a pivotal role in safeguarding their personal information actively. Through staying informed, leveraging privacy tools and settings, and exercising caution in their online activities, consumers can contribute to preserving their privacy amidst the AI era.

---

[96] European Union, 'Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation)' [2016] OJ L119/1, DOI: https://doi.org/10.1093/oxfordjournals.jiplap.a022469, accessed 18 May 2024.

[97] Commission Nationale de l'Informatique et des Libertés (CNIL), Decision No. SAN-2019-001 of 21 January 2019, https://www.edpb.europa.eu accessed 18 May 2024.

[98] European Commission, 'New Rules to Protect Your Rights and Activity Online in the EU' (2024) https://commission.europa.eu/news/new-rules-protect-your-rights-and-activity-online-eu-2024-02-16_en accessed 18 May 2024.

[99] Attorney-General's Department, 'Privacy Act Review – Discussion Paper' (2022) https://consultations.ag.gov.au/rights-and-protections/privacy-act-review-discussion-paper/ accessed 18 May 2024, 117.

[100] Ibid.

[101] Rachael Annear and others, 'Chapter 2: Global Trends in Privacy Laws: Different Routes Taken Along the Same Regulatory Pathway' (Freshfields Bruckhaus Deringer) https://www.freshfields.com/en-gb/our-thinking/campaigns/data-trends-2024/global-trends-in-privacy-laws-different-routes-taken-along-the-same-regulatory-pathway/ accessed 18 May 2024, 6.

2.3.1 Envisaging the Future of Privacy in the AI Era

As AI technologies advance and integrate further into daily life, the trajectory of privacy stands at a critical juncture. With the emergence of the metaverse and the proliferation of data, it becomes imperative to contemplate the future ramifications of these technologies on data security and privacy.

To ensure the development and utilization of AI technology align with respect for individual rights and freedoms, effective regulation and oversight are imperative. This includes not only regulating the collection and utilization of data by AI systems but also ensuring transparent, explicable, and unbiased design and development of these systems.[102]

Effective regulation demands collaboration among governments, industry stakeholders, and civil society to establish coherent standards and guidelines for the ethical utilization of AI. It also necessitates ongoing monitoring and enforcement to uphold these standards.[103]

In the absence of robust regulation, there looms the peril that the escalating adoption of AI technology will exacerbate privacy erosion and civil liberty encroachment, potentially amplifying existing societal inequalities and biases.[104] Through instituting a regulatory framework for AI, we can help ensure that this potent technology serves the common good while safeguarding individual rights and freedoms.

2.3.2 The Significance of Data Security and Encryption

Data breaches and cyber-attacks wield grave repercussions, encompassing identity theft, financial harm, and reputational impairment. In recent years, several high-profile data breaches have underscored the criticality of data security, with the adoption of encryption to shield sensitive information assuming heightened significance.[105]

Encryption, entailing the conversion of information into an unintelligible format to forestall unauthorized access, emerges as a linchpin for safeguarding data, both in transit and at rest. It furnishes a mechanism to shield data such as personal information, financial data, and proprietary knowledge. As AI technology progresses, the imperative for robust data security and encryption amplifies. The

[102] Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts COM(2021) 206 final, Recital 4.

[103] Reuben Binns, 'Algorithmic Accountability and Public Reason' (2018) 31 *Philosophy & Technology* https://doi.org/10.1007/s13347-017-0263-5, accessed 17 May 2024, 547.

[104] Shoshana Zuboff, 'Big Other: Surveillance Capitalism and the Prospects of an Information Civilization' (2015) 30 *Journal of Information Technology* https://doi.org/10.1057/jit.2015.5 accessed 17 May 2024, 77.

[105] Omar A Alzubi, Jafar A Alzubi, K Shankar, and Deepak Gupta, 'Blockchain and Artificial Intelligence Enabled Privacy-Preserving Medical Data Transmission in Internet of Things' (2021) 32(12) *Transactions on Emerging Telecommunications Technologies* https://doi.org/10.1002/ett.4360, accessed 18 May 2024, 7.

sheer volume of data underpinning AI underscores the imperative of instituting security measures to mitigate the perils of data loss or theft.[106]

Consider, for instance, a healthcare entity utilizing AI technologies to scrutinize patient data. Said data may encompass sensitive information like medical histories, diagnoses, and treatment regimens. In the event of unauthorized access or data pilferage, grave ramifications for the implicated patients ensue. By deploying robust encryption to fortify this data, the healthcare entity can ensure its confidentiality and integrity.[107]

Similarly, envision a financial institution leveraging AI to analyse customer data for fraud detection. The data amassed by the institution may encompass personal and financial particulars, spanning account identifiers and transaction chronicles. Should this data fall prey to unauthorized access, it could precipitate identity theft or other fraudulent exploits.[108] Through the adoption of encryption to safeguard this data, the financial institution can forestall unauthorized access, preserving its customers' information integrity.

Both scenarios underscore the pivotal import of data security and encryption. Entities leveraging AI must accord primacy to data security and implement robust encryption measures to shield the sensitive data they amass.[109] Failure to do so could precipitate dire consequences for both the entity and the individuals whose data stands compromised.

2.3.3 The Role of Individuals in Safeguarding their Privacy

Preserving privacy assumes heightened salience in contemporary times. While regulatory measures and data security protocols extend a measure of protection, individuals also wield a pivotal role in fortifying their privacy.[110] Consumers can undertake various steps to safeguard their personal information.

Primarily, comprehending the data amassed and its utilization is of utmost importance. This information is typically delineated in privacy policies and terms of service agreements.[111] Consumers ought to peruse and assimilate these documents comprehensively before availing themselves of products or services necessitating data submission.

Subsequently, individuals can leverage privacy tools and settings ingrained within software and social media platforms. For instance, numerous websites furnish the

[106] A Attkan and V Ranga, 'Cyber-Physical Security for IoT Networks: A Comprehensive Review on Traditional, Blockchain and Artificial Intelligence Based Key-Security' (2022) 8 *Complex Intell Syst* https://doi.org/10.1007/s40747-022-00667-z, accessed 18 May 2024, 3563.

[107] Ibid 3567.

[108] S Zaman et al., 'Security Threats and Artificial Intelligence Based Countermeasures for Internet of Things Networks: A Comprehensive Survey' (2021) 9 *IEEE Access* 10.1109/ACCESS.2021.3089681, accessed 18 May 2024, 94672.

[109] Ibid 94679.

[110] Catherine Tucker, 'Privacy, Algorithms, and Artificial Intelligence' in Ajay Agrawal, Joshua Gans and Avi Goldfarb (eds), *The Economics of Artificial Intelligence: An Agenda* (University of Chicago Press 2019) https://doi.org/10.7208/9780226613475-019, accessed 18 May 2024, 427.

[111] B Murdoch, 'Privacy and Artificial Intelligence: Challenges for Protecting Health Information in a New Era' (2021) 22 *BMC Med Ethics* https://doi.org/10.1186/s12910-021-00687-3, accessed 18 May 2024, 2.

option to opt out of targeted advertising or curtail data sharing with third-party entities. Analogously, social media platforms proffer privacy settings to govern access to personal information.[112]

Lastly, consumers ought to exercise caution in their online activities and the information they opt to disclose. Social media posts, online transactions, and even rudimentary web searches can unveil personal information susceptible to privacy breach.[113] By exercising vigilance over the information divulged and undertaking steps to restrict its dissemination, individuals can contribute significantly to preserving their privacy.

Preserving privacy in the era of AI constitutes a concern of global purview, influencing individuals both as standalone entities and constituents of society.[114] It is imperative to adopt a multifaceted approach to address this challenge, one encompassing technological innovations and regulatory interventions.

Decentralized AI technologies present a promising trajectory, endowing secure, transparent, and accessible AI solutions and algorithms. Through harnessing these platforms, we can attenuate the vulnerabilities associated with centralized systems, concurrently advancing democratization and accessibility of AI solutions.[115]

Simultaneously, it is incumbent upon governments and regulatory bodies to play an active role in overseeing the evolution and deployment of AI technologies. This entails the promulgation of regulations, standards, and oversight mechanisms to guarantee the ethical and responsible utilization of AI, while safeguarding individual privacy rights.[116]

Ultimately, maintaining privacy in this age of AI needs collaboration and cooperation amongst stakeholders including government, industry, and people at large. By synergizing efforts to evolve and enact strategies fostering privacy and security, we can engender an environment where AI augments societal welfare while upholding individual rights and freedoms, preserving privacy and dignity across the spectrum.

2.4 Future Legal Considerations for AI Governance

Effectively understanding and managing the risks posed by AI is crucial to fully realize its benefits. AI technology can enhance the efficiency and quality of goods and services, provide greater autonomy and mobility for the elderly and disabled, and improve safety in critical operations like healthcare, transportation, and

[112] Ibid 4.

[113] Ibid 5.

[114] Michael Butterworth, 'The ICO and Artificial Intelligence: The Role of Fairness in the GDPR Framework' (2018) 34(2) *Computer Law & Security Review* https://doi.org/10.1016/j.clsr.2018.01.004, accessed 18 May 2024, 261.

[115] Ginger Zhe Jin, 'Artificial Intelligence and Consumer Privacy' in Ajay K Agrawal, Joshua Gans, and Avi Goldfarb (eds), *The Economics of Artificial Intelligence: An Agenda* (University of Chicago Press 2018) https://doi.org/10.3386/w24253, accessed 18 May 2024, 441.

[116] Ibid 459.

emergency response.[117] These advantages can drive smart and sustainable development. As AI systems grow in complexity and interconnect with other smart devices and systems, the associated risks will also increase. This growth necessitates the creation of specific governance mechanisms for areas such as healthcare, transport, and autonomous weapons, along with a broader global governance framework for AI. [118]

2.4.1 Challenges in Formulating International AI Standards

The high uncertainty and complexity of the AI landscape present numerous challenges for governments in crafting and implementing effective AI governance policies. These challenges arise from the inherently unpredictable, intractable, and nonlinear nature of AI, making it difficult for governments to establish clear policy objectives.[119] The opacity and unpredictability of machine learning (ML) systems pose significant technical hurdles for ensuring accountability. The complexity of ML algorithms limits transparency, explainability, and accountability, even with mandated levels of these aspects.[120] Simplifying algorithms to enhance explainability can undermine their accuracy and performance. This issue is particularly evident in the EU's General Data Protection Regulation, which struggles to increase algorithmic transparency to combat discrimination. Algorithms are often kept intentionally opaque to prevent cyber-attacks and protect trade secrets, justified by intellectual property rights.[121] The extensive datasets used by ML algorithms make it nearly impossible to identify and remove all variables correlated with sensitive personal data.[122] Additionally, most individuals lack the technical literacy or the willingness to pay for expertise to interpret algorithmic explanations, making mandated explanations under regulations like GDPR unlikely to inform or empower them.

