

SMART CONTRACT- APPLICATION AND REGULATION

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Abstract

In recent times with the advancement and rapid growth of technology, there has been rise of smart contract to a great extent. A transition from the traditional method of contract to a more innovative form of digital contract, smart contract has emerged to facilitate the performance of a contract making it easier for people to transact without interference from a third party. Making transactions undeniably faster, cheaper, efficient and more secure than traditional systems, there seems to be an increased use of smart contract. This digital program that runs on a blockchain is replacing the regular contract gradually. This paper aims to study the new development of contract that is self-executing and immutable and how they differ from the traditional contract. It also discusses on the application and the legal issues concerning the innovative digital contract and the merits and demerits of smart contract.

I Introduction

A CONTRACT is a legally enforceable agreement that creates, defines, and governs mutual rights and obligations among its parties.¹ A contract typically involves the transfer of goods, services, money, or a promise to transfer any of those at a future date. In the event of a breach of contract, the injured party may seek judicial remedies such as damages or rescission.² Contract law, the field of the law of obligations concerned with contracts, is based on the principle that agreements must be honoured.³

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1 Victor Morawetz, “The Elements Of A Contract,” 11 *American Bar Association Journal* 87–90 (1925).

2 R. O. L. Staff, “Case Note - Contract Law” *Rule of Law Education Centre*, 2018, *available at*: <https://www.ruleoflaw.org.au/contract-law/> (last visited on Dec. 1, 2022).

3 Klaus Peter Berger Cologne LL M., University of and Klaus Peter Berger, “Principle IV.1.2 - Sanctity of contracts”, *available at*: https://www.trans-lex.org/919000/_/sanctity-of-contracts/ (last visited Dec. 1, 2022).

The wide use of contracts in international transactions for the purpose of commercial law and formation of legal basis. Contracts for transportation, software licences, employment agreements, and insurance policies, as well as contracts for the sale of products and services (both wholesale and retail), contracts for the sale or lease of land, and several more purposes are a few examples that are frequently used.

The area of contract theory, a vast corpus of legal theory that covers normative and conceptual issues in contract law, has emerged as a result of the significance of contracts in modern commercial law. Why contracts are enforced is one of the most crucial topics in contract theory. One well-known response to this query focuses on the advantages for the economy of upholding agreements. Another view point, attributed to Charles Fried, asserts that promises should be followed in accordance with contract law. The “Contract as Promise” by Fried develops this viewpoint. Legal realists and critical legal studies theorists’ writings contain additional perspectives on contract theory. More generally, Marxist and feminist interpretations of contract have been advanced by writers. There have been attempts to develop comprehensive theories that explain the function and nature of contracts as a phenomenon. One such theory is the relational contract theory, which was first developed by Ian Roderick Macneil and Stewart Macaulay and built, at least in part, on the work of Lon L. Fuller.⁴ Additionally, certain academic conceptions of contracts focus on issues related to “efficient breach” hypothesis and transaction cost. The position of the contract among and relationship to a broader law of obligations is another aspect of the theoretical discussion surrounding contracts. Research in business and management has also paid attention to the influence of contracts on relationship development and performance.⁵

With the rise of the internet and the corresponding emergence of e-commerce and electronic securities trading, electronic contracts have risen to prominence over the first two decades of the 21st Century. The legality of an electronic contract and signature has been established by the enactment of e-signature legislation in numerous jurisdictions. The Electronic Transactions Act, 2010 in Singapore (which puts into effect both the UNCITRAL Model Law on Electronic Transferable Records and the UN Convention on the Use of Electronic Communications in International Contracts) stipulates specific requirements for electronic transferable records in addition to stipulating the legal validity of electronic records, contracts, and signatures.⁶ In order to promote and simplify the use of electronic contracts and related documents, the act provides for broad recognition of electronic signatures and expressly declares that

4 “The Effects of Contracts on Interpersonal Trust - Deepak Malhotra, J. Keith Murnighan, 2002,” *available at*: <https://journals.sagepub.com/doi/10.2307/3094850> (last visited Dec. 1, 2022).

5 *Ibid.*

6 Electronic Transactions Act, 2010 - Singapore Statutes Online, *available at*: <https://sso.agc.gov.sg:5443/Act/ETA2010> (last visited on Dec. 1, 2022).

electronic documents satisfy any legal requirement for a contract or other document to be “written”.⁷ Similarly, subpart three of New Zealand’s Contract and Commercial Law Act, 2017 codifies provisions pertaining to the recognition of electronic contracts.⁸ The Indian Contract Act, 1872 is the legislation which governs the law relating to contracts in India, which specifies the requirements that must be met in order to create a legitimate contract, and the Information Technology Act, 2000 makes further provisions for the validity of online contracts in particular.⁹ In some American states, email exchanges have been recognised as binding contracts.

