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**CROSS-BORDER OVERSIGHT OF ARTIFICIAL INTELLIGENCE:  
CHALLENGES AND PROSPECTS FOR A HARMONISED  
INTERNATIONAL REGULATORY FRAMEWORK**

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**ABSTRACT**

As Artificial Intelligence (AI) continues to reshape industries, economies and societies globally, issues around privacy, security and ethical use of this technology have become major oversight concerns. Since AI is an area of technology that knows no bounds, there should be an adequate international regulatory response to address these new challenges. This paper will examine the global landscape for AI in several of the largest jurisdictions and how laws may be enforced beyond borders with regard to jurisdictional challenges, as well as enforcement. It discusses mechanisms to achieve this harmonization, with instruments of policy formulation and international cooperation. This study analyses the regulatory oversight strategies and international initiatives proposed by organizations such as the UN, OECD or WTO, to highlight how assembling a consistent set of regulations can be problematic. Results indicate that harmonized AI regulations in all countries can promote innovation, reduce costs of compliance and guarantee ethical deployment of secured beneficial AI worldwide. This paper provides a thorough examination of the problems and potential for international cooperation and regulation. It emphasizes the need for co-operation between nations and a regulatory ecosystem that is flexible enough to adapt quickly to rapid innovations. The study is located in the larger discussion on AI governance, and it highlights a global mandate towards coordinated approaches to unlock the promise of AI while warding off its dangers.

**Keywords:** Artificial intelligence (AI), cross-border oversight, regulatory harmonization, ethical AI, data protection.

## INTRODUCTION

Artificial Intelligence (AI) is restructuring industries globally, costing economies and society at large. For example, from healthcare and finance to transportation and education, AI technologies in general are leading the transformation of how services get delivered, as well as decisions made (Russell & Norvig, 2016; Elshobake & Sakka, 2024; Brynjolfsson & McAfee, 2017). The continuous spread and improvement of this impressive technology have been accompanied by some large challenges which cover the following: Security, Integrity, Privacy, and Protection Against Discrimination, all of which led on to greater accountability (Shin, 2020). Facilitating innovation and competitive edge via such technologies necessitates understanding the determinants of its adoption by various stakeholders (Abulehia et al., 2023). The scale and often transnational character of AI systems make a comprehensive international regulatory regime necessary to tackle the challenges of AI adoption (Vinuesa et al., 2020).

As of now, nations around the world do not have the same AI development guidelines. While some prefer strict rules, others choose not to intervene (Floridi et al., 2018). When each country has different rules, companies can move work there, spoiling efforts for responsible global use of advanced technologies. In addition to this, the global aspect of AI, as exhibited by auto-trading on universal exchanges and cross-border platforms, complicates the unilateral imposition of a regulation from a single country and raises demands for mutual internationally backed principles (Gordon, 2023).

The absence of a single regime is dangerous because it engulfs compliance costs for those organizations that, because of the absence of a consistent legal framework, experience variable sets of rules across jurisdictions, contributing to uncertainty and hindering innovation (Gasser & Almeida, 2017). In general, international cooperation and synchronization may be significant in forming successful solutions in other spheres of the negative AI influence, which is most efficiently combated worldwide (Brundage et al., 2020), including algorithmic prejudice, or privacy harm (Crawford et al., 2019).

The objective of the present paper is to unpack the challenges and opportunities that come with developing a global regulatory structure for AI. It aims to shed light on some thorny aspects including jurisdiction, enforcement, and international cooperation in order to better understand what is at stake, so that potential solutions can be found. Harmonization of AI regulations holds promise in fostering innovation and economic growth while ensuring the development of ethical, safe, and beneficial AI technologies for all of mankind (Cihon, 2019; Taddeo & Floridi, 2018).

This paper structure is as follows. Firstly, an extremely comprehensive report on the current state of AI regulation in major jurisdictions is discussed. The paper then details two examples of principal obstacles in competing jurisdictions and enforcement methods. Afterwards, it describes possible technological solutions, policy development and international collaboration to harmonize regulations on specific AI applications. Additional confusion and complexity regarding regulatory discrepancies are illustrated through case studies on real-world instances of AI deployment. The paper concludes with specific strategic recommendations for the development of impactful and coordinated AI regulations. This provides a refresher on the results as they stand today, highlighting implications for global governance around AI in our digital age, and providing recommendations for the next step forward in future research.

## **METHODOLOGY**

This study has a multi-method approach consisting of qualitative analysis, case studies and policy analysis to help understand the challenges and opportunities for establishing an international harmonized regulatory framework for AI. The data was collected by a detailed literature review of leading databases like IEEE Xplore, PubMed and SpringerLink on recent articles about the topic at hand. The case studies, which include facial recognition technology and AI driven credit scoring, were chosen because of their relevance, as well as geographical spread. Insights into existing regulatory frameworks were found in policy documents of international bodies, for example, the UN, OECD, and WTO. Practical perspectives were supported by expert consultations using semi-structured interviews with AI specialists, policymakers and industry stakeholders. Using a thematic analysis of the data gathered, a comparative framework was developed to assess the differences and similarities between regulatory approaches in the US and China, as compared to EU law. The utility and generalizability of policy documents and the key lessons from each case study for regulatory harmonization were assessed. This methodology is intended to be transparent and replicable even with data limitations and possible bias. The approach will serve as a solid basis for further research.