Furthermore, ML decisions can be highly unpredictable, varying significantly with slight changes in inputs. This lack of human control over AI behavior complicates the assignment of liability and accountability for harms caused by software defects, as manufacturers and programmers often cannot predict the inputs and rules that could result in unsafe or discriminatory outcomes.[123] Data governance is another critical issue, with organizational and technological challenges hindering effective control over data and responsibility for AI-driven decisions. Data fragmentation and

[117] Allan Dafoe, 'AI Governance: A Research Agenda' (2021) 40(2) *Policy and Society* https://doi.org/10.1080/14494035.2021.1928377, accessed 18 May 2024, 144.

[118] J Butcher and I Beridze, 'What is the State of Artificial Intelligence Governance Globally?' (2019) 164(5–6) *The RUSI Journal* accessed 18 May 2024, 91.

[119] S Larsson, 'On the Governance of Artificial Intelligence through Ethics Guidelines' (2020) 7(3) *Asian Journal of Law and Society* 10.1017/als.2020.19, accessed 18 May 2024, 442.

[120] Ibid 446.

[121] Ibid 447.

[122] Wendell Wallach and Gary E Marchant, 'An Agile Ethical/Legal Model for the International and National Governance of AI and Robotics' *Association for the Advancement of Artificial Intelligence* (2018) https://www.aies-conference.com/2018/contents/papers/main/AIES_2018_paper_77.pdf accessed 18 May 2024, 3.

[123] Ibid 7.

lack of system interoperability limit organizational control over data flows, while shared roles in data sharing obscure accountability for AI-driven decisions.[124]

Existing governance and regulatory frameworks struggle to address the societal issues introduced by AI due to insufficient understanding of the technology and regulatory lag. Major technology companies like Google, Facebook, Microsoft, and Apple have significant informational and resource advantages over governments, complicating regulation efforts.[125] The information asymmetry between tech companies and regulators exacerbates the difficulty in understanding and applying legislation to AI applications. Rapid technological advancements leave regulators lagging, resulting in laws that are too general or vague to effectively regulate AI. Lawmakers may avoid specific rules for programmers to allow future experimentation and software improvements, inadvertently enabling programmers to evade responsibility for the system's societal impacts.[126]

These challenges highlight the inadequacy of traditional regulatory resources in managing AI risks and the need for new methods to acquire information and develop adaptable policies. Amidst the limitations of 'hard' regulatory frameworks, industry bodies and governments have increasingly adopted self-regulatory or 'soft law' approaches to AI governance. These include voluntary standards, guidelines, and codes of conduct.[127] Soft law approaches can adapt more rapidly to technological developments and promote ethical, fair, and non-discriminatory AI practices. However, their voluntary nature and lack of uniform enforcement standards limit their effectiveness.[128] Ensuring consistent application of guidelines across sectors is also challenging if principles differ and are not well-coordinated with regulations.

Self-regulation alone is often insufficient and may be undesirable for AI governance due to its inability to ensure inclusivity and representation of diverse stakeholders. The involvement of industry stakeholders in developing ethical principles and regulations raises concerns about corporate interests dominating AI regulation. Major technology companies influence AI policy through lobbying and participation in government-formed AI expert groups, raising risks of regulatory capture due to their informational advantages.[129] The opaque nature of ML algorithms can be used by corporations to justify deep industry involvement in AI regulations, often away from public scrutiny. This influence can exacerbate power imbalances and social inequalities, as the ideologies and interests of a few elite individuals manifest in AI design and decisions affecting society.[130] To ensure greater inclusivity and diversity in AI governance, more research is needed to examine the key actors, their roles, the

[124] E Hickman and M Petrin, 'Trustworthy AI and Corporate Governance: The EU's Ethics Guidelines for Trustworthy Artificial Intelligence from a Company Law Perspective' (2021) 22 *Eur Bus Org Law Rev* https://doi.org/10.1007/s40804-021-00224-0, accessed 18 May 2024, 601.

[125] Dafoe (n 117) 145.

[126] Hickman (n 124) 608.

[127] Ibid 609.

[128] S Larsson, 'AI in the EU: Ethical Guidelines as a Governance Tool' in A Bakardjieva Engelbrekt, K Leijon, A Michalski, and L Oxelheim (eds), *The European Union and the Technology Shift* https://doi.org/10.1007/978-3-030-63672-2_4 accessed 18 May 2024, 91.

[129] Gianni Robert, Santtu Lehtinen, and Mika Nieminen, 'Governance of Responsible AI: From Ethical Guidelines to Cooperative Policies' (2022) 4 *Frontiers in Computer Science*, https://www.frontiersin.org/articles/10.3389/fcomp.2022.873437, accessed 18 May 2024, 3.

[130] Ibid, 8.

dominant ideas and values in AI policies, the global convergence of these values, and the extent to which they reflect societal interests or are politically motivated.

2.4.2 Way forward for AI governance

The conceptual framing of AI is pivotal in determining how AI-related problems are understood, whether they are included in policies, and the level of priority given to these issues in public policy development. Despite its importance, framing has not been extensively discussed as a key aspect of AI governance. As AI continues to evolve and diversify, its complexities require careful contextual conceptualization, with framing processes open to public debate.[131] For example, how policymakers prioritize ethical principles in AI applications and manage conflicts between these principles significantly impacts the resulting trade-offs in AI system design and public adherence to ethical guidelines.

Initial framing is also crucial to avoid amplifying perceived risks and fears associated with new technologies. Instead, it should promote a balanced discourse on AI's nature, goals, and norms, as well as the design requirements to maximize benefits and minimize risks.[132] To address the governance challenges posed by AI's uncertainty and complexity, there are calls for innovative approaches like adaptive and hybrid governance. These approaches diminish the government's traditional role in resource distribution, incorporating both state and non-state actors and blending industry standards with public regulatory oversight. Hybrid governance, including co-regulation, enforced self-regulation, and meta-regulation, emphasizes the role of non-state actors and the need for ongoing power balance assessments between private and public entities.[133]

Adaptive governance, on the other hand, advocates for flexible approaches that allow iterative adjustment and improvement of regulations and policies as new information emerges. This method is advantageous for proactively identifying and addressing evolving risks from ML systems, raising public awareness, and engaging the public to identify new issues. Flexibility is essential for building consensus among diverse stakeholders and for global AI governance to align with democratic and human rights standards across different contexts.[134] Examples of adaptive governance include regular risk assessments, collaborative guideline development, and legal experimentation through regulatory sandboxes.

New governance frameworks can also draw from past approaches to regulating emerging technologies. Studies highlight the importance of non-state actors, particularly technology companies, in controlling information exchange and developing design principles, as well as the role of civil society in ensuring

[131] S-C Fischer and A Wenger, 'Artificial Intelligence, Forward-Looking Governance and the Future of Security' (2021) 27 *Swiss Polit Sci Rev* https://doi.org/10.1111/spsr.12439, accessed 18 May 2024, 173.

[132] D Chhillar and RV Aguilera, 'An Eye for Artificial Intelligence: Insights into the Governance of Artificial Intelligence and Vision for Future Research' (2022) 61(5) *Business & Society* https://doi.org/10.1177/00076503221080959, accessed 18 May 2024, 1201.

[133] Ibid 1204.

[134] Helen Margetts, 'Rethinking AI for Good Governance' (2022) 151(2) *Daedalus*, https://doi.org/10.1162/daed_a_01922, accessed 18 May 2024, 367.

accountability.[135] Lessons from the governance of the internet, nanotechnology, aviation safety, and space law can inform AI governance. Additionally, future research should analyse AI's distinctive features to develop tailored governance approaches.

An emerging governance strategy involves regulating AI systems through their design, where social, legal, and ethical rules are enforced through code. For instance, data protection laws can be translated into technical specifications for AI systems to ensure compliance. However, implementing this approach faces challenges, such as the difficulty of coding complex legal and ethical rules and the potential for manipulation of encoded rules, masked by ML processes' opacity.[136]

Recent studies emphasize building societal consensus around AI ethical principles and ensuring accountability. One proposed framework includes a technical layer for AI processes, an ethical design layer, and a societal implications layer involving regulation and legislation. Another suggests a 'society-in-the-loop' approach, where society reaches a consensus on values to shape AI and the distribution of benefits and costs. There are also calls for greater centralization and cross-cultural cooperation to improve coordination among national approaches. Centralizing AI governance could address the fragmented international landscape, although it risks regulatory lags and limited adaptability.[137]

Ultimately, these frameworks need concrete implementation strategies, identifying responsible government parties to lead different aspects of AI governance and producing detailed specifications for practical application.

[135] Pedro Robles and Daniel J Mallinson, 'Catching Up with AI: Pushing Toward a Cohesive Governance Framework' (2023) 51(3) *Politics & Policy* https://doi.org/10.1111/polp.12529, accessed 18 May 2024, 362.

[136] P Cihon, MM Maas, and L Kemp, 'Fragmentation and the Future: Investigating Architectures for International AI Governance' (2020) 11 *Global Policy* https://doi.org/10.1111/1758-5899.12890, accessed 18 May 2024, 550.

[137] Mallinson (n 135) 364.

3 Implications of regulatory measures

Having identified the key legal challenges and regulatory considerations in the previous chapter, we now turn our attention to the specific regulatory measures being implemented to address these issues. This chapter focuses on the European Union's Artificial Intelligence Act, a landmark legislative effort designed to harmonize AI regulations across member states. By examining the objectives and impacts of the AI Act on cross-border transactions, we will assess how these regulatory measures align with global trends and contribute to a cohesive international framework for AI governance.

3.1 Understanding the EU's AI Act and its objectives

The European Union's Artificial Intelligence Act (AI Act) which was approved by the EU Council on 21st May 2024[138] represents a significant legislative effort to harmonize AI regulation across the EU's single market, encompassing all 27 Member States. By creating a unified regulatory framework, the AI Act aims to prevent market fragmentation and provide legal certainty for AI developers and operators, thereby facilitating smoother market operations within the EU. At the same time, the Act ensures that only 'trustworthy' AI systems, which align with EU values and safeguard fundamental rights, gain access to the EU market.[139] As a cornerstone in the landscape of digital legislation, the AI Act complements other landmark EU regulations such as the General Data Protection Regulation (GDPR), the Digital Services Act and the Cyber Resilience Act.