An emerging category of electronic contracts is the smart contract, which consists of computer program or a transaction protocol capable of automatically executing, controlling, or documenting legally relevant events and actions according to the terms of a contract or an agreement.¹⁰ The objectives of smart contracts are the reduction of need in trusted intermediators, arbitrations and enforcement costs, fraud losses, as well as the reduction of malicious and accidental exceptions.¹¹ A number of American states have passed legislation expressly authorising the use of smart contracts, such as Arizona,¹² Nevada, Tennessee, Wyoming,¹³ and Iowa.¹⁴

II Historical perspective

Contracts have existed since antiquity, forming the basis of trade since the dawn of commerce and sedentism during the Neolithic Revolution. A notable early modern development in contract law was the emergence of the hawala system in the Indian subcontinent¹⁵ and the Arab world, under which a series of contractual relationships formed the basis of an informal value transfer system spanning the Silk Road. The hawala system influenced the development of the agency in common law and in civil

7 *Ibid.*

8 “Contract and Commercial Law Act 2017 No 5 (as at Nov. 3, 2021), Public Act – New Zealand Legislation,” *available at*: https://www.legislation.govt.nz/act/public/2017/0005/latest/whole.html?search=ts_act%40bill%40regulation%40deemedreg_contract_resele_25_a&p=1#DLM6844461 (last visited Dec. 1, 2022).

9 Wayback Machine, “Understanding Electronic Contracts”, 2018 *available at*: <https://web.archive.org/web/20180613202520/http://www.nalsarpro.org/CL/Modules/Module%201/Chapter3.pdf> (last visited Dec. 1, 2022).

10 Martin Röscheisen *et al.*, “The Stanford InfoBus and its service layers: Augmenting the internet with higher-level information management protocols,” in A. Barth, M. Breu, *et al.* (eds.), *Digital Libraries in Computer Science: The MeDoc Approach* 213–30 (Springer, Berlin, Heidelberg, 1998).

11 Nick Szabo, “Formalizing and Securing Relationships on Public Networks” *First Monday* (1997).

12 “Arizona HB2417 | 2017 | Fifty-third Legislature 1st Regular,” *Legi Scan*, *available at*: <https://legiscan.com/AZ/text/HB2417/id/1588180> (last visited October 1, 2022).

13 65th Legislature of the state of Wyoming, “Bill Detail”, *available at*: <https://wyoleg.gov/Legislation/2019/sf0125> (last visited Dec. 1, 2022).

14 James Q. Lynch, “Iowa House approves bills to facilitate broadband, cryptocurrency,” *available at*: <https://www.thegazette.com/government-politics/iowa-house-approves-bills-to-facilitate-broadband-cryptocurrency/> (last visited Dec. 1, 2022).

laws, such as the *aval* in French law and the *avallo* in Italian law.¹⁶ The transfer of debt, which was “not permissible under Roman law but became widely practised in medieval Europe, especially in commercial transactions”, was due to the large extent of the “trade conducted by the Italian cities with the Muslim world in the Middle Ages”. The agency was also “an institution unknown to Roman law” as no “individual could conclude a binding contract on behalf of another as his agent”. In Roman law, the “contractor himself was considered the party to the contract and it took a second contract between the person who acted on behalf of a principal and the latter in order to transfer the rights and the obligations deriving from the contract to him”. On the other hand, Islamic law “had no difficulty in accepting agency as one of its institutions in the field of contracts and of obligations in general”, an approach that has since become mainstream in common law, mixed law, and most civil law jurisdictions¹⁷ In the Indian subcontinent, the hawala system gave rise to the hundi, a transferrable contract entitling its holder in due course to obtain money from its issuer or an agent thereof, giving rise to the principle underlying contemporary negotiable instruments.¹⁸

Since the nineteenth century, two distinct traditions of contract law emerged. On one hand, jurisdictions that were previously British colonies generally adopted English common law. On the other hand, other jurisdictions largely adopted the civil law tradition, either inheriting a civil law legal system at independence or adopting civil and commercial codes based on German or French law. While jurisdictions such as Japan, South Korea, and the Republic of China modelled their contract law after the German pandectist tradition, the Arab world largely modelled its legal framework after the Napoleonic Code. While the Netherlands adopted a legal system based on the Napoleonic Code in the early 19th Century, Dutch colonies retained the precedent-based Roman-Dutch law and British colonies in Southern Africa adopted Roman-Dutch principles in areas of private law via reception statutes adopting South African law, which retains Roman-Dutch law for most matters of private law while applying English common law principles in most matters of public law. Saint Lucia, Mauritius, Seychelles, and the Canadian province of Quebec are mixed law jurisdictions which primarily adhere to French legal tradition with regard to contract law and additional private law concepts. The expansion of export trade in the 20th Century prompted nations to ratify international agreements like the Hague-Visby Rules and the UN Convention on Contracts for the International Sale of Goods, which stipulate that

15 U.S. Department of the Treasury, “Front page,” available at: <https://home.treasury.gov/front> (last visited October 1, 2022).

16 Gamal Moursi Badr, “Islamic Law: Its Relation to Other Legal Systems,” 26 *The American Journal of Comparative Law* 187–98 (1978).