## **LITERATURE REVIEW**

AI rules around the world are rapidly evolving due to the differences in national interests and how the national governments confront them. The United States AI regulatory strategy is based on the systematic deployment of AI in all sectors, paying prior attention to the innovation and economic growth while at the same time struggling with ethical questions. This framework from the National Institute of Standards and Technology (NIST) that makes use of artificial intelligence, increases trust in AI systems due to its ability to explain how the conclusions were made on reducing the risk. However, a decentralized context may cause an imbalance between states and sectors (Calo, 2017; Gasser & Almeida, 2017).

While the AI regulation proposed in the EU (European Commission 2021) would be holistic in many ways, standing as an Artificial Intelligence Act with risk-based categorization of AI applications and specific demands for high-risk systems such as transparency, accountability and human oversight, we argue in this paper that it still fails to address the inherent risks of democratization or social inclusion. General regulation of data privacy in the EU enforces the General Data Protection Regulation (GDPR) and introduces similar strong requirements on the privacy of data that apply to AI deployment. On that basis, at least, this would potentially decrease innovation and compliance costs (Veale & Zuiderveen Borgesius, 2021; Floridi et al., 2018).

Opportunities in such fields are created by China's case surrounding national strategies such as China's New Generation Artificial Intelligence Development Plan, where AI is incorporated in economic development and social governance, with a broader focus on AI use for security and production. This sample of laws includes those designed to foster corporate data governance and the rapidity of deploying AI technologies, as well as codes of conduct designed to establish government-centric standards, and self-regulated industry codes of conduct for emerging industries. Finally, it is a reflection of the concerns about the subject of threat monitoring and personal privacy (Ding, 2018; Dafoe, 2018; Roberts et al., 2021).

The UK's sectorial regulatory route, underpinned by the National AI Strategy has a clear focus on innovation and responsible use. Cases of AI use without statutory enforcement will continue to create potential market failures where gaps in regulation or inconsistent enforcement may exist (Ada Lovelace

Institute, 2023). The Canadian AI and Data Act, which was first proposed in 2023 also follows the example set by the EU, with its focus on transparency and accountability, but potentially introducing substantial regulatory overheads (IMF, 2024; Binns et al., 2018).

A draft of AI law in Brazil concentrates on human agency and data protection, with potential regulation gaps regarding effectiveness of compliance enforcement. However, Japan's regulatory approach in fostering innovation around privacy still needs constant discussions and adjustments for its proper enforcement (Matsui, 2019).

The South Korean strategy for AI research care periodically emphasizes properly regulating technology and providing sufficient support to the startups without harming innovation (Kim, 2020). Meanwhile, Australia is currently working on regulations that are grounded in a set of ethical principles and security guarantees (Walsh et al., 2020). India has adopted a strategy emphasizing social welfare and privacy of data with guidelines gradually taking shape (Jaipuria, 2024).

While the theme in Singapore is largely based on a voluntary compliance approach to governance and respecting individual data rights, its framework focuses more on responsible AI use (Tan, 2019). The Russian national AI strategy prioritizes these three uses: leading on AI, security of the nation, and potential ethical concerns related to surveillance (Boulanin & Verbruggen, 2017).

One way or another, the AI regulation situation was thrown wide open during its creation on a global scale - from a broad framework like the EU to a guideline-oriented approach in the USA. This concentrates on the openness, explainability and good use with regard to respect for individual rights, as well as the need to facilitate strong oversight activities that will support AI progress at a societal level, while maintaining ethical values (see Table 1).

**Table 1**

*Summary of AI Regulatory Approaches in Major Jurisdictions*

Jurisdiction	Regulatory Body	Key Regulations	Focus Areas	Challenges
United States	National Institute of Standards and Technology (NIST)	NIST AI Risk Management Framework	Innovation, accountability	Inconsistencies across states
European Union	European Commission	Artificial Intelligence Act, GDPR	Transparency, human oversight	High compliance burden
China	Government-imposed standards	New Generation AI Development Plan	Economic development, security	Surveillance, human rights concerns
United Kingdom	National AI Strategy	Sector-specific guidelines	Innovation, responsible use	Potential regulatory gaps
Canada	Proposed AI and Data Act	Transparency and accountability	Data protection	Regulatory overheads
Brazil	Draft AI Regulation	Ethical AI use, data protection	Data protection	Effectiveness depends on enforcement
Japan	Privacy laws, continuous dialogue	Privacy emphasis	Development, privacy	Continuous adaptation needed

## **DISCUSSION AND ANALYSIS**

### **Challenges in Creating a Harmonized Regulatory Framework**

#### *Jurisdictional Issues*

When borders are crossed in the use of AI Technologies, jurisdictional conflicts which occur will present major challenges for regulatory authorities. There are no global standards or even legal guidelines regulating AI in different countries. For example, data protection laws in the EU (General Data Protection Regulation - GDPR) are some of the most stringent around the handling and use of personal information combined with user consent requirements that can force a clash, when compared to more relaxed rules such as those found in parts of the law in the United States (Binns, 2018; Wulf & Seitzov, 2022).