One of the foundational constraints of the AI Act is its basis in the EU's constitutional framework, which limits the EU's legislative competencies to those conferred by Member States. Unlike a sovereign state, the EU can only legislate within these specific sectors. To address the potential fragmentation of the market, the AI Act is designed as a horizontal instrument, applying broadly to all AI systems, regardless of their specific sector. This broad applicability leverages Article 114 of the Treaty on the Functioning of the European Union (TFEU), which provides the EU with a general competence to harmonize rules related to the internal market.[140] The AI Act's approach is rooted in product safety regulation, drawing on the EU's extensive experience with similar regulatory frameworks that have become global benchmarks. This approach benefits from established mechanisms for EU-wide

[138] Council of the EU, 'Artificial Intelligence (AI) Act: Council Gives Final Green Light to the First Worldwide Rules on AI' (Press Release, 21 May 2024) https://www.consilium.europa.eu/en/press/press-releases/2024/05/21/artificial-intelligence-ai-act-council-gives-final-green-light-to-the-first-worldwide-rules-on-ai/pdf/ accessed 22 May 2024.

[139] AI Act, Recital 1.

[140] Consolidated Version of the Treaty on the Functioning of the European Union [2008] OJ C115/47, art 114.

coordination on product risks, theoretically mitigating enforcement challenges seen in other regulatory domains, such as data protection.[141]

A key feature of the AI Act is its risk-based classification system, which categorizes AI systems into different levels of risk. This classification influences the stringency of the requirements imposed on AI systems. High-risk AI systems, for example, must meet rigorous technical standards before they can be marketed or used within the EU. These standards ensure that AI systems comply with safety and fundamental rights requirements, often necessitating both internal and external assessments of conformity.[142]

Despite its comprehensive nature, the AI Act has faced criticism. One major concern is the use of a product safety framework to address issues related to fundamental rights. The abstract legal requirements of the Act must be translated into technical specifications, a process that can lead to arbitrary interpretations and inadequate protections for fundamental rights. Additionally, the reliance on private technical bodies for setting standards raises questions about the legitimacy and accountability of these bodies in protecting public interests.[143] Moreover, the Act's provisions need to address the dynamic and multifaceted risks associated with AI systems comprehensively. While it aims to cover risks throughout the lifecycle of AI systems, from design to deployment and operation, the rapidly evolving nature of AI technology presents ongoing challenges for regulatory frameworks.[144]

The enforcement of the AI Act is slated to unfold gradually, with a phased timeline for implementation. The enforcement will commence with the prohibition of certain AI systems in late 2024 or early 2025, gradually extending to encompass nearly all AI systems by mid-2027.[145] Notably, non-compliance with the provisions of the AI Act carries significant financial penalties, emphasizing the importance of adherence to regulatory requirements for businesses operating within the EU or engaging in cross-border transactions involving AI technologies.[146]

The AI Act is a pivotal legislative effort by the EU to regulate AI, balancing the need for market integration with the protection of fundamental rights. It establishes a detailed and structured approach to managing the risks associated with AI technologies, reflecting the EU's leadership in global technology regulation.[147] However, its effectiveness in addressing the complex and evolving challenges of AI

[141] EUR-Lex, 'Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act)' (2021), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0206 accessed 18 May 2024.

[142] J Chamberlain, 'The Risk-Based Approach of the European Union's Proposed Artificial Intelligence Regulation: Some Comments from a Tort Law Perspective' (2023) 14(1) *European Journal of Risk Regulation* doi:10.1017/err.2022.38, accessed 18 May 2024, 3.

[143] Smuha (n 159) 10.

[144] Ugo Pagallo, Jacopo Ciani Sciolla, and Massimo Durante, 'The Environmental Challenges of AI in EU Law: Lessons Learned from the Artificial Intelligence Act (AIA) with its Drawbacks' (2022) 16(3) *Transforming Government: People, Process and Policy* https://doi.org/10.1108/TG-07-2021-0121, accessed 19 May 2024, 369.

[145] Morrison Foerster, 'EU AI Act – Landmark Law on Artificial Intelligence Approved by the European Parliament' (2024) https://www.mofo.com/resources/insights/240415-eu-ai-act-landmark-law-on-artificial-intelligence-approved-by-the-european-parliament.html accessed 18 May 2024.

[146] Novelli (n 11) 17.

[147] Marco Almada and Anca Radu, 'The Brussels Side-Effect: How the AI Act Can Reduce the Global Reach of EU Policy' (2024) *German Law Journal* https://doi.org/10.1017/glj.2023.108 accessed 19 May 2024, 7.

will depend on its implementation and the ability to adapt to new technological developments.

Given the complexity of the legislation and its far-reaching implications, it is imperative for business leaders within and beyond the EU to thoroughly assess the ramifications of the AI Act before its enactment. This entails a comprehensive understanding of how the AI Act intersects with existing and emerging regulatory frameworks both domestically and internationally.[148] Furthermore, organizations must undertake proactive measures such as maintaining updated inventories of AI systems, conducting risk assessments to determine compliance obligations, and establishing robust governance frameworks to ensure adherence to regulatory standards.

3.2 Analysing the Impact of the EU's AI Act on Cross-Border Transactions

A notable aspect of the AI Act's adaptation process is the proposed two-year grace period, which mirrors the implementation strategy of the General Data Protection Regulation (GDPR). This period is designed to provide organizations with sufficient time to align their operations with the new requirements, facilitating a smoother transition and minimizing disruption. However, this grace period is still under discussion and has not been finalized, indicating ongoing negotiations between the European Parliament and the Council of the European Union.[149]

The European institutions aim to set both de facto and de jure standards that could influence global AI practices through the AI Act. The Act focuses on rigorously controlling high-risk AI applications, such as those impacting safety, public health, and fundamental rights, ensuring that these technologies are transparent and ethically aligned.[150]

Internationally, other countries are also making strides to regulate AI. For instance, the United States has introduced a 'Blueprint for an AI Bill of Rights', emphasizing privacy and robust evaluation of AI systems before public deployment. China has issued draft regulations that emphasize compliance with state censorship laws for chatbot technologies.[151] The UK has released an AI white paper providing guidance on the responsible use of AI, demonstrating a commitment to innovation while ensuring public trust.

The AI Act proposes stringent measures for AI systems classified as high-risk, including those used in critical infrastructure and processes significantly impacting societal decision-making. These systems will undergo rigorous evaluations both

[148] Ibid 12.

[149] Mohammad R Davahli, Waldemar Karwowski, Konrad Fiok, Tao Wan, and Hamid R Parsaei, 'Controlling Safety of Artificial Intelligence-Based Systems in Healthcare' (2021) 13 *Symmetry* https://doi.org/10.3390/sym13010102 accessed 19 May 2024, 107.

[150] Jonathan Truby, Ronald D Brown, Ibraheem A Ibrahim, and Oscar C Parellada, 'A Sandbox Approach to Regulating High-Risk Artificial Intelligence Applications' (2022) 13(2) *European Journal of Risk Regulation* https://doi.org/10.1017/err.2021.52 accessed 19 May 2024, 5.

[151] Eleanor Hine and Luciano Floridi, 'The Blueprint for an AI Bill of Rights: In Search of Enaction, at Risk of Inaction' (2023) 33 *Minds & Machines* https://doi.org/10.1007/s11023-023-09625-1 accessed 19 May 2024, 287.

before market introduction and throughout their operational lifecycle. Generative AI systems, like ChatGPT, are mandated to meet high standards of transparency to ensure users can trace the origin of AI-generated content.[152] Basic AI applications must undergo comprehensive risk assessments and be registered before deployment, maintaining the integrity of AI innovations while safeguarding public welfare.

Despite the comprehensive nature of the AI Act, it faces criticism for relying on a product safety framework to address fundamental rights concerns. The abstract legal requirements and the need for technical translation pose challenges, potentially leading to arbitrary interpretations and inadequate protections for fundamental rights. Additionally, the role of private technical bodies in setting standards raises questions about legitimacy and public accountability.[153]

The AI Act's ambition is not only to regulate AI within the EU but also to establish the Union as a global leader in AI governance. This leadership is contingent on the Act's ability to provide sufficient protection for fundamental rights and other public values. While the Act's product safety framework aims to mitigate risks associated with AI, its effectiveness in covering all dimensions of fundamental rights remains in question. The AI Act could potentially set a global standard, but it may also spread norms that inadequately address fundamental rights, constraining the EU's ability to shape AI adoption values globally.[154]

The European Parliament's approval of the AI Act represents a significant advancement in AI regulation. It sets the stage for ongoing international discussions aimed at developing a cohesive global framework for ethical, transparent, and safe AI use.[155] By adopting a proactive stance towards compliance and advocating for global harmonization, stakeholders can navigate the legal intricacies of AI regulation while fostering innovation in alignment with legal standards and ethical principles.[156]

This integration reflects the complex balance the EU seeks to achieve, fostering innovation and market integration while ensuring the protection of fundamental rights. The AI Act, despite its potential shortcomings, represents a critical step towards comprehensive AI regulation and positions the EU as a pivotal player in the global landscape of AI governance.

[152] Natali Helberger and Nicholas Diakopoulos, 'ChatGPT and the AI Act' (2023) 12(1) *Internet Policy Review* https://policyreview.info/essay/chatgpt-and-ai-act accessed 19 May 2024, 3.

[153] Marco Almada and Nicolas Petit, 'The EU AI Act: A Medley of Product Safety and Fundamental Rights?' (18 October 2023) Robert Schuman Centre for Advanced Studies Research Paper No. 2023/59 http://dx.doi.org/10.2139/ssrn.4308072 accessed 19 May 2024, 13.

[154] Pehlivan, Ceyhun Necati, 'The EU Artificial Intelligence (AI) Act: An Introduction' (1 January 2024) *Global Privacy Law Review* https://ssrn.com/abstract=4746840 accessed 20 May 2024, 4.

[155] 'The EU AI Act: the finish line is in sight' (Deloitte UK, 2024) https://www.lexology.com/library/detail.aspx?g=a87d9d1c-e3da-46bc-8b1b-b33af2fc7a1e accessed 20 May 2024.

[156] Ibid

3.3 Alignment with global regulatory trends

3.3.1 The Brussels Effect

From the outset, the AI Act was crafted with global implications in mind. This ambition aligns with the European Commission's goal to position the EU as a leader in AI regulation, building on its history of influencing international digital regulation and treaties. While the EU cannot compel other jurisdictions to adopt its standards, it can influence their regulatory approaches through various mechanisms, including bilateral or multilateral actions, like those seen with the Council of Europe (CoE) conventions.[157] However, the EU can also exert unilateral influence via the Brussels Effect.

