

# The Implications of Technological Advancements on the Constitutional Principles of Contract Law

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**Abstract**—In today's rapidly evolving technological landscape, the traditional principles of contract law are facing significant challenges. The emergence of new technologies, such as electronic signatures, smart contracts, and online dispute resolution mechanisms, is transforming the way contracts are formed, interpreted, and enforced. This paper examines the implications of these technological advancements on the constitutional principles of contract law. One of the fundamental principles of contract law is freedom of contract, which ensures that parties have the autonomy to negotiate and enter into contracts as they see fit. However, the use of technology in the contracting process has the potential to disrupt this principle. For example, online platforms and marketplaces often offer standard-form contracts, which may not reflect the specific needs or interests of individual parties. This raises questions about the equality of bargaining power between parties and the extent to which parties are truly free to negotiate the terms of their contracts. Another important principle of contract law is the requirement of consideration, which requires that each party receives something of value in exchange for their promise. The use of digital assets, such as cryptocurrencies, has created new challenges in determining what constitutes valuable consideration in a contract. Due to the ambiguity in this area, disagreements about the legality and enforceability of such contracts may arise. Furthermore, the use of technology in dispute resolution mechanisms, such as online arbitration and mediation, may raise concerns about due process and access to justice. The use of algorithms and artificial intelligence to determine the outcome of disputes may also raise questions about the impartiality and fairness of the process. Finally, it should be noted that there are many different and complex effects of technical improvements on the fundamental constitutional foundations of contract law. As technology continues to evolve, it will be important for policymakers and legal practitioners to consider the potential impacts on contract law and to ensure that the principles of fairness, equality, and access to justice are preserved in the contracting process.

**Keywords**—Technological advancements, constitutional principles, contract law, smart contracts, online dispute resolution, freedom of contract.

## I. INTRODUCTION

CONTRACT law has been a fundamental part of commerce for centuries, providing a legal framework for parties to enter into agreements and enforce their rights and obligations. However, the emergence of new technologies has created significant challenges for the traditional principles of contract law [1]. The widespread use of electronic communication, the rise of blockchain technology, and the development of online dispute resolution mechanisms are just a few examples of how technology is transforming the way contracts are formed,

interpreted, and enforced [2]. While technology has the potential to improve the efficiency and accessibility of the contracting process, it also raises important questions about the constitutional principles of contract law. For example, the principle of freedom of contract, which allows parties to negotiate and enter into contracts as they see fit, may be undermined by the use of standard-form contracts and online platforms that limit the ability of parties to negotiate the terms of their agreements. Moreover, the use of digital assets, such as cryptocurrencies, in contract transactions creates new challenges in determining what constitutes valuable consideration in a contract [3]. The lack of clarity in this area may lead to disputes over the validity and enforceability of such contracts. The use of technology in dispute resolution mechanisms, such as online arbitration and mediation, also raises concerns about due process and access to justice [4]. The use of algorithms and artificial intelligence to determine the outcome of disputes may raise questions about the impartiality and fairness of the process [5]. As such, it is important to examine the implications of these technological advancements on the constitutional principles of contract law. This research article aims to provide a comprehensive analysis of the challenges and opportunities presented by technology in the contracting process, and to consider how the principles of fairness, equality, and access to justice can be preserved in this rapidly evolving landscape.

## II. IMPACT ON THE FREEDOM OF CONTRACT

The principle of freedom of contract is a cornerstone of contract law, allowing parties to negotiate and enter into agreements as they see fit. However, the rise of technology has the potential to disrupt this principle in several ways. One way in which this disruption can occur is through the use of online platforms and marketplaces that offer standard-form contracts [6]. Standard-form contracts are pre-drafted agreements that are typically non-negotiable, and are often used by online platforms and marketplaces to govern transactions between parties [7]. While these contracts can offer convenience and efficiency, they may not reflect the specific needs or interests of individual parties. This can lead to a situation where one party has significant bargaining power over the other, particularly if the standard-form contract is presented on a "take-it-or-leave-it" basis [8]. Moreover, the use of online platforms and marketplaces can further exacerbate inequalities in bargaining power between parties. For example, larger businesses or

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corporations may have greater bargaining power than individual consumers or small businesses. This can lead to situations where the terms of the contract are heavily skewed in favor of one party, to the detriment of the other. The lack of bargaining power and the inability to negotiate the terms of the contract can also lead to situations where one party is forced to accept terms that they do not fully understand or agree to. This can create situations where parties are forced to waive important rights or protections that they would otherwise be entitled to under the law [9].