Moreover, some regulations have extraterritorial reach which only add to the complexity of jurisdictional conflicts. For instance, the GDPR is applicable to any organization processing the data of EU citizens irrespective of where that firm is situated. If regulating states are able to have jurisdiction reach beyond their borders, they may after all come into contradiction with national (local) regulation. The local regulations usually allow simplified processing under less demanding conditions of legality. This state of affairs places the multinational AI companies between a rock and hard place, with devastating blind legal spots that provide a fertile ground for uncertainty and non-compliance, as is aptly shown by recent court cases where extraterritorial application failures occurred in various jurisdictions (Kuner, 2020; Rodrigues, 2020).

One notable example of these issues is the deployment of facial recognition technology by multinational corporations. By using facial recognition systems that violate aspects of the GDPR in 2019, an American company faced punishing legal claims within the EU which include large-scale lawsuits and fines. The case highlights the challenges of working within multiple regulatory jurisdictions, as well as the call for global standards that will help to guide compliance and innovation (Castro & McLaughlin, 2020).

Conflict of jurisdiction resulting from AI application in financial services is another example. A fintech company operating in the US and Europe faced difficulties with many different compliance standards for their AI-based credit scoring algorithms. The US rests solely on anti-discrimination laws, whereas the EU is bound by all the GDPR and uses strict consent-transparency requirements. This leads to additional operational and legal challenges concerning the different regulations (Finck, 2019; Koulu, 2020). Additionally, AI-driven financial technologies (fintech) are subject to very different regulations depending on the specific jurisdiction these technologies are being put in use. The US Securities and Exchange Commission (SEC) aims to create a level playing field that prevents fraud, while the EU's Markets in Financial Instruments Directive II (MiFID II) focuses on transparency and market integrity. This is, by its very nature, difficult for fintech companies that operate transnationally, as these variations can pose compliance headaches (Zhang et al., 2021; Omarova, 2020).

Another strong area of jurisdictional conflict is autonomous vehicles. The U.S. experienced an incident with its autonomous vehicle in 2018, revealing the need to debate liability and oversight of these vehicles at a regulatory level. Loose adherence to best practices by some countries opened the door for a cascade of failures that officials in other nations scrambled to determine how they might prevent recurrence, suggesting insufficient coordinated efforts internationally to regulate the risks (Viljanen, 2023).

### ***Enforcement Mechanisms***

Enforcing regulations for AI across borders is challenging as per the decentralized nature of AI technologies, along with the different legal frameworks in place in various nations. Due to decentralization, there are different ways rules can be enforced, and the level of regulatory intensity is also highly variable resulting in a negative impact on the enforcement of AI regulations (Wagner, 2016). Gill in Gill, S (2020) identifies the prediction paradigm in AI as significant, raising key ethical concerns on the human cost of instrumentalism inherent to predictive technology. According to Gill (2020), there are many ethical concerns arising from the growth and application of AI in the prediction paradigm, intensifying and revealing “the human costs” because of the instrumentalist control afforded by the technologies. Likewise, Gill (2021) considers the multiple forms and types of ethical challenges which are entangled with AI adoption and suggests that an intricate compliance framework that is appropriate and more enduring worldwide is comprehensive and multifaceted. In addition to this, the bibliometric analysis of the literature on cybercrime implies that international AI policy is rushing to respond to the emerging cyber threats (Alashqar et al., 2023).

Furthermore, the rapid pace of AI advancement complicates enforcement. As technology advances faster than monitoring and compliance activities, it can occasionally leave gaps in the framework and lead to oversight regulatory issues. This is especially worrying in low-capacity situations, as agreed. These regulatory loopholes can be used by large global companies operating in jurisdictions with limited effective methods of regulation, allowing them to shop around for the lowest-regulated zone available (Gasser & Almeida, 2017).

The Cambridge Analytica scandal is a prime example of how difficult it can be to put AI-specific regulations into effect on an international scale. The unscrupulous use of personal data stripped from social media users for political advertising highlighted one problem with the global enforcement regime on data protection. The unprecedented consumer outcry and regulatory investigation were not followed up by concrete, transborder accountability (Cadwalladr & Graham-Harrison, 2018). This case shows why the world needs to do much more in international enforcement mechanisms. This is because applying cross-border data protection or AI regulation is an area where co-operation is vital.

The same issues were faced in the enforcement and deployment of autonomous vehicles by multinational corporations. A 2018 incident in the US involving an autonomous vehicle, on the other hand, prompted questions of liability and regulatory oversight. The absence of common safety standards and enforcement led to difficulties during the investigation to resolve this kind of accident, which serves to highlight that international cooperation in regulatory oversight is essential (Viljanen, 2023). The difficulties of legislating autonomous vehicles in a patchwork fashion, among many governing bodies should also be considered. This is to avoid all the complexity in trying to regulate with an even heavier hand, but though through only one entity which surely makes regulating easier.

Authorities have a hard time, especially in the healthcare sector to enforce laws because of the tough regulations that must be followed in medical devices. In the United States, the FDA's AI framework for medical devices emphasizes the importance of pre-market review and post-market surveillance. On the other hand, the Medical Device Regulation (MDR) in the European Union has very strict clinical evaluation requirements in addition to the requirement of post-market scrutiny. Such different regulatory paths also mean that innovative AI healthcare solutions are slow to cross borders, further highlighting the need for standard rules among different countries (Rathi et al., 2020; Jordon et al., 2019).