The Brussels Effect is a market-driven mechanism where the EU exports its regulatory standards globally through the influence of its strong internal market. Companies often comply with EU standards even when subject to less stringent regulations elsewhere due to economic pressures.[158] This compliance can occur both *de facto*, driven by market forces, and *de jure*, through the emulation of EU regulations by other jurisdictions influenced by corporate lobbying or the need to keep pace with technological advancements. For the Brussels Effect to occur, five conditions must be met, including market size and regulatory capacity.[159]

The EU's large market makes it an attractive destination for AI system providers. The substantial population and wealth within the EU single market make it unlikely for large online platforms to ignore it. Additionally, the regulatory capacity of the EU, bolstered by its expertise in AI and the product safety framework, positions it as a formidable regulator.[160] The AI Act's reliance on this framework allows the EU to utilize decades of regulatory experience, making it one of the few jurisdictions with the technical and institutional capability to regulate AI effectively.[161]

However, the AI Act must be stringent to have a Brussels Effect. While the Act imposes rigorous requirements for high-risk AI systems[162] and general-purpose AI systems with systemic risk, it falls short in comprehensively covering low-risk AI systems, mainly limiting itself to disclosure requirements.[163] Therefore, compliance with the AI Act might not be sufficient for AI systems to meet the standards of all potential jurisdictions.

The AI Act's stringency and comprehensive regulatory framework for high-risk AI systems and certain general-purpose AI systems are more likely to influence global standards. Nonetheless, the Act's product safety framework does not fully address

[157] KI LEE, 'Study on the use and protection of biometric data under EU AI Act' (2024) *Law Journal* https://www.knulaw.org/archive/view_article?pid=lj-85-0-57 accessed 20 May 2024, 11.

[158] Ibid.

[159] Nathalie A Smuha and others, 'How the EU Can Achieve Legally Trustworthy AI: A Response to the European Commission's Proposal for an Artificial Intelligence Act' (August 5, 2021), http://dx.doi.org/10.2139/ssrn.3899991, accessed 18 May 2024, 7.

[160] M Almada and A Radu, 'The Brussels Side-Effect: How the AI Act Can Reduce the Global Reach of EU Policy' (2024) *German Law Journal* 10.1017/glj.2023.108, accessed 20 May 2024, 12.

[161] Ibid 4.

[162] Article 6 AI Act.

[163] Oxford Analytica, 'EU AI Law Faces Tough Conflicting Pressures' (2023) 10.1108/OXAN-DB279356, accessed 20 May 2024, 9.

all public interest concerns, particularly those related to fundamental rights.[164] Jurisdictions with regulations that directly address these concerns may impose additional requirements beyond the AI Act's provisions.

Elasticity within the AI Act's framework allows some flexibility for providers to classify their AI systems, potentially avoiding stringent high-risk classifications. However, the Act's territorial extension mechanism ensures that its provisions apply to any AI system affecting individuals within the EU, regardless of the provider's location. This reduces the incentive for providers to avoid compliance by operating outside the EU.[165]

The non-divisibility of AI systems, particularly those relying on centralized infrastructures and general-purpose AI models, promotes compliance with EU standards. The compositional nature of AI technologies, where providers build systems from components or fully-trained models offered by large-scale providers, further reinforces this non-divisibility. As a result, creating EU-specific versions of AI systems is often more costly than complying with EU regulations globally.[166]

Despite these factors, the AI Act's global influence might be limited. While the Act's stringent standards for high-risk and general-purpose AI systems may set a global benchmark, other standards may surpass the EU's approach in addressing specific regulatory concerns.[167] Therefore, the EU's success in spreading its AI regulatory framework may come at the expense of adequately protecting fundamental rights and other public values.

The AI Act represents a significant advancement in AI regulation, setting the stage for ongoing international discussions to develop a cohesive global framework for ethical, transparent, and safe AI use. By advocating for global harmonization and proactive compliance, stakeholders can navigate the legal intricacies of AI regulation while fostering innovation in alignment with legal and ethical standards.[168] However, the potential side effects of the Brussels Effect highlight the need for a balanced approach that protects fundamental rights and promotes societal well-being. By fostering collaboration and promoting a balanced approach, the EU can lead the way in creating a cohesive and ethical global framework for AI regulation.

3.3.2 Distinction in regulation for AI systems in human services

Another category of high-risk AI systems targeted by the proposed AI Act consists of specific AI applications impacting human rights, often referred to as 'stand-alone' AI systems. These encompass various private-sector applications in hiring, education access, credit scoring, as well as government use in public services, law

[164] Ibid 11.

[165] AI Act, Art. 2(1)(b).

[166] K Rulf, 'Why US Universities have more influence in the global debate on AI Governance and Regulation and how German Universities can reclaim their seat at the table' *Ordnung der Wissenschaft, 2024* https://d-nb.info/131480331X/34 accessed 20 May 2024, 4.

[167] Ibid.

[168] I Poselużna, 'Towards the politicization of Artificial Intelligence in the EU? External influences and internal dynamics' (Rocznik Integracji Europejskiej, 2023) https://ruj.uj.edu.pl/xmlui/bitstream/handle/item/328407/poseliuzhna_towards_the_politicization_of_ai_2023.pdf?sequence=1 accessed 20 May 2024, 385.

enforcement, and judicial decision-making. Potential additions, such as insurance, medical triage, and AI affecting democratic processes, could further broaden this category.[169]

Understanding the AI Act's impact on private-sector AI in human services necessitates a distinction between AI utilized in platforms versus other software. This distinction is pivotal in assessing the extraterritorial implications of the AI Act, as the degree of incorporation into geographically dispersed platforms determines the comprehensiveness of regulatory requirements.[170]

However, the Brussels effect may be less pronounced for AI human services not integrated into dispersed platforms, instead relying on local data with more isolated interactions. For instance, multinational companies outsourcing AI development for hiring systems may tailor compliance efforts to EU requirements, while selectively applying them elsewhere. The distinction between AI in international platforms versus localized software delineates the extent of AI Act influence, with the former more likely to exhibit a pronounced Brussels effect.[171]

A comprehensive analysis of the AI Act's provisions suggests a targeted extraterritorial impact and a limited Brussels effect. Regulations regarding high-risk AI in products are likely to be influenced by global market dynamics, while those pertaining to high-risk AI in human services are anticipated to have the most significant impact on international platforms.[172] Transparency requirements are expected to result in minor changes, and banned qualities of AI Act systems are likely to remain restricted to the EU. While the AI Act may inspire other nations to enact AI regulations, this would likely be driven by coercion rather than voluntary emulation, challenging the traditional notion of the Brussels effect.[173]

The complex nature of the AI Act's extraterritorial impact underscores the need for careful consideration, as businesses will respond based on their unique circumstances and incentives, leading to unintended consequences. Despite the inherent risks in predicting commercial reactions, understanding the AI Act's outcomes is crucial for global governance.[174] Other governments can draw insights from the AI Act's extraterritorial nature when formulating their own regulatory frameworks, challenging the assumption that the Brussels effect is a compelling reason for swift AI Act implementation.[175]

For the rest of the world, the effects of the AI Act may not be overwhelming but still merit attention. Sector-specific business models and AI applications could lead to unexpected challenges and potential conflicts with existing regulations. Enhancing

[169] T Madiega, Artificial Intelligence Act (European Parliamentary Research Service, European Parliament 2021) https://superintelligenz.eu/wp-content/uploads/2023/07/EPRS_BRI2021698792_EN.pdf accessed 20 May 2024, 4.

[170] Ibid 7.

[171] Alex Engler, 'The EU AI Act will have global impact, but a limited Brussels Effect' *Brookings*, https://www.brookings.edu/research/the-eu-ai-act-will-have-global-impact-but-a-limited-brussels-effect accessed 20 May 2024, 12.

[172] Ibid.

[173] Ibid

[174] 'EU Draft Artificial Intelligence Regulation: Extraterritorial Application and Effects' *European Law Blog* https://europeanlawblog.eu/2022/08/23/eu-draft-artificial-intelligence-regulation-extraterritorial-application-and-effects accessed 20 May 2024, 3.

[175] Ibid, 4.

cohesion through the standards process and regulatory stocktaking can help mitigate these challenges. Additionally, the EU should advance the AI Act on a timeline aligned with its own needs rather than rushing for global standard-setting purposes. Rushing the AI Act implementation may not yield the anticipated global impact, suggesting a need for the EU to signal openness to feedback and cooperation with the broader democratic world.

4 Global coordination and role of international organizations

In an increasingly interconnected world, the seamless integration of legal systems across borders stands as a pivotal challenge and necessity for global governance. The complexity of international law, which encompasses diverse areas such as trade, intellectual property, and human rights, necessitates robust global coordination to ensure uniformity and fairness in its application. International organizations, particularly the World Trade Organization (WTO), play critical roles in this landscape, striving to harmonize legal norms to facilitate smoother international interactions and dispute resolutions.[176]

This chapter delves into the essentiality of global coordination in the legal arena, scrutinizing the instrumental roles played by international bodies like the WTO. It further evaluates existing initiatives and proposals aimed at enhancing legal interoperability and addresses potential pathways for future advancements.[177] By exploring the interconnectedness of global legal challenges, the efficacy of current organizational roles, and the dynamic landscape of international legal reform, this discussion aims to provide a comprehensive insight into the scaffolding of global legal coordination and its future trajectory.[178]

4.1 Need for global coordination in addressing legal challenges

4.1.1 Challenges of divergent legal systems

The globalization of markets and international relations has accentuated the disparities among national legal systems, often resulting in conflicts and inefficiencies. For instance, variations in regulatory standards can lead to significant barriers in international trade, where products acceptable in one country may fail to meet the legal requirements of another.[179] Intellectual property rights also present a notorious area of discord, with differing national laws complicating the enforcement

[176] OECD, 'Why does international regulatory co-operation matter and what is it?' (2020) International Regulatory Co-operation, OECD iLibrary https://www.oecd.org/gov/regulatory-policy/international-regulatory-cooperation-policy-brief-2018.pdf accessed 20 May 2024.

[177] McKinsey Global Institute, 'Global flows: The ties that bind in an interconnected world' (2022) McKinsey & Company https://www.mckinsey.com/industries/public-and-social-sector/our-insights/global-flows-the-ties-that-bind-in-an-interconnected-world accessed 20 May 2024, 13.

[178] Council on Foreign Relations, 'The United Nations and the Future of Global Governance' (2023) https://www.cfr.org/report/united-nations-and-future-global-governance accessed 20 May 2024.