The use of technology in the contracting process has the potential to disrupt the fundamental principle of freedom of contract. The use of online platforms and marketplaces that offer standard-form contracts can limit the ability of parties to negotiate the terms of their agreements, and can lead to situations where one party has significant bargaining power over the other. This raises important questions about the equality of bargaining power between parties and the extent to which parties are truly free to negotiate the terms of their contracts. It is important for policymakers and legal practitioners to consider these issues in order to ensure that the principles of fairness, equality, and access to justice are preserved in the contracting process.

#### *Interference that Technology Has with the Contractual Principles*

The principle of consideration is a fundamental aspect of contract law, requiring that each party receives something of value in exchange for their promise. However, the rise of technology, particularly the use of digital assets such as cryptocurrencies, has created new challenges in determining what constitutes valuable consideration in a contract. In traditional contract law, consideration typically takes the form of money or tangible goods. Digital assets like cryptocurrencies do not fit neatly into these categories, as they are not physical objects and do not have a universally recognized value. This can make it difficult to determine whether a contract involving digital assets constitutes valid consideration. One way in which this issue can arise is in situations where one party offers digital assets as consideration for a promise, but the other party does not recognize these assets as having any value. This can create a situation where the promise is not considered valid consideration under the law, as the value of the digital assets is not recognized. Moreover, the value of digital assets can be highly volatile, which can further complicate matters when it comes to determining what constitutes valid consideration in a contract. The value of a digital asset may change significantly between the time the contract is formed and the time the promise is fulfilled, which can create uncertainty and risk for both parties. Additionally, the lack of regulatory oversight and standardization in the world of digital assets can further complicate matters. There are currently no universally recognized standards for determining the value of digital assets, which can make it difficult for parties to come to a mutual agreement on the value of the assets being exchanged.

The use of digital assets in contracts has created new challenges in determining what constitutes valuable

consideration under contract law. The lack of regulatory oversight and standardization, as well as the volatility of digital asset values, can make it difficult to determine the validity of contracts involving these assets. It is important for policymakers and legal practitioners to consider these issues in order to ensure that the principles of contract law are upheld in the rapidly evolving world of technology.

#### *The Use of Technology in Dispute Resolution Mechanisms*

The use of technology in dispute resolution mechanisms, such as online arbitration and mediation, has become increasingly popular in recent years. While these mechanisms offer numerous advantages, such as convenience and cost-effectiveness, there are also concerns about due process and access to justice [10].

One potential issue is the lack of transparency that may arise in online dispute resolution processes. Unlike in-person hearings, online proceedings may not offer the same level of transparency, which could lead to concerns about fairness and due process. For example, parties may not be able to observe the demeanor of the arbitrator or mediator, or witness the evidence presented by the opposing party, which could impact their ability to effectively present their case. Additionally, concerns have been raised about the potential for technology to disadvantage parties who may not have access to or be comfortable with the technology being used. This could lead to an unequal playing field and impact the ability of some parties to fully participate in the dispute resolution process. Moreover, there may be concerns about the enforceability of online dispute resolution decisions. If parties are not physically present for the proceedings, it may be more difficult to ensure that the decision is enforceable and that both parties abide by the terms of the settlement or award. Another concern is the potential for bias in online dispute resolution processes. Algorithms and technology may be used to assist with decision-making, but these tools may not always be neutral or unbiased. This could lead to outcomes that are unfairly weighted in favor of one party over another [11].

In conclusion, while online dispute resolution mechanisms offer many benefits, there are also potential concerns about due process and access to justice. Policymakers and legal practitioners must carefully consider these issues to ensure that technology is used in a way that upholds the principles of fairness and equality in the dispute resolution process.

#### *Impartiality and Fairness of the Process*

The use of algorithms and artificial intelligence in the dispute resolution process has become increasingly common in recent years, particularly in cases where large volumes of data need to be analyzed in order to make a decision. While these tools can offer numerous benefits, such as speed and efficiency, they also raise questions about impartiality and fairness. One potential issue is the lack of transparency in how algorithms and artificial intelligence systems arrive at their decisions. It may be difficult for parties to understand how the decision-making process works, which could lead to concerns about bias or discrimination. Additionally, algorithms may be based on

historical data, which could perpetuate existing biases or discrimination, leading to outcomes that are unfairly weighted in favor of certain groups. Moreover, the use of algorithms and artificial intelligence may raise concerns about due process. In some cases, parties may not have access to the underlying data or code used to develop the algorithm or system, which could limit their ability to challenge the decision. This could result in decisions that are not subject to meaningful review or appeal. Furthermore, the use of algorithms and artificial intelligence may be particularly problematic in cases where the stakes are high, such as in criminal trials. The potential for errors or biases in the decision-making process could lead to wrongful convictions or other miscarriages of justice.