### ***Cooperation among Countries***

In this regard, the UN, OECD, and ITU are among several world bodies that have a key role to play to reconcile the AI Regulations of different countries. These bodies serve as negotiation platforms for determining international standards and bringing the national policies in line with best worldwide practices. The OECD AI principles (which over 40 countries have pledged to endorse) are intentionally proscriptive towards creating trustworthy AI, grounded as they are in transparency, accountability, and human rights. These actors coordinate regulatory matters after which they assist member countries to align domestic regulation with the international trade regulations to enhance trading policies (OECD 2019).

Achieving a consensus with various nations of the globe with differing legal and regulatory frameworks, in particular, is a challenge. Regulatory strategies and goals towards AI will be different due to the reasons of political, economic, and cultural disparities. Again, misuse of liberty and equality in democracy and a sense of order and security can be obtained in an authoritarian state (Cath, 2018). Most probably, these conflicting interests create tension and slowdown with the actualization of international cooperation regarding AI policy. In addition, in reality, due to the variety of legal frameworks and capacities for enforcement across jurisdictions, it will be difficult to standardize the approaches and speeds of enforcement of compliance. To reduce such chasms and create clear global AI policies, to make them interdisciplinary and operate in harmony, as well as to gain users' consensus as much as possible (Floridi et al., 2018), these challenges require continuous discussion and integration.

Therefore, there is the need for international cooperation that could be realized through multi-stakeholder approaches involving key players from the industry, scholars, and non-governmental players. Such interactive platforms may also facilitate the ensuring of the relevant laws' proportionality — taking into consideration different positions and kinds of knowledge. One good example of success in international co-operation is the Global Partnership on AI (GPAI) which was launched in 2020. This project gathers professionals from numerous fields, to understand what consciousness is, and how it can influence the future in response to the problem of rising climate change, which is threatening civilization in the 21st century (IBM, 2020).

It is worth looking at initiatives on how to regulate AI through training the models of international regulatory cooperation in other successful sectors. For instance, there is no better model than the Basel Committee, which provides a good example of how the principle of cooperation in a form that even though there will always be competition among various countries, the adoption of harmonious regulatory arrangements among them can be actualized (Basel Committee on Banking Supervision 2011). Similarly, with respect to the International Maritime Organization's (IMO) work in ensuring mariners' safety and environmental preservation, lessons from maritime regulations can be brought to bear on international AI legislation (IMO, 2020).

In addition, international collaboration is necessary for solving ethical problems created by AI. Because if ethical guidelines for AI fail to become established at the international level, it is most likely that the development and use of AI will conflict with global values and moral norms. Such conflicts can affect one's impartiality, transparency, responsibility and so forth, all of which are vital to ensuring public trust in AI technology (Jobin et al., 2019).

Finally, cooperation between countries to regulate AI is necessary to evolve a harmonized global legal system which is well adapted towards addressing the multi-faceted and ethical problems posed by AI technology. Dialogue, comparative policy analysis, multi-stakeholder initiatives, and the need to take advantage of technological solutions are some of the effective ways to do this.

## **Opportunities for Harmonized AI Regulation**

### ***Technological Solutions***

There is no denying that technological solutions can play an integral role in harmonizing AI regulations across the globe by offering standardized tools and frameworks to ensure compliance with these rules. These would certainly help in solving the problem of decentralized and fast-growing AI mechanisms. One example is that blockchain technology can be used to store AI algorithms and information processing activities in a transparent manner, enabling certain international standards for an algorithm running on any platform or organization. Since blockchain is immutable, it acts as an accessible record of compliance activities that executives engage in and aids in establishing trust with the stakeholders and regulators (Zyskind et al., 2015).

The other is equipment enabled by Artificial Intelligence but used in compliance with regulations. They can help track compliance with some of the general requirements that are implemented from time to time. In using these new tools, developers and regulators will be alerted instantaneously and therefore, know or at least have good reason to suspect that certain things may be in contravention of the law. By constantly keeping an eye on all things AI, such products guarantee that they are in line with the legal requirements and other criteria like the GDPR (National Institute of Standards and Technology, 2021).

Another promising technological solution for the standardization of the rules of AI is the development of the interoperable data protection frameworks. They enable interoperability of structures in cross-border data flow, but may be guided by local regulations. The frameworks also facilitate the protection of the user in such circumstances without violating elements of the legislation. For instance, the GDPR which has embraced encryption and anonymization. It also guarantees compliance while fostering international data transfers which are fundamental in AI processes at the global level (National Institute of Standards and Technology, 2021; Wulf and Seizov, 2022). They minimize the risk of complementary regulation by promoting the use of standardized approaches that will protect personal data worldwide.

In addition, the advanced techniques in machine learning may also be applied to develop dynamic regulatory compliance solutions. These technologies can capture changes in the regulatory strategy and redesign the compliance technique autonomously. This flexibility is especially important because of the high rate of technical advancements in artificial intelligence. With the help of machine learning, applied together with the relevant regulation, policy makers might ensure that compliance systems remain useful and efficient in the long-term perspective (Floridi et al., 2018).