17 *Ibid.*

18 *Ibid.*

certain requirements must be met in order for a contract to be enforceable,¹⁹ bringing the various legal traditions closer together.

Over the course of the 19th and 20th Century, the majority of jurisdictions in the Middle East and East Asia adopted civil law legal frameworks based on the Napoleonic, German, or Swiss model. In 1926, Turkey replaced its Ottoman-era mixture of Islamic and secular laws with a secular civil code modelled after that of Switzerland and its contract and commercial law is thus modelled after the Swiss Code of Obligations, which was influenced by both German and French legal traditions. Following the Meiji Restoration, Japan adopted a series of legal codes modelled primarily after German law, adopting its commercial code in 1899. The Japanese adaptation of German civil law was spread to the Korean Peninsula and China as a result of Japanese occupation and influence, respectively, and continues to form the basis of the legal system in South Korea and the Republic of China. In 1949, Abd El-Razzak El-Sanhuri and Edouard Lambert drafted the Egyptian Civil Code, which was modelled after the Napoleonic Code but contains provisions designed to better fit Arab and Islamic society. The Egyptian Civil Code was subsequently used as a model for the majority of Arab states which thus follow the contract law established under the Napoleonic Code. Consequently, the Napoleonic Code shapes contract law across much of the Middle East while contract law in Japan, South Korea, and the Republic of China is rooted in the German pandectist tradition.

Notably, unlike common law jurisdictions, civil and mixed law jurisdictions do not require consideration for a contract to be binding.²⁰ In systems based on the Napoleonic Code (including Québec and Saint Lucia whose law of obligations is based on the Civil Code of Lower Canada as well as Arab jurisdictions whose legal systems are based on the Egyptian Civil Code), an ordinary contract is said to form simply on the basis of a “meeting of the minds” or a “concurrence of wills”. The Law of Germany (though not necessarily that of jurisdictions such as Japan who modelled their legal system after that of Prussia), while also rooted in the “meeting of the minds” principle, follows the ‘abstraction principle’ with regard to both personal and real property (*Abstraktionsprinzip*) under which the personal obligation of contract forms separately from the title of property being conferred and thus when contracts are invalidated for some reason (e.g. a car buyer is so drunk that he lacks legal capacity to contract)²¹ the contractual obligation to pay can be invalidated separately from the proprietary title

19 Lindy Willmott *et al.*, *Contract Law*, 5th edn. (Oxford University Press, Oxford, New York, 2018).

20 “§ 105 BGB Nichtigkeit der Willenserklärung,” 2006, *available at*: <https://web.archive.org/web/20061209072433/http://dejure.org/gesetze/BGB/105.html> (last visited Dec. 1, 2022).

21 *Ibid.*

of the car. Unjust enrichment law, rather than contract law, is then used to restore title to the rightful owner.²²

Civil law jurisdictions based on the Napoleonic Code or the Bürgerliches Gesetzbuch provide for a more interventionist role for the state in both the formation and enforcement of contracts than in common law jurisdictions or Scots law, Roman-Dutch law, and other civil or mixed law jurisdictions.²³ Such systems incorporate more terms implied by law into contracts, allow greater latitude for courts to interpret and revise contract terms, and impose a stronger duty of good faith.²⁴

In 2021, Mainland China adopted the Civil Code of the People's Republic of China, which codifies its contract law in book three. While generally classified as a civil law jurisdiction, contract law in Mainland China has been influenced by a number of sources, including traditional Chinese views toward the role of law, the PRC's socialist background, the Japanese/German-based law of the Republic of China on Taiwan, and the English-based common law used in Hong Kong. Consequently, contract law in the Chinese mainland functions as a *de facto* mixed system. The 2021 civil code provides for the regulation of nominate contracts in a manner similar to that of jurisdictions such as Japan, Germany, France, and Québec.

Common law jurisdictions are often associated with a high degree of freedom of contract, though this may be misleading. One example of the supposedly greater freedom of contract in American law, is the 1901 case of *Hurley v. Eddingfield* in which despite the patient's consequent death and the lack of other available medical care, a doctor was allowed to refuse treatment to a patient.²⁵ In civil law jurisdictions rooted in the French or German tradition, nominate contracts are regulated in order to prevent unfair terms and the law of obligations typically includes a duty to rescue which would make cases such as *Hurley v. Eddingfield* far less likely. Conversely, civil law jurisdictions are more likely to enforce penalty clauses and provide for the specific performance of contracts than their common law counterparts,²⁶ which typically refuse to recognise clauses providing for damages greater than that required to adequately compensate the plaintiff. Civil law jurisdictions thus provide greater freedom of contract with regard to the types of terms that may be validly contracted. Contract law in all jurisdictions, the complete scope of contract freedom has been limited by the necessity to stop discrimination or unethical corporate activities. The entire freedom of contract