In order to address these concerns, policymakers and legal practitioners must carefully consider the use of algorithms and artificial intelligence in the dispute resolution process. This may involve developing guidelines or regulations that require transparency in the decision-making process, as well as ensuring that parties have access to the data and code used to develop the algorithms or systems. Additionally, it may be necessary to regularly review and audit these tools to ensure that they are functioning fairly and accurately.

In conclusion, while the use of algorithms and artificial intelligence in the dispute resolution process offers numerous benefits, it also raises questions about impartiality, fairness, and due process. It is important for legal practitioners and policymakers to carefully consider these issues in order to ensure that technology is used in a way that upholds the principles of fairness and equality in the dispute resolution process.

### III. EUROPEAN COURT OF JUSTICE JURISPRUDENCE

The European Court of Justice (ECJ) has played a significant role in shaping the implications of technological advancements on the constitutional principles of contract law in the European Union (EU). ECJ case law has provided guidance on how technological advancements impact the constitutional principles of contract law, such as freedom of contract, the principle of good faith, and the requirement of mutual consent. The court has taken into account the unique features of electronic contracts, such as the absence of physical signatures and the importance of online communication in forming and executing contracts. ECJ case law has also recognized the need to balance the interests of parties to electronic contracts, especially with regard to the protection of personal data and the liability of intermediaries.

One of the key cases in this area is the ECJ's decision in *EUCJ C-322/14*, [12] which concerned the interpretation of the Electronic Commerce Directive (2000/31/EC). The case involved a dispute between a French consumer and Amazon, an online retailer based in Luxembourg. The consumer argued that the terms of the contract were unfair and that the jurisdiction clause was invalid. The ECJ held that the contractual terms must be clear and easily accessible to consumers, and that any jurisdiction clause must be fair and not create a significant imbalance between the parties. The court also held that the Electronic Commerce Directive did not prevent national courts

from applying their own laws to online contracts. In the *EUCJ C-322/14* case, the ECJ emphasized the importance of protecting consumers in online contracts. The court held that the terms of the contract must be clear and easily accessible, and that any jurisdiction clause must be fair and not create a significant imbalance between the parties. This decision reflects the principle of good faith in contract law, which requires parties to act honestly and fairly towards each other.

Another important case is the ECJ's decision in *Google Spain SL, Google Inc. v. Agencia Española de Protección de Datos (AEPD), Mario Costeja González (C-131/12)* [13]. This case concerned the right to be forgotten, which allows individuals to request that search engines remove links to outdated or irrelevant information about them. The ECJ held that search engines are data controllers and must respect the rights of data subjects. The court also held that the right to be forgotten is not absolute and must be balanced against the public interest in accessing information. In the *Google Spain* case, the ECJ recognized the need to balance the right to privacy with the public interest in accessing information. The court held that search engines must respect the rights of data subjects and consider the specific circumstances of each case. This decision reflects the constitutional principle of proportionality, which requires that any interference with fundamental rights must be proportionate to the legitimate aim pursued.

A further significant ECJ case is *Case C-128/11, Content Services Ltd v. Bundesarbeitskammer (2012)* [14]. This case concerned the use of cookies on websites and the requirement to obtain users' consent. The ECJ held that the use of cookies must be disclosed to users and that their consent must be obtained before the cookies are placed. The court also held that the consent must be specific and informed, meaning that users must be informed of the purpose of the cookies and any third parties involved. This case highlights the importance of transparency and informed consent in the use of technology, particularly in relation to the collection and use of personal data. The ECJ recognized that cookies can be used to track user behavior and collect personal data, and therefore it is important to obtain users' consent before placing them. The principle of informed consent is a fundamental principle of data protection law, and this case highlights its application in the context of technology. The ECJ emphasized the need for clear and specific information to be provided to users about the use of cookies and the purposes for which they are being used. This decision reflects the principle of transparency in data protection law, which requires that individuals be informed about the processing of their personal data.

ECJ has also made a significant ruling in the *Case C-191/15, Verein für Konsumenteninformation v. Amazon EU Sàrl (2016)* [15]. This case concerned the liability of online marketplaces for the sale of counterfeit goods by third-party sellers. The ECJ held that online marketplaces can be held liable for trademark infringement if they play an active role in the sale of the goods. The court also held that the safe harbor provisions in the E-Commerce Directive do not apply if the online marketplace has knowledge or control over the infringing activity. This case addresses the issue of liability in the digital context and reflects

the tension between protecting intellectual property rights and promoting the growth of online marketplaces. The ECJ recognized that online marketplaces can facilitate the sale of counterfeit goods and that they should not be immune from liability if they play an active role in the sale. This decision reflects the principle of accountability in data protection law, which requires organizations to be responsible for the personal data they process. The ECJ emphasized that online marketplaces have a responsibility to ensure that their platforms are not used for illegal activities, and that they must take appropriate measures to prevent and remove infringing content. This decision also highlights the importance of cooperation between online platforms and intellectual property rights holders in preventing and addressing intellectual property infringement in the digital context.