Aside from that, deliberate guidelines together with compatibility criteria need to be utilized for the purpose of assisting the enactment of cross border legislation of artificial intelligence. For instance, the creation of unified application programming interfaces and data exchange interfaces may help AI systems easily interface with compliance instruments in many regulatory nations. Such standardizations can be useful in lessening the technological barriers and enhancing the outcome of the regulators' enforcement collaborations. In addition, it may also be observed that through technical solutions, AI ethical norms around the world can be rolled out, thereby also making sure the ethical norms are rolled out uniformly across the globe. Thus, AI systems can be designed with sets of ethical compliance checks, which are oriented toward international legal requirements with regard to the fairness, transparency and accountability of the AI system. Most of these ethical compliance technologies can help enterprises to manage the complex landscape of AI ethics and guarantee that its AI systems are ethical in terms of global standards (Jobin et al., 2019).

Cloud-based AI governance platforms also offer centralized control and monitoring for the enterprises operating on a global scale. These solutions are created to converge multiple regulatory mandates, and thus, facilitate better compliance management by firms. As an example, organizations can update their AI systems to be in line with the latest regulations without interruption by taking advantage of cloud technologies, regardless of where they are located.

Despite their promising role, technology-based compliance mechanisms are not silver bullets. They introduce new complexities, such as ethical trade-offs, infrastructural disparities, and questions about accountability. Many jurisdictions—particularly in the Global South—may lack the digital infrastructure or institutional readiness to implement such systems, raising concerns about regulatory exclusion. Furthermore, many of these tools are developed by private technology firms, which could lead to concerns over transparency, proprietary control, and regulatory capture. Overreliance on automated governance could also weaken democratic oversight and erode trust in regulatory institutions if citizens perceive the decisions as opaque or unchallengeable. Therefore, while technological solutions can play a supporting role in harmonizing AI governance, they must be treated as supplementary tools, not substitutes for robust legal frameworks, human-centered oversight, and international cooperation. Any implementation of such tools must be accompanied by critical evaluation, inclusive policymaking, and strong accountability structures to ensure they enhance, rather than undermine, equitable and effective AI regulation across borders.

To sum up, technology solutions have a vast potential to make AI regulation harmonized across the board. Stakeholders can come together leveraging blockchain, AI-based compliance tools, data protection frameworks that allow interoperability at the level of singularity (rather than just transparency), adaptive regulatory systems for dynamic change in standards enforcement and administration, standardizing some basic protocols to ensure that all ethical compliance against international norms enforcing implementation. These advances help create more transparency and nimbleness in the system, while also providing a base infrastructure that will enable the effective regulation of AI technologies to work globally.

### ***Policy and Framework Development***

The overall view on regulatory frameworks needs to be developed with input from various industry experts, as well as policy makers and civil society. Such an inclusive strategy helps in the integration of all viewpoints and produces fairer and more extensive regulations (Jobin et al., 2019). It leads to a regulatory dynamic where the possible risks and rewards are discovered through multiple prisms, involving all significant stakeholders in tailoring regulation that will support both innovation, as well as public interest (Floridi et al., 2018).

Furthermore, models of international regulatory cooperation in other fields have been shown to work and could provide useful lessons for regulation. The Basel Committee on Banking Supervision, for its part, has created international banking regulatory standards that have subsequently been adopted and implemented by countries across the globe. This model has shown the benefits of international cooperation in devising regulatory frameworks that may resemble party political programs (Basel Committee on Banking Supervision, 2011). These concepts and principles of sound risk management, transparency, and supervisory review can be easily adopted. Recrafting the AI regulation is pertaining to ensuring adequate governance mechanisms within the AI system design.

Another example is the International Maritime Organization (IMO), which has successfully harmonized regulations for maritime safety and environmental protection. The development of globally recognized

standards and their strict monitoring initiated by the IMO could act as a precedent within international AI regulation (International Maritime Organization, 2020). The IMO was successful because it could convene diverse stakeholders and reach agreement around common standards, while also implementing strong enforcement mechanisms. Using the same logic in the context of AI regulation could help produce a more comprehensive regulatory scenario entirely in at least some jurisdictions. These global standards and principles, monitored by the IMO's severe compliance regime, can be transformed into a worldwide AI regulatory framework (IMO, 2020). The IMO has been successful in bringing disparate parties together to agree on uniform standards and adopt enforcement procedures. If we use a similar approach to pursue cross-border AI legislation, perhaps the model would be easier to enforce without collapsing across states.

Moreover, the mechanism of regulatory sandboxes can be effective in generating and experimenting with AI regulations. These regulated environments allow for free testing of the AI business technology under the watchful eye of officials; whereby they provide ample insights into all the ramifications of regulation policies before the regulations go live (Zetzsche et al., 2017). A sandbox protects the institutions from being disrupted and at the same time allows the regulators to understand the challenges and possibilities associated with the new technology.

Another good example of a successful cross-border oversight strategy would be the General Data Protection Regulation of the European Union. A worldwide framework for AI regulation beyond Europe has included its extraterritoriality and strict rules on data protection (Voigt & Von dem Bussche, 2017). The GDPR-based AI regulations will promote decisions that elevate data subject rights research, transparency, and accountability to reduce the gap of what individuals want with respect to their routes to self-sufficiency. Another advantage of an adaptive regulatory approach is that it can assist organizations to respond to the dynamic nature of AI solutions. For this, it should be a track-and-trace system in which, rules are improved frequently in order to adapt to growth in technology and more ethical concerns (Gasser & Almeida, 2017).

To summarize, having effective rules for AI use across borders calls for the following principles: promoting the involvement of a wide range of stakeholders, learning from cases where AI is well governed and using new tools such as sandboxes. If governments use strategies like these, they will be able to develop ethical frameworks that blend innovation and social advantage for all regions around the world.