[179] Paul Schiff Berman, 'The Effect of Globalization on the Interactions among Legal Systems: Case Studies' (2021) *Laws* https://www.mdpi.com/journal/laws/special_issues/Globalization_Legal_Systems accessed 20 May 2024, 05.

of rights across borders, leading to high-profile legal disputes and inconsistencies in protection.[180]

4.1.2 Benefits of harmonized legal approaches

The harmonization of legal standards across nations offers numerous advantages. Firstly, it reduces transaction costs associated with international business, as firms no longer need to navigate a labyrinth of varying regulations. Additionally, a unified legal framework enhances judicial cooperation and mutual legal assistance among countries, thereby strengthening the enforcement of laws and resolutions of disputes.[181] For example, the Hague Conference on Private International Law has made significant strides in facilitating international civil and commercial legal cooperation, reflecting the potential benefits of harmonized legal frameworks.

Harmonization creates a more reliable and stable business landscape by standardizing legal frameworks across various jurisdictions. This consistency enables companies to make better-informed decisions with greater assurance, reducing legal uncertainties and complexities. Such a predictable regulatory environment is essential for fostering investment and innovation, as businesses are more inclined to invest in markets where the rules are clear and consistently applied.[182]

Harmonized legal standards can elevate the quality of legal and regulatory measures globally. By integrating best practices from different legal frameworks, nations can enhance their regulatory systems, bolstering consumer protection, environmental policies, and governance standards. This cooperative strategy helps regulations to evolve in line with global advancements, such as technological innovations and changes in economic activities. [183]

Finally, harmonization facilitates international trade by removing obstacles to market entry. When nations implement uniform legal standards, goods and services can cross borders more easily without encountering regulatory challenges.[184] This increased openness drives economic growth, expands market opportunities for businesses, and offers consumers a wider range of options and more competitive prices.

The AI Act illustrates harmonization by creating a unified regulatory framework for AI throughout Europe. This framework aims to encourage innovation while ensuring safety and respect for fundamental rights. By implementing standardized

[180] Ibid 12.

[181] Christian Twigg-Flesner, 'Making International Commercial Law: Harmonization – Process and Methods' in *Foundations of International Commercial Law* (2021), 37.

[182] Eliezer Sanchez Lasaballett, 'Conceptualizing harmonization: the case for contract law' (2019) 24(1) *Uniform Law Review* https://doi.org/10.1093/ulr/unz007 accessed 20th May 2024, 81.

[183] Ibid, 83.

[184] DC Esty and D Geradin, 'Market access, competitiveness, and harmonization: Environmental protection in regional trade agreements' (1997) 21 *Harv. Envtl. L. Rev.* https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/helr21&section=11 accessed 20th May 2024, 256.

regulations, the AI Act aims to simplify AI development and deployment, promoting market expansion and regulatory adherence.[185]

4.1.3 Impact of non-coordination

Several instances underscore the challenges posed by non-coordinated legal systems. A notable example is the antitrust dispute involving major technology companies, where countries have adopted divergent legal strategies. This divergence has led to conflicting rulings and a lack of consensus on regulatory approaches. For instance, the United States and European Union have taken markedly different stances in cases involving companies like Google and Apple, resulting in protracted legal battles and inconsistent regulatory outcomes.[186]

Similarly, environmental regulations vary widely across countries, with some nations imposing stringent standards while others adopt more lenient approaches. This inconsistency complicates global efforts to address climate change effectively, as seen in the varied implementation of international agreements like the Paris Accord.[187] The disparities in regulatory frameworks hinder collective action and undermine the effectiveness of international policies aimed at mitigating environmental issues.

The need for global coordination in legal matters is evident from the tangible benefits of harmonized laws and the significant challenges arising from disparate legal frameworks. The following section will delve deeper into this topic, examining the specific role played by international organizations such as the WTO in fostering legal coordination. Harmonized legal standards can enhance international cooperation, streamline regulatory processes, and ensure that countries can collaboratively address global challenges more effectively.

4.2 Role of international organizations such as the WTO

4.2.1 Overview of the World Trade Organization

Founded in 1995 as the successor to the General Agreement on Tariffs and Trade (GATT), the World Trade Organization has been pivotal in overseeing global trade regulations and ensuring trade flows as smoothly, predictably, and freely as possible. The WTO currently boasts 164 member countries, representing over 98% of global trade.[188]

It plays a crucial role in overseeing global trade regulations and ensuring that trade flows as smoothly, predictably, and freely as possible. The WTO provides a platform

[185] Michael Ebers et al, 'The European Commission's Proposal for an Artificial Intelligence Act—A Critical Assessment by Members of the Robotics and AI Law Society (RAILS)' (2021) 4(4) *Journal of Robotics and AI Law* https://www.mdpi.com/2571-8800/4/4/43 accessed 20th May 2024, 12.

[186] Ibid 19.

[187] Andrew T Guzman, 'The Case for International Antitrust' (2004) 22 *Berkeley J Int'l L* https://escholarship.org/uc/item/32z7p4sq accessed 20th May 2024, 8.

[188] Bernard M Hoekman, Aaditya Mattoo, and Philip English (eds), *Development, Trade, and the WTO: A Handbook* (World Bank Publications 2002) 22.

for negotiating trade agreements aimed at reducing barriers to international trade and creating a level playing field for all member countries.[189] This organization contributes significantly to economic growth and development by promoting fair and open trade practices.

4.2.2 WTO's influence on global legal norms

The influence of the World Trade Organization (WTO) extends well beyond mere trade regulations, affecting global legal norms through its dispute settlement system, which is one of the most active international adjudication mechanisms. This system not only resolves trade disputes but also sets legal precedents that influence national trade laws and policies. For example, WTO rulings on trade-related intellectual property rights have significantly shaped the laws of member nations, promoting more uniform enforcement of intellectual property regulations.[190] Additionally, the WTO's Trade Policy Review Mechanism enhances transparency by providing regular assessments of member countries' trade policies and practices, encouraging compliance with WTO agreements and fostering an environment conducive to stable and predictable trade.[191]

Moreover, the WTO's role in setting legal precedents is crucial in creating a cohesive framework for international trade law. The dispute settlement system has established itself as a quasi-judicial body that interprets and applies WTO agreements, thereby influencing the domestic laws of member countries. This process ensures that trade laws are harmonized across different jurisdictions, reducing legal uncertainties and fostering a predictable trading environment. The impact of WTO's legal framework on national policies highlights the importance of international cooperation in maintaining a stable global economy.[192]

The WTO's commitment to transparency and legal consistency is further exemplified by its efforts to review and evaluate the trade policies of its members through the Trade Policy Review Mechanism. This mechanism not only promotes adherence to agreed-upon standards but also provides a platform for dialogue and improvement, thereby enhancing the overall effectiveness of global trade regulations. The continuous evaluation and adaptation of trade policies under the WTO framework contribute to a more integrated and resilient global trading system.[193]

---

[189] Pao-Li Chang and Myoung-Jae Lee, 'The WTO Trade Effect' (2011) 85(1) *Journal of International Economics* 53 https://doi.org/10.1016/j.jinteco.2011.05.011 accessed 19 May 2024, 56.

[190] Gregory Shaffer, Manfred Elsig, and Sergio Puig, 'The Law and Politics of WTO Dispute Settlement' in Wayne Sandholtz and Christopher Whytock (eds), *The Politics of International Law* (OUP 2016) https://ssrn.com/abstract=2748883 accessed 19 May 2024, 12.

[191] JH Jackson, 'The WTO Dispute Settlement Understanding—Misunderstandings on the Nature of Legal Obligation' (1997) 91(1) *American Journal of International Law* https://www.cambridge.org/core/journals/american-journal-of-international-law/article/wto-dispute-settlement-understandingmisunderstandings-on-the-nature-of-legal-obligation/9504D7090B6BB0B517B47690AA6577E4 accessed 19 May 2024, 63.

[192] L Bartels, 'Applicable law in WTO dispute settlement proceedings' (2001) 35 *Journal of World Trade* https://kluwerlawonline.com/api/Product/CitationPDFURL?file=Journals\TRAD\352549.pdf accessed 19 May 2024, 502.

[193] J Cameron and KR Gray, 'Principles of international law in the WTO Dispute Settlement Body' (2001) 50 *International & Comparative Law Quarterly* https://www.cambridge.org/core/journals/international-and-comparative-law-quarterly/article/principles-of-international-law-in-the-wto-dispute-settlement-body/F0E005BB3EE886681956657A0ABE07D1 accessed 19 May 2024, 252.

4.2.3 Critiques and challenges faced by the WTO

The World Trade Organization (WTO) plays a crucial role in overseeing global trade regulations, but it faces numerous criticisms and challenges. Critics argue that the organization is biased towards wealthier nations and multinational corporations, often at the expense of smaller states and developing countries. This perceived bias affects the WTO's legitimacy and effectiveness. Furthermore, the organization has struggled to conclude major new agreements due to the differing interests of its members, highlighting the need for reform in its negotiation processes.[194]

One significant challenge facing the WTO is the recent blockage in the appointment of judges to its Appellate Body. This issue, primarily due to objections by the United States, has effectively paralyzed the WTO's dispute settlement system. This situation underscores significant geopolitical tensions and demonstrates the need for structural changes within the organization to restore its functionality and credibility.[195]

Moreover, the WTO's dispute settlement system, while highly active, is not without its flaws. The blockage of new appointments to the Appellate Body has created a backlog of cases and uncertainty in the enforcement of trade rules. The U.S. has criticized the system for being biased and overreaching in its rulings, which has further complicated the situation.[196] These challenges highlight the necessity for comprehensive reforms to ensure the WTO can continue to effectively mediate international trade disputes.

Looking forward, the WTO has the potential to play an even more significant role in global governance, especially in emerging areas such as digital trade and environmental sustainability. As global challenges evolve, so too must the WTO if it is to remain effective. This involves not only adapting its policies and structures but also fostering greater cooperation and trust among its members.

4.3 Analysis of existing initiatives and proposals

4.3.1 Current initiatives leveraging AI in international legal coordination

Artificial Intelligence (AI) is increasingly pivotal in transforming cross-border transactions through initiatives that streamline and enhance legal processes. For instance, AI-driven tools are being employed by international organizations to analyse complex trade data and legal documents, which helps in identifying

[194] Manfred Elsig and Mark A Pollack, 'Agents, trustees, and international courts: nomination and appointment of judicial candidates in the WTO Appellate Body' (2014) *European Journal of International Relations* https://www.peio.me/wp-content/uploads/2014/04/Conf4_Elsig-Pollack-24.01.2011.pdf accessed 20 May 2024, 37.