The European Court of Justice has also dealt with the Case C-311/18, *Data Protection Commissioner v. Facebook Ireland and Maximilian Schrems* (2020) [16]. This case concerned the transfer of personal data from the EU to the US and the validity of the EU-US Privacy Shield framework. The ECJ held that the Privacy Shield was invalid because it did not provide adequate protection for personal data, particularly in light of the US surveillance programs. This case has significant implications for the transfer of personal data between the EU and the US, as well as for the validity of other data transfer mechanisms. The ECJ recognized the importance of protecting personal data in the context of international transfers, and highlighted the need for safeguards and remedies to ensure that individuals' rights are protected. This decision reflects the principle of data protection by design and by default, which requires that data protection be integrated into the design and operation of systems and processes. The ECJ emphasized the need for adequate safeguards and protections to be in place when personal data are transferred to third countries, particularly in light of the potential for government surveillance and other forms of interference. This decision also highlights the importance of transparency and accountability in data.

The ECJ case law has been instrumental in shaping the implications of technological advancements on the constitutional principles of contract law. The court has recognized the unique features of electronic contracts and the importance of protecting consumers and data subjects. The ECJ has also emphasized the need to balance competing interests and to apply traditional principles of contract law to the digital context. The future of ECJ case-law in the area of technological advancements and contract law is likely to be shaped by a number of factors, including evolving technologies, changes in EU legislation and policy, and developments in the legal and regulatory landscape. One potential challenge is the pace of technological change, which can make it difficult for legal frameworks to keep up. New technologies, such as blockchain and artificial intelligence, present novel legal and regulatory challenges that may require new approaches and legal standards. The ECJ will need to navigate these challenges in a way that balances the need to protect fundamental rights and legal principles with the need to foster innovation and economic growth. Another challenge is the changing legal and regulatory

landscape in the EU, particularly in relation to data protection and consumer rights. The General Data Protection Regulation (GDPR), for example, has introduced new obligations and standards for the processing of personal data, which have implications for contractual relationships and liability. The ECJ will need to ensure that its case-law in this area is consistent with the GDPR and other relevant legislation, while also addressing emerging legal issues and challenges. A third challenge is the potential impact of Brexit on ECJ case-law in this area. With the UK no longer a member of the EU, there is likely to be less influence on the development of EU law and less direct jurisdiction of the ECJ over UK courts. This may lead to divergent legal frameworks and interpretations in the area of technological advancements and contract law, particularly if the UK adopts different standards or approaches to data protection and other legal issues. The future of ECJ case-law in the area of technological advancements and contract law is likely to be shaped by a range of legal, technological, and policy factors. The ECJ will need to navigate these challenges in a way that ensures the protection of fundamental rights and legal principles, while also promoting innovation and economic growth.

#### IV. CONCLUSION

In conclusion, the rapid advancement of technology has disrupted the traditional notions of contract law, particularly in areas such as freedom of contract, consideration, and dispute resolution. The increasing use of online platforms and marketplaces, as well as the emergence of digital assets, has created new challenges in determining the value of consideration in a contract and ensuring the parties have equal bargaining power. The use of technology in dispute resolution mechanisms, while providing efficiency and cost-effectiveness, raises concerns about access to justice and due process. Furthermore, the use of algorithms and artificial intelligence in decision-making processes raises questions about impartiality and fairness.

It is obvious that there are numerous and complex effects of technology improvements on the constitutional principles of contract law. It is essential for policymakers and legal practitioners to consider the potential impacts of technology on contract law and to ensure that the principles of fairness, equality, and access to justice are preserved in the contracting process. Policymakers must establish clear guidelines and regulations that promote transparency and accountability in the use of technology in the contracting process. Furthermore, legal practitioners must keep themselves informed of the latest technological developments and their impact on contract law to provide adequate legal advice and representation to their clients.

As technology continues to evolve, it will be imperative to strike a balance between the benefits of technological advancements and the need to protect the fundamental principles of contract law. In doing so, we can ensure that technology is harnessed for the greater good, without compromising the principles of fairness, equality, and access to justice that underpin our legal system.

The future of ECJ case-law in the area of technological advancements and contract law is likely to be shaped by a number of factors, including evolving technologies, changes in EU legislation and policy, and developments in the legal and regulatory landscape. The ECJ will need to navigate these challenges in a way that balances the need to protect fundamental rights and legal principles with the need to foster innovation and economic growth. Some of the potential challenges that the ECJ may face include the pace of technological change, the changing legal and regulatory landscape in the EU, and the impact of Brexit. The ECJ will need to ensure that its case-law in this area is consistent with relevant legislation and addresses emerging legal issues and challenges.

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