### ***International Collaboration***

Bi-national organizations like the United Nations, Organization for Economic Cooperation and Development, the World Trade Organization among others, assume the roles of creating harmony on AI policies across nations. These organizations provide forums for the deliberation, the negotiation of standards and for the advancement of the international standards for evaluating the social, ethical and economic implications of the pressing concern on a cross-border regulatory framework for AI. Recent technologies often leave legislation behind, which means that finding the right balance through multilateralism remains crucial for facing problems such as privacy, biases, and security, as well as for AI development. Since AI is embracing more and more facets of human life, co-created best practices will be of utmost importance in ensuring that AI systems are created and deployed responsibly.

The UN recognizes that there is a need to launch global discussions on the creation of the ethical standards for AI and on such related inquiries into the technology for human rights. The UN through agencies like UNESCO offers a platform through which international goodwill on these important

issues can be formulated. These new efforts of UNESCO on the issue of AI ethics, currently underway and in the future, are intended to guarantee that new advancements in the field protect and aspire to basic global values and principles such as respect for human rights and an inclusive society for all. As the world leader in dealing with AI, its concern for questions regarding the inauguration of innovative, high potency technology also calls for international collaborations to handle novel problems.

The OECD is however, more advanced in its AI principles on transparency, accountability, and ethics in the use of technology. These principles are today being adopted by nations as the framework through which specific regulations (OECD, 2019) are formulated. We present an approach from the OECD that provides concrete principles with which governments should encourage responsible stewardship of trustworthy AI, while on the other hand, supporting market creativity and technological evolution. The OECD comes to the rescue of these regularities by proclaiming a general set of guidelines that can be agreed upon to access international and local cooperation.

Norms and rules on control or protection by commercial policies which will ensure benefits from the use of information technology are developed by the WTO, as long as these commercial policies do not hinder technological innovation, consumer protection and rights related to data (World Trade Organization 2020). The work of the WTO is doubly important in making sure that trade barriers are not going to stand in the way of these AI technologies being developed and built on a global scale. Lastly, regarding matters such as cross-border data flows and intellectual property rights through the platform, it is essential to provide legal clarity in order to ensure a fair regulatory environment that not only fosters innovation, but also protects individuals.

Establishing international conventions on AI can lead to more harmonized rules around the world. Should it be signed, it would introduce worldwide standards for how AI should be ethical; prioritizing privacy and offering clear guidelines for its algorithms. The next crucial step is to create transnational groups that cooperate on checking compliance and enforcement (Cath, 2018). This approach would establish wide guidelines for working jointly to use AI worldwide while respecting human values and laws. For example, it could set up common audits for AI applications, require disclosure of the results from those systems and organize a worldwide listing of the types of AI being used. It is important that AI helps fulfill the demands of worldwide ethics and human rights (Floridi et al., 2018). Having regular audits would ensure that both performance and risks in AI could be checked all the time, so they remain within the given standards. In this way, more information about an organization's AI will be shared with regulators and the public, making both parties more accountable and trusting about using AI.

In addition to treaties, we could build more organizations that would help countries become partners and govern these issues together. These groups can oversee how nations apply global AI guidelines; advise each country on how to meet those guidelines and support capacity building in the least developed countries. International groups could assist in solving the significant problems with cross-border AI and making sure advances in AI help everyone, all around the globe.

In addition, the development of public-private partnerships can strengthen cooperation across boundaries in AI governance. Joint ventures such as this would leverage the best of both worlds as they have recourse to private sector agility and innovation, provide adequate stewardship but otherwise minimal regulation from the government. Practical and reasonably effective regulatory frameworks can only be crafted through collaboration, providing enough of what people want to ensure uptake among different groups.

Finally, it is imperative for international cooperation to create common regulations concerning AI, since it represents a global problem in nature. Through the platforms and established expertise of international organizations such as the United Nations, OECD and WTO, new (or updated) treaties for forming regulatory bodies or public-private partnerships can be designed to guide how AI is developed that is ethical in use, respect human rights while keeping pace with innovation.

## **CASE STUDIES**

The regulation and use of AI technology across boundaries have brought significant challenges, as evidenced by many previous case studies. These incidents highlight the complexities of coordinating global AI directions and the consequences of discrepancies in authority.

### ***Facial Recognition Technology in the EU and US***

In 2019, an American business faced challenges in the EU after their facial recognition tools did not adhere to the EU's General Data Protection Regulation (GDPR). Even though the organization's invention was allowed under US guidelines, it still went against tough information assurance standards set by the EU, and this had led to many costly and difficult fights in court. This development highlights the problems multinationals experience when managing multiple directions at once, as well as why there is a need for unity in international business standards (Castro & McLaughlin, 2020; Brundage et al., 2020). The disagreement over information assurance rules by US and EU regulators demonstrates how different regulations can slow innovation and put companies that work in more than one country at risk.

### ***AI-Driven Credit Scoring in Financial Services***

A US and Europe based fintech firm saw huge challenges in addressing the various legal requirements of AI credit scoring algorithms. While US authorities remained focused on anti-discrimination laws, the EU wanted adherence to its GDPR which came with strict consent and transparency laws. Fragmented regulatory scenarios led to more operational and legal issues which underlined the importance of having just one overarching AI law, which can cover different legal systems (Finck, 2019; Brynjolfsson & McAfee, 2017). The consistencies and inconsistencies that exist with credit scoring reveal larger questions of how to ensure the fairness and transparency of AI regulation across nations.