[195] KI Cox, 'Vetoing WTO Appellate Body Judges' Reappointments: Analyzing the United States' Actions through Neo-Realist Lenses' (2019) Hous. J. Int'l L. https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/hujil42&section=3 accessed 20 May 2024, 18.

[196] Rajesh Babu, 'WTO Appellate Body Overreach and the Crisis in the Making: A View from the South' in The Appellate Body of the WTO and Its Reform (Springer 2020) https://link.springer.com/chapter/10.1007/978-981-15-0255-2_6 accessed 20 May 2024, 96.

inconsistencies in trade regulations and intellectual property laws across different jurisdictions.[197]

The World Intellectual Property Organization (WIPO) has adopted AI technologies like image recognition and language processing to facilitate the patent registration process. This application of AI not only speeds up the examination of patents but also enhances the consistency of patent grants globally, thereby minimizing disputes over intellectual property in international trade.[198]

These advancements highlight the significant role AI plays in creating a more cohesive and efficient global trade environment.[199] By leveraging AI, organizations like WIPO can improve the accuracy and speed of legal processes, which is crucial in the fast-paced landscape of international trade.

4.3.2 Proposed AI-driven changes to enhance legal coordination

To further enhance legal coordination, there are several AI-centric proposals on the table. One significant proposal is the creation of an AI-powered legal platform for the WTO and other trade-related bodies, which would serve as a comprehensive resource for accessing harmonized trade regulations, case law, and dispute resolutions. This platform could use natural language processing to help legal professionals and businesses understand complex legal texts and trade agreements in multiple languages.[200]

Additionally, there is a push for AI-mediated negotiation tools that could assist in drafting and revising international agreements. These tools would use machine learning algorithms to suggest agreement terms based on past successful negotiations, potentially reducing the time and friction involved in reaching consensus among multiple parties.[201]

4.3.3 Looking ahead: AI's potential in future legal coordination

The effectiveness of AI in international legal coordination can be seen in several areas. AI-driven analysis tools have made it possible to process vast amounts of legal data more quickly and accurately than ever before, leading to more informed decision-making in policy development and dispute resolution. However, the deployment of AI technologies also poses challenges, such as the need for significant data privacy and security measures, and the risk of bias in AI algorithms which must

---

[197] V Singh and MR Sethi, 'Digital Trade And Artificial Intelligence: Role Of Intellectual Property' (2021) *NTUT Journal of Intellectual Property Law* https://iip.ntut.edu.tw/var/file/92/1092/img/2036/vol.10(1).pdf accessed 20 May 2024, 424.

[198] Bryan Mercurio and Yu Robert, 'An AI policy for the (near) future' (2021) Addressing Impediments to Digital Trade https://cepr.org/system/files/publication-files/60026-addressing_impediments_to_digital_trade.pdf accessed 20 May 2024, 79.

[199] G Szilágyi and J Gyarmathy, 'Emergence of Digitalization and Artificial Intelligence in the Intellectual Property System' (2023) Institutiones Administrationis-J. Admin. Sci. https://real.mtak.hu/184293/1/InstitutesAdministrationis_Vol02_2023_2_Szilagyi.pdf accessed 20 May 2024, 121.

[200] Sandesh Achar, 'Early Consequences Regarding the Impact of Artificial Intelligence on International Trade' (2019) American Journal of Trade and Policy https://www.researchgate.net/publication/364728799_Early_Consequences_Regarding_the_Impact_of_Artificial_Intelligence_on_International_Trade accessed 20 May 2024, 123.

[201] Ibid 130.

be continuously addressed to ensure fair and equitable outcomes.[202]

The future of international legal coordination with AI appears promising but requires careful implementation. The integration of AI into international legal systems should focus on enhancing transparency and inclusivity, ensuring that all countries benefit from technological advancements. Furthermore, ongoing training and education on AI technologies will be essential for legal professionals to effectively utilize these new tools.[203]

AI has the potential to significantly enhance the efficiency and effectiveness of international legal coordination, especially in managing cross-border transactions. However, this potential can only be fully realized with thoughtful regulation, broad-based training, and a commitment to ethical standards in AI development and application.

[202] Szilágyi (n 199) 81.

[203] P Cihon, 'Standards for AI governance: international standards to enable global coordination in AI research & development' (2019) *Future of Humanity Institute, University of Oxford* https://www.fhi.ox.ac.uk/wp-content/uploads/Standards_-FHI-Technical-Report.pdf accessed 20 May 2024, 8.

5 Conclusion

The study of AI in cross-border transactions presented in this thesis reveals both the extensive impact and the complex challenges that AI brings to the realm of international trade law. AI's ability to revolutionize data analysis, optimize processes, and automate tasks is fundamentally transforming traditional business operations and legal frameworks.

The integration of AI into global commerce necessitates a comprehensive reassessment of existing legal structures. Challenges such as jurisdictional complexities, liability concerns, and data privacy issues have been identified as significant. These challenges are deeply interconnected, necessitating substantial legal reforms to accommodate the autonomous and decentralized characteristics of AI technologies. Traditional legal frameworks, which were not designed to manage such advanced technologies, exhibit significant shortcomings, particularly in areas like accountability for AI-driven decisions and the protection of data across borders.

The AI Act is a pioneering legislative initiative aimed at addressing these gaps. By establishing a detailed regulatory framework, the AI Act strives to harmonize AI regulations across the EU, balancing the promotion of innovation with the necessity of consumer protection, safety, and privacy. This regulatory approach, which emphasizes transparency and accountability, sets a global standard for managing the complexities of AI in a way that promotes ethical use while fostering economic growth. The Act’s influence extends beyond Europe, shaping international AI governance through mechanisms like the Brussels Effect, where stringent EU standards indirectly shape global practices.

Global cooperation is critical in addressing the legal challenges posed by AI. The widespread implications of AI across international borders require a coordinated regulatory approach. International bodies, particularly the WTO, are essential in facilitating this global response. The WTO’s efforts in harmonizing regulations and fostering international dialogue are crucial for creating a stable and predictable environment for AI in global trade. The WTO’s dispute settlement system and trade policy reviews play a significant role in ensuring consistent and fair AI regulation across different jurisdictions.

Reflecting on the broader implications of this research, it is clear that as AI technologies advance, so must our strategies for managing their impact. This involves continually reassessing regulations like the EU’s AI Act and maintaining a firm commitment to international collaboration. The dynamic nature of AI necessitates adaptive legal frameworks that can respond swiftly to technological advancements and changing market conditions.

Future research should take a proactive stance, anticipating technological developments and exploring new models for international cooperation. Legal frameworks must be designed to accommodate rapid changes without stifling innovation. Ethical considerations must remain central to this discussion, ensuring that AI's integration into societal and economic systems does not compromise fundamental human rights or exacerbate inequalities.

In conclusion, this thesis provides a critical understanding of the legal implications of AI in international trade, paving the way for future research and policy-making. The evolution of AI presents both opportunities and responsibilities: to harness its potential responsibly and ensure that its benefits are shared equitably. Addressing these challenges through research, policy development, and international cooperation will be essential for securing a future where AI enhances global trade while adhering to the highest standards of law and ethics.

Looking forward, it is crucial that stakeholders across various sectors engage in continuous dialogue to refine and adapt regulatory frameworks. Governments, international organizations, industry leaders, and academia must collaborate to develop robust policies that foster innovation while protecting public interests. By adopting a forward-thinking approach, we can create a resilient and inclusive global trade environment that leverages the transformative power of AI for the benefit of all.

References

Official documents

1. Article 34 Vienna Convention on the Law of Treaties, 1969.
2. 1971 Hague Convention on the Law Applicable to Traffic Accidents; Directive 2000/31/EC on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (e-Commerce Directive), 2000.
3. Consolidated Version of the Treaty on the Functioning of the European Union, 2008.
4. Regulation (EC) No 593/2008 on the law applicable to contractual obligations (Rome I); Regulation (EC) No 864/2007 on the law applicable to non-contractual obligations (Rome II), 2008.
5. ILC Final Report, 'Obligation to Extradite or Prosecute', UN Doc A/CN.4/L.844, paras 50–51, 2014.
6. European Union, 'Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation)', OJ L119/1, 2016.
7. Asilomar AI Principles, paragraph 19, 2017.
8. Montreal Declaration for a Responsible Development of Artificial Intelligence, Principle 9, 2018.
9. World Trade Organization, 'Joint Statement on Electronic Commerce', WT/L/1056, 2019.
10. Commission Nationale de l'Informatique et des Libertés (CNIL), Decision No. SAN-2019-001, 2019.
11. OECD, 'Why does international regulatory co-operation matter and what is it?', International Regulatory Co-operation, 2020.
12. Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts COM(2021) 206 final, Recital 4, 2021.
13. Organisation for Economic Co-operation and Development (OECD), 'Public Integrity Handbook', OECD Publishing, 2021.

14. EUR-Lex, ‘Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act)’, 2021.

15. Council on Foreign Relations, ‘The United Nations and the Future of Global Governance’, 2023.

16. European Commission, ‘New Rules to Protect Your Rights and Activity Online in the EU’, 2024.

17. Council of the EU, ‘Artificial Intelligence (AI) Act: Council Gives Final Green Light to the First Worldwide Rules on AI’, 2024.

Literature

Monographs

1. Anu Bradford, The Brussels Effect: How the European Union Rules the World (OUP), accessed 18 May 2024, 2020.

2. Bernard M Hoekman, Aaditya Mattoo, and Philip English (eds), Development, Trade, and the WTO: A Handbook (World Bank Publications), 2002.

3. D Darwish, Blockchain and Artificial Intelligence for Business Transformation Toward Sustainability (Springer Nature Singapore), https://doi.org/10.1007/978-981-19-8730-4_8, 2023.

4. EB Hunt, Artificial Intelligence (Academic Press), https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat02271a&AN=atoz.ebs2939903e&site=eds-live&scope=site, 1975.

5. Julia Hörnle, Internet Jurisdiction: Law and Practice (OUP), accessed 18 May 2024, 2021.

6. Omar A Alzubi, Jafar A Alzubi, K Shankar, and Deepak Gupta, ‘Blockchain and Artificial Intelligence Enabled Privacy-Preserving Medical Data Transmission in Internet of Things’ (32(12) Transactions on Emerging Telecommunications Technologies), https://doi.org/10.1002/ett.4360, accessed 18 May 2024, 2021.

7. RE Neapolitan and X Jiang, Artificial Intelligence: With an Introduction to Machine Learning (2nd edn, CRC Press), https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat07147a&AN=lub.6387411&site=eds-live&scope=site, 2018.

8. SJ Russell and P Norvig, Artificial Intelligence: A Modern Approach (4th edn, Pearson), https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat07147a&AN=lub.6806195&site=eds-live&scope=site, 2021.