22 Stephen Smith, "The Structure of Unjust Enrichment Law: Is Restitution a Right or a Remedy?" (Rochester, NY, 2002).

23 Mariana Pargendler, "The Role of the State in Contract Law: The Common-Civil Law Divide" (Rochester, NY, 2018).

24 *Ibid.*

25 *Ibid.*

26 *Ibid.*

has been restricted by laws governing equality, equal pay, racial discrimination, disabled discrimination, and other issues.²⁷ For instance, implementation of the Civil Rights Act of 1964 for the prohibition of the private racial discrimination against African-Americans.²⁸ Same was repeated in the late twentieth and early twenty first century, consumer protection legislation, such as Singapore's Consumer Protection (Fair Trading) Act 2003 which aims to "protect consumers against unfair practices and to give consumers additional rights in respect of goods that do not conform to contract[ual obligations]"²⁹ and Consumer Protection (Trade Descriptions and Safety Requirements) Act 1975 which prohibits "mis descriptions of goods supplied in the course of trade",³⁰ progressively imposed limits upon freedom of contract in order to prevent businesses from exploiting consumers. Although early in the 20th Century, the United States experienced the "Lochner era," during which the Supreme Court of the country struck down economic regulations on the basis of the due process clause and the right to a fair trial. These decisions were ultimately overturned, and the Supreme Court established deference to legislative statutes and regulations that limit the freedom of contract.³¹ The Contract Clause of the US Constitution has been understood to simply prevent retroactive contract impairment.³²

There is no overarching "EU Law of Contract," despite the fact that the European Union is essentially a body which has many trade laws. Under the guidance of the English and Scottish Law Commissions, a proposal to codify and harmonise the contract laws of England and Scotland was made in 1993 by Harvey McGregor, a British attorney and academic. The idea behind this book was to serve as a "Contract Code for Europe," but conflicts between the English and German legal scholars have prevented this plan from materializing so far.

Conventionally, common law jurisdictions did not acknowledge third party beneficiaries' rights. According to the common law theory of privity of contract, only individuals who are parties to a contract can file suit based on that contract.³³ The famous case *Tweddle v. Atkinson (1861)* made it abundantly evident how the approach had the

27 David E. Bernstein, "Freedom of Contract" (Rochester, NY, 2008).

28 Davison M. Douglas and David E. Bernstein, "Contract Rights and Civil Rights", 100 *Michigan Law Review* 1541 (2002).

29 "Consumer Protection (Fair Trading) Act 2003 - Singapore Statutes Online", available at: <https://sso.agc.gov.sg:5443/Act/CPFTA2003> (last visited Dec. 1, 2022).

30 "Consumer Protection (Trade Descriptions and Safety Requirements) Act 1975 - Singapore Statutes Online", available at: <https://sso.agc.gov.sg:5443/Act/CPTDSRA1975> (last visited Dec. 1, 2022).

31 David E. Bernstein, "Freedom of Contract" (Rochester, NY, 2008).

32 *Ibid.*

33 "*Dunlop v. Selfridge - 1915*," available at: <https://www.lawteacher.net/cases/dunlop-v-selfridge.php> (last visited Oct. 1, 2022).

unintended result of defeating the purposes of the parties. *N.Z. Shipping v. Satterthwaite and Scruttons v. Midland Silicones* both date back to 1975 in maritime law showed how third parties could benefit from limitation clauses in a bill of lading. Certain common law exceptions, like agency, assignment, and negligence, enabled some privity principles to be broken.³⁴ The doctrine was repealed by The Contracts (Rights of Third Parties) Act 1999 in England and Wales, which was largely replicated by the Contracts (Rights of Third Parties) Act 2004 implemented in Singapore. According to the laws “a person who is not a party to a contract (referred to as a third party in this Act) may, in the third party’s own right, enforce a term of the contract if (a) the contract expressly provides that the third party’s ability to do so; or (b) ..., the term purports to confer a benefit on the third party”.³⁵ In New Zealand, section 12 of the Contract and Commercial Law Act 2017 provides that a “promisor is under an obligation, enforceable by the beneficiary, to perform the promise” thus decisively rejecting the doctrine of privity of contract.³⁶

While the majority of common law jurisdictions continue to rely on precedent and unmodified principles to determine issues under contract law, a significant minority of common law jurisdictions have enacted statutes governing contract law either comprehensively or in part. Contract law in New Zealand is governed by the Contract and Commercial Law Act 2017, which comprehensively outlines rules regarding contracts and related areas of law.³⁷ Notably, contract law in India, the most populous common law jurisdiction, is codified in the Indian Contract Act, 1872, which comprehensively outlines issues of contract law and versions of which remain in force in Pakistan and in Bangladesh. Similarly, although it is not a comprehensive code, the Civil Law Act 1909 makes several provisions regarding contract law in Singapore.³⁸ In America, the Uniform Commercial Code codifies several provisions of commercial law, including the law of contracts.

34 “*Adler v. Dickson*, [1955] 1 QB 158 | England and Wales Court of Appeal (Civil Division), Judgment, Law, casemine.com,” <https://www.casemine.com/available-at:https://www.casemine.com/judgement/uk/5a8ff87960d03e7f57ec1111> (last visited Dec. 1, 2022).