### ***Cambridge Analytica Scandal***

The Cambridge Analytica scandal was a clear indicator of enforcement challenges associated with data protection regimes transcending borders. This case revealed glaring regulatory and compliance gaps and challenges for enforcement across jurisdictions. It involved simply the misuse of data acquired on social media by users when they launched political ads. Nonetheless, even with all the noise from a concerned public and regulatory shake-up, compliance or establishing accountability was inevitably hard due to this very necessity for an international approach to AI regulation (Cadwalladr & Graham-Harrison, 2018; Gasser & Almeida, 2017). This case exemplifies the necessity of domestic and state-coordinated rules that address privacy concerns where the problem of data trash is a real one.

### ***Autonomous Vehicles in the US***

Questions of liability and regulation arose in the United States after an autonomous car accident involving a pedestrian took place in 2018. The lack of unified safety standards and enforcement mechanisms made the investigation into how to resolve it more difficult, emphasizing the necessity for international regulatory bodies to facilitate cross-national governance on autonomous deployment (Whittlestone et al., 2019). The example of autonomous vehicles using AI highlights the more extensive struggles faced in creating a structure that delivers concurrent safety, liability, and regulatory compliance for new AI technologies within varying jurisdictional boundaries.

In short, these case studies illustrate several different complexities and challenges inherent in regulating AI across borders. These case studies highlight further the urgent need for the ability of internationally agreed standards and harmonized regulatory regime to effectively tackle the issues at hand. These examples offer the chance for the lawmakers to create agile and thorough regimes around an AI regulatory framework that encourages innovation, human rights and general good.

### **AI Regulation across Borders: Insights from Healthcare and Transport**

While the previous case studies pointed out that AI deployment faces many different rules in various places, such issues are also becoming more pressing in healthcare and autonomous transportation. Because these domains manage big decisions, we can see that differing legal standards in various nations can block progress in AI, safety and ethics.

Healthcare is using AI to create tools for diagnosis, treatment plans and procedures assisted by robots. Access to patient information is usually needed for these tools, leading to strict privacy and consent rules that depend a lot on users' location (Devi et al., 2023). AI approved by the U.S. Food and Drug Administration (FDA) could be subject to delays or must be re-examined under the European Union's Medical Device Regulation (MDR) and the GDPR. Since many nations have different rules, cross-border use is delayed and could leave patients with unpredictable levels of oversight. Unequal results in diagnosis can occur because of biased training data, indicating that international rules and guidelines should be developed immediately (Aboy et al., 2024).

In autonomous transportation, there is uncertainty about the liable party in accidents, the rules for safe operations and how widespread testing will happen. For instance, because there are no worldwide standards, an autonomous vehicle that complies with its own nation's laws can still break the law in different countries (Kubica, 2022). After the 2018 fatal crash of an autonomous car in the United States, people began to wonder who should take responsibility—whether the business behind the car, the software team, or the one who was driving. Besides, the General Safety Regulation in the EU makes approval processes more complicated, compared to the flexible ones at the state level in the US, which then can slow down deployment and investment across borders. Due to the lack of harmonized standards, working together internationally on safety, insurance, and ethics in AI-driven transport has not materialized (Wang et al., 2020).

In general, all these cases indicate that the lessons learned can be useful to formulating a harmonized regulatory across borders. Because AI regulations and policies are not the same everywhere and enforcement is unreliable, scaling AI in sensitive sectors has been made more difficult. These sectors reveal the worldwide requirement for a way to combine both legal and ethical protection while using AI.

## DISCUSSION

The development of standard AI regulations presents immense challenges but enormous opportunities. The complexity of regulating AI across borders is underlined by jurisdictional conflicts and enforcement difficulties. Different countries have different legal frameworks, which make it hard for even multinationals in the AI space to navigate cross jurisdictional conflicts and compliance. These problems are exacerbated by the lack of a central authority to coordinate and enforce compliance globally, leading to inconsistent enforcement (Cath, 2018; Calo, 2017).

However, there is significant potential to build technology solutions and coordination mechanisms that can address these challenges. Transparency, and compliance with regulations in real-time can be molded by advancements like blockchain for this purpose, along with AI-based compliance tools. It could also provide immediately verifiable records of the algorithms and data processing activities using blockchain technology, which are compliant with international requirements to build trust among stakeholders (Zyskind et al., 2015). The AI compliant tools can do automation and checks for compliance requirements regularly without human intervention, even real-time monitoring. AI will be able to alert the regulator of any new or potential non-compliance issues. Such innovations can lead to a more transparent and flexible regulatory framework that can keep pace with the speed of digital development.

Principles-based regulation, such as the principles of conduct and ethics approach to financial services rules, can be promoted so regulatory flexibility moves beyond a ruling by a committee. Upper-level ethical standards may include key rules such as transparency, responsibility and equity, indispensable to the proper production and roll-out of new systems using AI (Floridi et al., 2018; Jobin et al., 2019). Principles-based regulation allows for adaptability as AI technologies evolve, avoiding the rigidity of detailed rules that may quickly become outdated (Floridi et al., 2018).