9. T Madiega, Artificial Intelligence Act (European Parliamentary Research Service, European Parliament), https://superintelligenz.eu/wp-content/uploads/2023/07/EPRS_BRI2021698792_EN.pdf, accessed 20 May 2024, 2021.

10. Tencent Research Institute, Artificial Intelligence (Springer Singapore), https://search-ebscohost-com.ludwig.lub.lu.se/login.aspx?direct=true&AuthType=ip,uid&db=cat07147a&AN=lub.7361988&site=eds-live&scope=site, 2021.

Articles

1. A Adadi and M Berrada, 'Peeking Inside the Black-Box: A Survey on Explainable Artificial Intelligence (XAI)' 6 IEEE Access 52138 (2018), doi: 10.1109/ACCESS.2018.2870052, 2870052.

2. A Attkan and V Ranga, 'Cyber-Physical Security for IoT Networks: A Comprehensive Review on Traditional, Blockchain and Artificial Intelligence Based Key-Security' 8 Complex Intell Syst 3559 (2022), https://doi.org/10.1007/s40747-022-00667-z, 00667-z.

3. A Jobin, M Ienca, and E Vayena, 'The Global Landscape of AI Ethics Guidelines' (2019) 1 Nat Mach Intell 389, https://doi.org/10.1038/s42256-019-0088-2, 389.

4. A Koene, C Clifton, Y Hatada, H Webb, and R Richardson, A Governance Framework for Algorithmic Accountability and Transparency (European Parliamentary Research Service 2019) 17, 17.

5. Allan Dafoe, 'AI Governance: A Research Agenda' (2021) 40(2) Policy and Society 137, https://doi.org/10.1080/14494035.2021.1928377, 137.

6. Alex Engler, 'The EU AI Act will have global impact, but a limited Brussels Effect' (Brookings, 14 June 2022), https://www.brookings.edu/research/the-eu-ai-act-will-have-global-impact-but-a-limited-brussels-effect, 2022.

7. Andrew T Guzman, 'The Case for International Antitrust' (2004) 22 Berkeley J Int'l L 355, https://escholarship.org/uc/item/32z7p4sq, 32z7p4sq.

8. Ashish Ghosh, Debasrita Chakraborty, and Anwesha Law, 'Artificial Intelligence in Internet of Things' CAAI Transactions on Intelligence Technologies, first published 14 November 2018 (2018), https://doi.org/10.1049/trit.2018.1008, 1008.

9. B Murdoch, 'Privacy and Artificial Intelligence: Challenges for Protecting Health Information in a New Era' (2021) 22 BMC Med Ethics, https://doi.org/10.1186/s12910-021-00687-3, 122.

10. C Novelli, F Casolari, A Rotolo and others, 'Taking AI Risks Seriously: A New Assessment Model for the AI Act' AI & Society (2023), https://doi.org/10.1007/s00146-023-01723-z, 1723.

11. C Ryngaert, ‘International Jurisdiction Law’ in Cedric Ryngaert (ed), Handbook on Extraterritoriality in International Law (Edward Elgar Publishing 2023), DOI: https://doi.org/10.4337/9781800885592.00008, 8.

12. Catherine Tucker, ‘Privacy, Algorithms, and Artificial Intelligence’ in Ajay Agrawal, Joshua Gans and Avi Goldfarb (eds), The Economics of Artificial Intelligence: An Agenda (University of Chicago Press 2019) 423, https://doi.org/10.7208/9780226613475-019, 423.

13. Cristian González García and others, ‘A Review of Artificial Intelligence in the Internet of Things’ MDE Research Group, Department of Computer Science, University of Oviedo (2018), https://digibuo.uniovi.es/dspace/bitstream/handle/10651/52310/A%20Review.pdf, 52310.

14. Daniel J Gervais, ‘Towards an Effective Transnational Regulation of AI’ 38 AI & Society 391 (2023), https://doi.org/10.1007/s00146-021-01310-0, 1310-0.

15. Damião Ribeiro de Almeida and others, ‘A Survey on Big Data for Trajectory Analytics’ 9(2) ISPRS International Journal of Geo-Information 88 (2020), https://www.mdpi.com/2220-9964/9/2/88, 88.

16. DC Esty and D Geradin, ‘Market access, competitiveness, and harmonization: Environmental protection in regional trade agreements’ (1997) 21 Harv. Envtl. L. Rev., https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/helr21&section=11, 11.

17. Eliezer Sanchez Lasaballett, ‘Conceptualizing harmonization: the case for contract law’ (2019) 24(1) Uniform Law Review 73, https://doi.org/10.1093/ulr/unz007, unz007.

18. Eleanor Hine and Luciano Floridi, ‘The Blueprint for an AI Bill of Rights: In Search of Enaction, at Risk of Inaction’ (2023) 33 Minds & Machines, https://doi.org/10.1007/s11023-023-09625-1, 9625-1.

19. Ernst Sauer, ‘Universal Principles in International Law’ 42 Transactions of the Grotius Society 181 (1956), JSTOR http://www.jstor.org/stable/743133, 743133.

20. Etinosa Igbinenikaro and Adefolake Olachi Adewusi, ‘Navigating the Legal Complexities of Artificial Intelligence in Global Trade Agreements’ 6(4) International Journal of Applied Research in Social Sciences (2024), https://fepbl.com/index.php/ijarss/article/view/987, 987.

21. Fiona Smith and Lorna Woods, ‘A Distinction Without a Difference: Exploring the Boundary Between Goods and Services in the World Trade Organization and the European Union’ 12(1) Columbia Journal of European Law 1 (2005), 1.

22. Frank Fagan and Saul Levmore, ‘The Impact of Artificial Intelligence on Rules, Standards, and Judicial Discretion’ (2019) Coase-Sandor Working Paper Series in Law and Economics, University of Chicago Law School, https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2658&context=law_and_economics, 2658.

23. G Shaffer, M Elsig, and S Puig, ‘The law and politics of WTO dispute settlement’ in J Dunoff and M Pollack (eds), Interdisciplinary Perspectives on International Law and International Relations (Cambridge University Press 2017), 2017.

24. Ginger Zhe Jin, ‘Artificial Intelligence and Consumer Privacy’ in Ajay K Agrawal, Joshua Gans, and Avi Goldfarb (eds), The Economics of Artificial Intelligence: An Agenda (University of Chicago Press 2019) 423, https://doi.org/10.7208/9780226613475-019, 423.

25. Hannah Ruschemeier, ‘The Problems of the Automation Bias in the Public Sector – A Legal Perspective’ (May 8, 2023) Weizenbaum Conference proceedings 2023, forthcoming, available at SSRN: https://ssrn.com/abstract=4521474, 4521474.

26. Harry Surden, ‘Machine Learning and Law: An Overview’ in Roland Vogl (ed), Research Handbook on Big Data Law (Edward Elgar Publishing 2021) 171, https://scholar.law.colorado.edu/cgi/viewcontent.cgi?article=1088&context=faculty-articles, 171.

27. Helen Margetts, ‘Rethinking AI for Good Governance’ (2022) 151(2) Daedalus 360, https://doi.org/10.1162/daed_a_01922, 360.

28. I Poselużna, ‘Towards the politicization of Artificial Intelligence in the EU? External influences and internal dynamics’ (Rocznik Integracji Europejskiej, 2023), https://ruj.uj.edu.pl/xmlui/bitstream/handle/item/328407/poseliuzhna_towards_the_politicization_of_ai_2023.pdf?sequence=1, 328407.

29. J Butcher and I Beridze, ‘What is the State of Artificial Intelligence Governance Globally?’ (2019) 164(5–6) The RUSI Journal 88, 88.

30. J Chamberlain, 'The Risk-Based Approach of the European Union’s Proposed Artificial Intelligence Regulation: Some Comments from a Tort Law Perspective' (2023) 14(1) European Journal of Risk Regulation 1, doi:10.1017/err.2022.38, 1.

31. JI Charney, ‘Universal International Law’ 87(4) American Journal of International Law 529 (1993), DOI: 10.2307/2203615, 2203615.

32. Jan Schuett, ‘Defining the Scope of AI Regulations’ 15(1) Law, Innovation and Technology 60 (2023), https://doi.org/10.1080/17579961.2023.2184135, 2184135.

33. Joran Mökander and Luciano Floridi, ’Operationalising AI Governance Through Ethics-Based Auditing: An Industry Case Study’ 3 AI Ethics 451 (2023), https://doi.org/10.1007/s43681-022-00171-7, 171-7.

34. JH Jackson, ‘The WTO Dispute Settlement Understanding—Misunderstandings on the Nature of Legal Obligation’ (1997) 91(1) American Journal of International Law, https://www.cambridge.org/core/journals/american-journal-of-international-law/article/wto-dispute-settlement-understandingmisunderstandings-on-the-nature-of-legal-obligation/9504D7090B6BB0B517B47690AA6577E4, 6577E4.

35. Jonathan Truby, Ronald D Brown, Ibraheem A Ibrahim, and Oscar C Parellada, ‘A Sandbox Approach to Regulating High-Risk Artificial Intelligence Applications’ (2022) 13(2) European Journal of Risk Regulation 270, https://doi.org/10.1017/err.2021.52, 270.

36. Kenneth C Randall, ‘Universal Jurisdiction under International Law’ 66 Tex L Rev 785 (1987), https://heinonline.org/HOL/LandingPage?handle=hein.journals/tlr66&div=39&id=&page=, 39.

37. Kenneth S Carlston, ‘Universality of International Law Today: Challenge and Response’ 8 Howard LJ 79 (1962), https://heinonline.org/HOL/LandingPage?handle=hein.journals/howlj8&div=15&id=&page=, 15.

38. KI LEE, ‘Study on the use and protection of biometric data under EU AI Act’ (2024) Law Journal, https://www.knulaw.org/archive/view_article?pid=lj-85-0-57, 57.

39. L Bartels, ‘Applicable law in WTO dispute settlement proceedings’ (2001) 35 Journal of World Trade, https://kluwerlawonline.com/api/Product/CitationPDF

40. Lyria Bennett Moses, ‘Artificial Intelligence in the Courts, Legal Academia and Legal Practice’ (2017) 91 ALJ 561, https://heinonline.org/HOL/LandingPage?handle=hein.journals/aslnlwjunl91&div=99&id=&page=, 561.

41. M Almada and A Radu, ‘The Brussels Side-Effect: How the AI Act Can Reduce the Global Reach of EU Policy’ (2024) German Law Journal, https://doi.org/10.1017/glj.2023.108, 108.