35 “Contracts (Rights of Third Parties) Act 2001 - Singapore Statutes Online,” *available at*: <https://sso.agc.gov.sg:5443/Act/CRTPA2001> (last visited Dec. 1, 2022).

36 “Contract and Commercial Law Act 2017 No 5 (as at Nov. 3, 2021), Public Act – New Zealand Legislation,” *available at*: https://www.legislation.govt.nz/act/public/2017/0005/latest/whole.html?search=ts_act%40bill%40regulation%40deemedreg_contract_resele_25_a&p=1#DLM6844461 (last visited Dec. 1, 2022).

37 *Ibid.*

38 “Civil Law Act 1909 - Singapore Statutes Online,” *available at*: <https://sso.agc.gov.sg:5443/Act/CLA1909> (last visited Dec. 1, 2022).

III Smart contracts

A self-executing contract is a smart contract. A smart contract, as contrast to a traditional contract, is essentially a computer programme that contains the conditions of the agreement between the buyer and the seller. The code directly incorporates the terms agreed upon by the parties, ensuring Compliance, Enforcement, and Performance. The transactions are traceable and irreversible, and the code governs their execution. Therefore, the terms that parties have agreed upon to govern their relationship are automatically carried out by smart contracts. The smart contracts finds its fundamental base in the Block chain technology, which is a globally distributed and decentralized network. The block chain is a database with an immutable history, which means that nothing can be added to, deleted from, or changed on the block chain. On the block chain, information can only be changed by adding new entries, unlike traditional databases.³⁹

A self-enforcing piece of software known as a smart contract is managed by a peer-to-peer computer network. Without the use of conventional legal contracts, smart contracts are electronic client rights management solutions that offer a framework for coordination and enforcement of agreements between members of the network. Simple agreements between two persons, an organization's bylaws, or the creation of tokens can all be formalized using them.

The computer scientist and cryptographer Nick Szabo first described the idea of smart contracts as "*a set of promises, expressed in digital form, including mechanisms within which the parties carry on these promises*" in 1996.⁴⁰

However, in order to put Szabo's theories into practice, it was necessary to wait until 2009 and for the emergence of the block chain and crypto currencies because the technological infrastructure required to implement this system of contracts did not yet exist.⁴¹

It's crucial to note that Szabo avoids using the term "artificial intelligence" and when comparison is drawn between smart contracts with paper-based contracts, he uses quotation marks around the word "smart". The ability to automatically carry out some pre-programmed actions makes smart contracts "smarter" than paper contracts, but they shouldn't be viewed as tools with the intelligence to decipher a contract's more

39 "Nick Szabo — Smart Contracts: Building Blocks for Digital Markets", *available at*: https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart_contracts_2.html (last visited Dec. 21, 2022).

40 *Ibid.*

41 Samantha Rojo, "Digital signature versus 'smart contracts': The importance of legal validity" *vintegris.com*, 2018, *available at*: <https://www.vintegris.com/blog/digital-signature-smart-contracts/> (last visited Dec. 21, 2022).

ambiguous needs. In fact, Szabo's example of a vending machine is the standard example of a smart contract. The machine automatically upholds the terms of the informal contract and disburses the snack whenever a buyer has met the requirements of the "contract" (*i.e.*, inserted money into the device).⁴²

Today's smart contracts also have their roots in the Ricardian Contracts concept, which Ian Grigg and Gary Howland developed while working on the Ricardo asset transfer payment system and published in 1996. Ricardian Contracts, according to Grigg, served as a link between text contracts and code and included the following characteristics: a single document that is:

- i) a contract offered by an issuer to holders,
- ii) for a valuable right held by holders, and managed by the issuer,
- iii) easily readable by people (like a contract on paper),
- iv) readable by programs (parsable like a database),
- v) digitally signed,
- vi) carries the keys and server information, and
- vii) allied with a unique and secure identifier.⁴³

The important characteristics of a smart contract are as follows:

- i) Once it has been released, it is not possible for anyone, including the owner or creator to alter its terms.
- ii) Its performance and completion do not require submission of any physical documents.
- iii) Although users may be anonymous, the details of each transaction are recorded and registered.
- iv) Transactions under smart contracts are irreversible in nature.⁴⁴

42 Alex Lipton and Stuart Levi, "An Introduction to Smart Contracts and Their Potential and Inherent Limitations" *The Harvard Law School Forum on Corporate Governance*, 2018 available at: <https://corpgov.law.harvard.edu/2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/> (last visited Dec. 18, 2022).

43 "The Ricardian Contract," available at: https://iang.org/papers/ricardian_contract.html (last visited Dec. 21, 2022).