The United Nations, OECD and World Trade Organization are among several international organizations that help bring about common rules for government cooperation. The United Nations invites countries to participate in conventions where there will be worldwide dialogues on AI and human rights. Quite a few countries have adopted the OECD AI Principles which outline how to practice transparency and accountability, and create in-depth rules (OECD 2019). The WTO can also contribute to AI governance, notably focusing on its rules instruments, which are largely designed in a catch-all manner in order to address trade-related aspects of AI regulation. This will ensure that trade policies do not become unwanted technical barriers and instead will act to safeguard consumer rights and privacy (World Trade Organization, 2020).

Resolving conflicts in jurisdictional matters requires creating a set of global AI regulations which all countries must follow. There could be an international agreement that creates voluntary rules on worldwide ethical standards, data problems and the functions of algorithms. Following compliance, the treaty ought to ensure monitoring and following through with compliance within worldwide cross-border standards. By making an international AI treaty, nations could agree to check AI regularly, demand businesses using it to publish reports and keep a list of the most important AI tools used globally (Floridi et al., 2018).

Enforcement mechanisms can be strengthened by leveraging technological solutions that provide real-time compliance monitoring and reporting. Such AI-based tools that can automate in the background with a range of applicable and overlapping regulatory requirements could have potential implications for regulators to do better at regulating compliance across-borders. Such tools will be able to

continuously monitor AI operations for compliance errors, and warn both the developer or regulator straightaway in real time that an error has just occurred.

International cooperation benefits most when countries decide to cooperate with one another. Such progress comes about when the UN and OECD recommend directions or methods for national policies that adopt the best global standards. If guidelines are designed with the participation of everyone, a wider range of advantages can be respected and the regulations developed will be better balanced and more thorough (Floridi et al., 2018). The Global Partnership on AI serves to allow experts from different fields to assure AI advances and cope with worldwide problems by working closely with each other (GPAI, 2020).

That is why the regulatory environment will either encourage or hinder the design and use of advanced AI. It would reduce the conflict of law and lower compliance expenses across the world through the formation of a universal framework where both the consumer and developer can have faith to integrate the AI solution all around the world. This allows organizations to carry out their operations in different territories and expand their international presence by following common standards in a certain country. Moreover, structures of a global nature could decrease risks of AI from biasing and violating data privacy. It will also prevent these abuses by implementing normative constraints (Jobin et al., 2019).

However, to be able to promote harmonized AI regulations, there is a requirement to create an International AI regulatory framework to work on coordinating universal standards. This entity would promote cross-border cooperation and set benchmarks for best practice. The standard for ethical AI data use and protection, as well as algorithms' openness, should be enhanced in cooperation with states to develop an extra interaction format. Promoting the positive adoption of technologies, such as blockchain and AI-based legal compliance solutions to gain real time access and transparency will further guarantee the instant implementation of laws. To make things simpler for both companies and regulators, compliance monitoring is automated with tools that do the reporting as well. Furthermore, participation by all interested parties and multi-stakeholder groups that welcome contributions from the commercial sector, legislators, civil society organizations and even online users can help produce balanced rules. With Sandboxes in place, corporations could check out the AI technology with government supervision, find risks and decide on rules to prevent its risky use at scale. Insights and discussions from events organized by the UN, OECD and WTO help different countries coordinate their strategies on issues that are important to everyone. A regulatory system should be able to change over time, or it will soon be outdated when technology advances. These actions can strengthen the basis for creating useful and backed-by-science AI solutions in many parts of the globe.

## **CONCLUSION AND FUTURE STUDIES**

In this paper, the complexity and fragmentation of cross-border AI regulation are presented to highlight the need for harmonized global frameworks to solve jurisdictional conflicts, enforcement problems, and ethical issues. For its optimum implementation, actionable steps to consider are as follows. First, International policymakers should pursue a treaty on international AI governance, through a binding, multilateral agreement built on the principles of transparency, accountability, and human rights. Secondly, the UN, OECD or other global organization should be entrusted with establishing a repository of AI systems identified as high risk and enforcing standardized audit mechanisms for cross border compliance and oversight. Furthermore, national governments would be urged to adopt regulatory sandboxes that enable the safe testing of AI in real world settings, necessitating innovation within legal

and ethical guard rails. This is equally important to avoid global inequalities in AI governance as low and middle-income countries will also be supported to build up regulatory and technological capacity.

In addition, international norms should be shaped by diverse perspectives. This means that institutions for multi-stakeholder collaboration between governments, industry, academia and civil society should be institutionalized. Looking forward, future research should concentrate on predictive models for regulating AI, the impact of future technologies (quantum computing and deeper neural networks) on today's regulatory systems, and compliance tools that function in diverse nations. Specific research questions could include the following: "How can AI regulatory frameworks be adapted to accommodate advancements in quantum computing?" and "What are the most effective strategies for implementing AI compliance tools across different legal environments?". It will also be essential to look at cross-border enforcement mechanisms and conduct analysis on ethical AI deployment. Further research might fruitfully consider the broader scalability of compliance tools, and how concepts activated by ethical principles can be operationalized consistently across different legal norms, cultural nuances especially regarding their contestation. Through the investigation of these research questions and hypotheses, we anticipate that a comprehensive international regulatory framework could be developed to help promote AI in a safe, ethical and positive manner around the world.

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