42. M Bearman and R Ajjawi, ‘Learning to Work with the Black Box: Pedagogy for a World with Artificial Intelligence’ 54 British Journal of Educational Technology 1160 (2023), https://doi.org/10.1111/bjet.13337, 13337.

43. M Carabantes, ‘Black-Box Artificial Intelligence: An Epistemological and Critical Analysis’ (2020) 35 AI & Soc 309, https://doi.org/10.1007/s00146-019-00888-w, 309.

44. M Coeckelbergh, ‘Narrative Responsibility and Artificial Intelligence’ 38 AI & Society 2437 (2023), https://doi.org/10.1007/s00146-021-01375-x, 1375-x.

45. Marco Almada and Anca Radu, ‘The Brussels Side-Effect: How the AI Act Can Reduce the Global Reach of EU Policy’ (2024) German Law Journal, https://doi.org/10.1017/glj.2023.108, 108.

46. Marco Almada and Nicolas Petit, ‘The EU AI Act: A Medley of Product Safety and Fundamental Rights?’ (18 October 2023) Robert Schuman Centre for Advanced Studies Research Paper No. 2023/59, http://dx.doi.org/10.2139/ssrn.4308072, 4308072.

47. Martin Krzywdzinski, Detlef Gerst and Florian Butollo, ‘Promoting Human-Centred AI in the Workplace: Trade Unions and Their Strategies for Regulating the Use of AI in Germany’ 29(1) Transfer: European Review of Labour and Research 53 (2023), https://doi.org/10.1177/10242589221142273, 42273.

48. Matthew U Scherer, ‘Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies’ (2015) 29 Harv JL & Tech 353, https://doi.org/10.1177/0008125619867910, 353.

49. Michael Butterworth, ‘The ICO and Artificial Intelligence: The Role of Fairness in the GDPR Framework’ (2018) 34(2) Computer Law & Security Review 257, https://doi.org/10.1016/j.clsr.2018.01.004, 257.

50. Michael Ebers et al, ‘The European Commission's Proposal for an Artificial Intelligence Act—A Critical Assessment by Members of the Robotics and AI Law Society (RAILS)’ (2021) 4(4) Journal of Robotics and AI Law, https://www.mdpi.com/2571-8800/4/4/43, 43.

51. Mira Burri, ‘Trade Law 4.0: Are We There Yet?’ 26 Journal of International Economic Law 90 (2023), https://doi.org/10.1093/jiel/jgac053, jgac053.

52. Mohammad Abualethem Nsour, ‘The WTO and Using Digital Economy Technologies: Surviving the Race with Preferential Trade Agreements’ 57(5) Journal of World Trade 763 (2023), https://kluwerlawonline.com/journalarticle/Journal+of+World+Trade/57.5/TRAD2023031, 3031.

53. Mohammad R Davahli, Waldemar Karwowski, Konrad Fiok, Tao Wan, and Hamid R Parsaei, ‘Controlling Safety of Artificial Intelligence-Based Systems in Healthcare’ (2021) 13 Symmetry 102, https://doi.org/10.3390/sym13010102, 102.

54. N Lucchi, ‘ChatGPT: A Case Study on Copyright Challenges for Generative Artificial Intelligence Systems’ European Journal of Risk Regulation 1 (2023), DOI: 10.1017/err.2023.59, 59.

55. Natali Helberger and Nicholas Diakopoulos, ‘ChatGPT and the AI Act’ (2023) 12(1) Internet Policy Review, https://policyreview.info/essay/chatgpt-and-ai-act, 12-1.

56. Nathalie A Smuha and others, ‘How the EU Can Achieve Legally Trustworthy AI: A Response to the European Commission’s Proposal for an Artificial Intelligence Act’ (August 5, 2021), http://dx.doi.org/10.2139/ssrn.3899991, 3899991.

57. Nils von Ingersleben-Seip, ‘Competition and Cooperation in Artificial Intelligence Standard Setting: Explaining Emergent Patterns’ 40 Review of Policy Research 781 (2023), https://doi.org/10.1111/ropr.12538, 12538.

58. Omar A Alzubi, Jafar A Alzubi, K Shankar, and Deepak Gupta, ‘Blockchain and Artificial Intelligence Enabled Privacy-Preserving Medical Data Transmission in Internet of Things’ 32(12) Transactions on Emerging Telecommunications Technologies (2021), https://doi.org/10.1002/ett.4360, 4360.

59. Oxford Analytica, ‘EU AI Law Faces Tough Conflicting Pressures’ (2023) 10.1108/OXAN-DB279356, DOI: 10.1108/OXAN-DB279356, DB279356.

60. Pao-Li Chang and Myoung-Jae Lee, ‘The WTO Trade Effect’ (2011) 85(1) Journal of International Economics 53, https://doi.org/10.1016/j.jinteco.2011.05.011, 011.

61. P Cihon, MM Maas, and L Kemp, ‘Fragmentation and the Future: Investigating Architectures for International AI Governance’ (2020) 11 Global Policy 545, https://doi.org/10.1111/1758-5899.12890, 545.

62. P Kaur, K Krishan, SK Sharma, and T Kanchan, ‘Facial-Recognition Algorithms: A Literature Review’ 60(2) Medicine, Science and the Law 131 (2020), doi: 10.1177/0025802419893168, 9893168.

63. P Tambe, P Cappelli, and V Yakubovich, ‘Artificial Intelligence in Human Resources Management: Challenges and a Path Forward’ (2019) 61(4) California Management Review 15, https://doi.org/10.1177/0008125619867910, 15.

64. Paul Schiff Berman, ‘The Effect of Globalization on the Interactions among Legal Systems: Case Studies’ (2021) Laws, https://www.mdpi.com/journal/laws/special_issues/Globalization_Legal_Systems, 2021.

65. Pedro Robles and Daniel J Mallinson, ‘Catching Up with AI: Pushing Toward a Cohesive Governance Framework’ (2023) 51(3) Politics & Policy 355, https://doi.org/10.1111/polp.12529, 355.

66. Pehlivan, Ceyhun Necati, ‘The EU Artificial Intelligence (AI) Act: An Introduction’ (1 January 2024) Global Privacy Law Review (Forthcoming), SSRN https://ssrn.com/abstract=4746840, 4746840.

67. Quentin André and others, ‘Consumer Choice and Autonomy in the Age of Artificial Intelligence and Big Data’ 5 Customer Needs and Solutions 28 (2018), https://doi.org/10.1007/s40547-017-0085-8, 28.

68. Reuben Binns, ‘Algorithmic Accountability and Public Reason’ (2018) 31 Philosophy & Technology 543, https://doi.org/10.1007/s13347-017-0263-5, 543.

69. S Larsson, ‘On the Governance of Artificial Intelligence through Ethics Guidelines’ (2020) 7(3) Asian Journal of Law and Society 437, DOI: 10.1017/als.2020.19, 437.

70. S Zaman et al., ‘Security Threats and Artificial Intelligence Based Countermeasures for Internet of Things Networks: A Comprehensive Survey’ 9 IEEE Access 94668 (2021), doi: 10.1109/ACCESS.2021.3089681, 3089681.

71. Shoshana Zuboff, ‘Big Other: Surveillance Capitalism and the Prospects of an Information Civilization’ (2015) 30 Journal of Information Technology 75, https://doi.org/10.1057/jit.2015.5, 75.

72. TS Cabral, ‘Liability and Artificial Intelligence in the EU: Assessing the Adequacy of the Current Product Liability Directive’ (2020) 27(5) Maastricht Journal of European and Comparative Law 615, https://doi.org/10.1177/1023263X20948689, 615.

73. ‘The EU AI Act: the finish line is in sight’ (Deloitte UK, 2024), https://www.lexology.com/library/detail.aspx?g=a87d9d1c-e3da-46bc-8b1b-b33af2fc7a1e, a1e.

74. U Peters, ‘Algorithmic Political Bias in Artificial Intelligence Systems’ (2022) 35 Philos Technol 25, https://doi.org/10.1007/s13347-022-00512-8, 25.

75. Ugo Pagallo, Jacopo Ciani Sciolla, and Massimo Durante, ‘The Environmental Challenges of AI in EU Law: Lessons Learned from the Artificial Intelligence Act (AIA) with its Drawbacks’ (2022) 16(3) Transforming Government: People, Process and Policy 369, https://doi.org/10.1108/TG-07-2021-0121, 369.

76. Wolfgang Friedmann, ’The Position of Underdeveloped Countries and the Universality of International Law’ 1(2) Columbia Journal of Transnational Law 78 (1961), https://heinonline.org/HOL/LandingPage?handle=hein.journals/cjtl1&div=11&id=&page=, 11.

77. Wyatt Hoffman and Heeu Millie Kim, Reducing the Risks of Artificial Intelligence for Military Decision Advantage (Center for Security and Emerging Technology), no page number available.

78. Y Wang, Y Pan, M Yan, Z Su, and TH Luan, ‘A Survey on ChatGPT: AI–Generated Contents, Challenges, and Solutions’ 4 IEEE Open Journal of the Computer Society 280 (2023), DOI: 10.1109/OJCS.2023.3300321, 3300321.

79. Ying Qian and others, ‘Can Artificial Intelligence Improve Green Economic Growth? Evidence from China’ 30 Environmental Science and Pollution Research 16418 (2023), https://doi.org/10.1007/s11356-022-23320-1, 23320-1.

Case law

1. United States Court of Appeals for the Second Circuit Judgement of 12 March 1945, United States v Aluminum Corp of America, 148 F 2d 416, 443 (concerning antitrust laws).

2. Tribunal de grande instance de Paris Ordonnance de référé of 22 May 2000, LICRA and UEJF v Yahoo! Inc and Yahoo! France, No RG: 00/05308 (on hosting illicit content).

3. Court of Justice of the European Union Judgement of 13 May 2014, Google Spain SL and Google Inc v Agencia Española de Protección de Datos (AEPD) and Mario Costeja González, Case C-131/12, EU:C:2014:317 (right to be forgotten).

4. United States District Court for the Southern District of New York Judgement of 16 November 2016, United States v Zarrab, No 15-cr-867, 2016 WL 6820737 (regarding sanctions violations).

5. Court of Justice of the European Union Judgement of 3 October 2019, Eva Glawischnig-Piesczek v Facebook Ireland Limited, Case C-18/18, EU:C:2019:821 (obligation to remove defamatory content).

6. Tribunale Ordinario di Bologna Judgement of 2020, Judgment No. 2949/2020 (concerning data protection and privacy).

7. High Court of Justice (England and Wales), Queen's Bench Division Judgement of 5 March 2021, Miller v Amazon.com Inc, [2021] EWHC 479 (QB) (product liability and safety).