44 Sannidhi Agrawal, "Smart Contracts: Functioning and Legal Enforceability" 7, 14 (2021).

How do smart contracts work

- (i) The clauses of the contract in question make up the contract's code. Any transaction is interpreted, verified, and carried out by smart contracts in accordance with the terms.
- (ii) Let's look at an example of a rent contract that has been converted into a smart contract to better understand how effective and efficient a smart contract may be. The renter will pay the landlord the rent in crypto currency, and once the money has been received, the code will carry out the transactions in line with the terms of the contract that have been set into the code. After the deal is done, the homeowner will receive a receipt and the key to the house will be handed over. Hundreds of blockchain participants will be able to see the transaction and the contract because the system is based on the If-Then concept. The homeowner will surely receive payment if he turns hands over the key. The tenant will undoubtedly receive the key if he pays the rent. It is impossible to carry out one action without carrying out the other, creating a system that is both effective and efficient.
- (iii) Similar to conventional contracts, smart contracts define the rules and penalties that apply to an agreement. However, smart contracts also automatically carry out these obligations. The Ethereum platforms, which have two parts: currency and contracts, are used to create these contracts.
- (iv) Smart contracts are contracts in which an electronic platform is used instead of paper as the interaction medium. This prompts the question of whether smart contracts can still be governed by current legal systems or if a new legal system is required.
- (v) Strong smart contracts have significant revocation and modification costs, but weak smart contracts do not. This suggests that a contract will be considered a weak smart contract if a court can readily modify it after it has been executed. The contract will be declared strong if altering it in a way that a court would not find reasonable would be unreasonably expensive.⁴⁵

The formation

- (i) Both smart contracts and traditional contracts share the same beginning phases of a contractual arrangement. This is due to the fact that for the contract to be effective, two parties must concur on a set of conditions that initiate the programme. In contrast to traditional contracts, smart contracts base acceptance on performance. There is no smart contract until the program starts, although a

⁴⁵ Sneha Mahawar, "All about smart contracts" *iPleaders*, 2022 available at: <https://blog.iPLEaders.in/all-about-smart-contracts/> (last visited Sep. 18, 2022).

person might promise to begin a smart contract, which might be a binding legal agreement. But a smart contract code might be added as an offer to a ledger.

- (ii) When a step is taken to start acceptance, such as granting the code control over a certain amount of money, the contract is made.
- (iii) Smart contracts can formalize the situations under which contracts will be enforced by courts. This is so that each party's obligations and advantages under the smart contract's conditions are crystal clear and are readily known.⁴⁶

Types of smart contracts

Three broad categories can be used to classify smart contracts

Smart legal contract: The most popular smart contract type, a smart legal contract, is used to ensure that parties to an agreement are accountable for fulfilling their end of an agreement. It functions in a similar manner to a traditional contract in terms of legal requirements, including mutual assent demonstrated by a proper offer and acceptance, adequate thought, capacity, and legality. A smart contract is enforceable and requires the parties to carry out their obligations when it is set up correctly. If this isn't done, the smart contract has the power to instantly initiate legal action taken against the offending party.⁴⁷

Decentralised Autonomous Organisations: DAOs, or decentralised autonomous organisations, are blockchain-based communities. A set of rules that are mutually agreed upon and codified using smart contracts can serve as the defining characteristics of these communities. The rules of the community are applicable to each participant and their actions, and the community's rule enforcers are responsible for upholding these rules. Many smart contracts make up these rules, and they all work together to monitor community actions.⁴⁸

Application Logic Contracts: Application-based code that keeps up with other blockchain contracts is part of blockchain contracts referred to as "Application Logic Contracts," or "ALCs." They make it possible for various devices to communicate with one another, such as when blockchain technology and the Internet of Things (IoT) are combined. Multi-function smart contracts must have ALCs, which are typically handled by a computer.⁴⁹

46 *Ibid.*

47 "Smart Legal Contracts: Summary," 33.

48 "What Is A DAO And How Do They Work?," *ConsenSys*, available at: <https://consensys.net/blog/blockchain-explained/what-is-a-dao-and-how-do-they-work/> (last visited Dec. 1, 2022).

49 Sneha Mahawar, "All about smart contracts" *iPleaders*, 2022, available at: <https://blog.iplayers.in/all-about-smart-contracts/> (last visited Dec. 18, 2022).

IV Smart contracts and the law

One of the main goals of blockchain technology, and consequently of smart contracts as well, is the establishment of resilient, decentralized, and global platforms. However, parties may be using smart contracts in a much broader range of jurisdictions than text-based contracts because they are becoming more widely adopted. It would be in the best interest of the party proposing terms under a smart contract to make the applicable legislation and venue clear. A venue clause specifies which jurisdiction's courts will hear the dispute, while a governing law clause specifies which substantive law will be used to the smart contract's interpretation.

In contrast to a venue clause, which defines which jurisdiction's courts would hear the dispute, a governing law provision outlines what substantive law will be used to interpret the smart contract. Given the wide range of jurisdictions in which a smart contract may be used, a plaintiff may be relatively unconstrained to decide where to bring a claim or to argue which substantive law should be used, in situations where controlling law or venue are not indicated. Given that many early smart contract disputes may be founded on initial impressions, contractual parties may desire some certainty on where such disputes will be decided.

Smart contracts must satisfy both of the essential requirements of a traditional contract in order to be considered legally binding:

- (i) A legitimate offer,
- (ii) A properly communicated acceptance.
- (iii) Lawful consideration pertaining to the subject matter.
- (iv) Consideration.
- (v) Consent of all competent parties in regards to all aspects of the contract.

Are smart contracts enforceable in general

Before analysing the enforceability of smart contracts, it is important to clarify the primary distinction between a contract and an agreement. States often acknowledge that a contract is an agreement that is enforceable in a court of law and has legal power, despite the fact that two parties can engage into a variety of agreements. In order to determine whether an agreement is enforceable, State courts typically check to see if the offer, acceptance, and consideration standards set forth by common law are met. Supplemental smart contracts can almost likely satisfy these core requirements. An insurer might construct a flight insurance package, for instance, that automatically compensates the insured if a flight is delayed for longer than two hours. Text-based contracts allow for the specification of key terms, while a supporting smart contract manages contract creation (payment of the premium) and execution, such as how the

delay will be calculated (automatic payout upon a verifiable delay). The insured accepts the insurer's firm promise to provide flight insurance in return for payment of the premium.

United States

As there is no federal contract law in the United States, state laws are used to interpret and enforce contracts. While trying to harmonise state laws, the National Conference of Commissioners on Uniform State Laws and certain fundamental concepts are applicable to all states, any conclusions about smart contracts must be qualified by the fact that different governments may adopt different strategies.

In 47 states across the US, the Uniform Electronic Transactions Act (UETA) was passed in 1999. The UETA developed regulations for electronic contracts, records, and signatures, stipulating that these documents would be enforceable by law and that electronic signatures would be acceptable as a form of consent. The EU's Rome I Regulation is the legislation that establishes the legality of all civil and commercial transactions within the EU.⁵⁰

Despite the fact that the Uniform Commercial Code (UCC) and other state fraud statutes may require certain contracts to be in writing, written agreements are not always necessary for them to be enforceable. Consequently, smart contracts that are composed entirely of code will be recognised by state contract laws. Szabo's use of a vending machine as an example is helpful in this regard. Although the buyer had a number of implied rights, except for a price display for each item, there were no other substantial written terms in the contract. Therefore, other than the constraints imposed by the UCC and statutes of frauds, the fact that an agreement is wholly written in code, as is the case with code-only smart contracts, provides no specific barrier to contract formation. In reality, many laws and legal systems have recognised the importance of information technology in the creation of contracts for a long time.

United Kingdom

The UK Law Commission has begun investigating ways to make the use of smart contracts based on blockchains more transparent from a legal standpoint. In order to assess and suggest changes to English and Welsh legislation, the UK Law Commission was established by the Parliament in accordance with the Law Commissions Act of 1965. The Law Commission claims that smart contracts boost "confidence and certainty" while also enhancing the efficiency of business-to-business transactions.

50 Alex Lipton and Stuart Levi, "An Introduction to Smart Contracts and Their Potential and Inherent Limitations" *The Harvard Law School Forum on Corporate Governance*, 2018, available at: <https://corpgov.law.harvard.edu/2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/> (last visited Dec. 18, 2022).

Consequently, in order to advance commerce and modernise the UK legal system to accommodate changing technology.⁵¹

According to the Federal Electronic Signatures Recording Act (e-sign Act), which also acknowledges the legality of electronic signatures and electronic records in interstate commerce, a contract or other record relating to a transaction “*may not be denied legal effect, validity, or enforceability solely because its formation, creation, or delivery involved the action of one or more electronic agents so long as such action is legal.*” An “electronic agent” is any computer programme, other electronic device, or other automated system that, in whole or in part, initiates or reacts to electronic records or performances without being reviewed by or requiring a response from a human at the time of the action or reaction.

Enforceability of smart contracts in India

The most significant law controlling contracts in India is the Indian Contract Act of 1872. All agreements are considered contracts according to section 10 if they “*have the free consent of parties ready to contract, for a lawfully approved consideration, and with an object.*” Any agreement that consists of an offer, acceptance, and consideration may be regarded as a contract for the purposes of law. The Indian Contract Act of 1872 appears to define smart contracts as being legal. It is unclear if bitcoin is recognised as consideration under Indian law because a smart contract requires an offer, acceptance, and payment in crypto currency.

The Information Technology Act of 2000’s sections 5 and 10 permit the acceptance of digital signatures as legitimate signatures and the evaluation of an electronic contract’s legality and enforceability. Furthermore, under Section 65B of the Indian Evidence Act of 1872, contracts that have been digitally signed are admissible in court. The government can therefore use the legal system to settle disagreements between the parties.

Legal functioning of smart contracts in India

In essence, smart contracts provide a platform for making agreements with parties who might or might not know one another and who might be at risk. Under Indian law, smart contracts may be enforceable, but if caution is not used when dealing with the person you are contracting with, you will have to deal with the fallout on your own because the legal system lacks a regulatory mandates to regulate smart contracts.

A smart contract might not be enforceable under Indian law if the consideration was not mutual. This may occur if the contract is unilateral. In Indian courts, contracts without valid consideration are void. Smart contracts without mutual consideration

51 Sneha Mahawar, “All about smart contracts” *iPleaders*, 2022, available at: <https://blog.iplayers.in/all-about-smart-contracts/> (last visited Dec. 18, 2022).

can still be enforced through code, but a violation of such a contract would not be viewed as a breach in Indian courts since there would have been no contract because mutual consideration is a crucial component of a contract.

The legality of smart contracts in India permits their usage, but because there is no regulatory framework in place to oversee smart contracts, it does not offer legal protection to the parties participating in the contract in the event that they become liable or suffer damages. However, the law will offer its best assistance if the smart contract complies with the parameters of contract law as specified by the statute.

Challenges to smart contracts under Indian contract law

There may be several challenges to enforce a smart contract under the current Indian Contract Act, 1872. The creation, execution, breach, and interpretation of smart contracts can all present difficulties.

- i. As we have seen above, a contract is formed by a proposal from one party and its acceptance by another party. The role of proposal and acceptance may get diminished in a smart contract. A smart contract is conditional in nature. It is made when parties agree that if 'X' condition is fulfilled then 'Y' will be executed. In a traditional contract the parties have more freedom to incorporate clauses into the contract and not limit their contract on conditional events. An offer by one party may get a counter offer and both the parties may agree to the new offer. The parties can even enter negotiations before making a concrete proposal. For example, a customer negotiates with the shopkeeper for the price of the goods and the shopkeeper agrees to offer a discount. The customer accepts the shopkeeper's counter proposal and make a deal. If the same customer uses a smart contract to buy the goods online, there will be no negotiations, bargains or counter offers.
- ii. A contract with a minor is void according to contract law. A party cannot enter into a legal contract unless they are of legal age. Considering that smart contracts are yet not governed. A smart contract might occasionally be carried out by a party under the legal age of majority. Taking a mortgage signed by a minor as an example. As a result, under contract law, such a smart contract will not be enforceable.
- iii. An agreement is invalid if there is no consideration. The agreement's purpose and consideration both need to be legal. An illegal object cannot be the subject of a smart contract. A payment for the drugs, as an example. Using a smart contract, it is feasible to send payments using crypto currencies like bitcoin. Cryptocurrencies are not, however, recognised as legal currency by many central banks. This means that because they are still illegal, crypto currencies cannot be used as legal money. As a result, if the consideration is illegal, a smart contract will not be enforced. For instance, places where using cryptocurrency as payment is not permitted.
- iv. One of the requirements of the contract is free consent. The party whose consent has been obtained via force, fraud, undue influence, misrepresentation, or coercion

may choose to nullify the contract. The future of a smart contract where a party's consent has been acquired through the aforementioned methods is still yet to be determined. Because there is no turning back once a smart contract has been performed, it cannot be revoked. Thus, the party may decide to go with a conventional contract rather than a smart contract.

v. A smart contract will not be enforceable and will be void in accordance with the Indian Contract Act if it is executed for a subject that is covered by one of the agreements that the act has specifically deemed void. For instance, a contract that restrains trade or a contract that restrains legal action.

vi. If the parties accidentally inserted an erroneous clause to the contract, that is a violation of contract law. It may be altered, or the clause may be later interpreted by the court in light of the parties' intentions or the clause's purpose. In the case of a smart contract, the outcome will change after execution if there is anything stated in the code that isn't in accordance with what the parties intended. A minor programming error could place the contract's parties in an unfavorable situation.

vii. Anytime one party violates a provision of a contract, the other party is always entitled to legal recourse, either in the form of compensation or specific performance. A smart contract cannot be violated because execution happens automatically, however there are some circumstances that could prevent execution. For instance, in the event of a bank account payment default if there is no money. Therefore, there may be violations of Smart Contracts as well.

viii. With the agreement of both parties, the contract may be amended in accordance with contract law. Despite the fact that the parties have agreed to specific conditions in the contract, they may feel the need to revise them if the situation changes. A smart contract, once it has been carried out, cannot be changed. Only the Application Programming Interface (API) technology, which could be quite expensive for the parties, allows for amendments.

ix. For the parties, a smart contract could be more cumbersome than a conventional one. It can be quite difficult for parties to determine whether a smart contract genuinely manifests what the parties meant because in a traditional contract, the parties can simply express their intention through words. An average person is unaware of the code but is familiar with the conventional contract legal regime.

x. The courts are responsible for interpreting both the law and the contract. By examining the contract's object, provisions, and the value of the consideration, it is typically simple to determine the parties' intentions. Because a smart contract must first be approved as an enforceable contract under the Indian Contract Act of 1872, the court may or may not decide to read it similarly to a regular contract in the event of a dispute. The interpretation is a crucial tool for enforcement and for providing the party who has been wronged under the law genuine remedy.

V Conclusion and suggestions

According to a study by Capgemini, the proper adoption and implementation of smart contracts could aid retail banking and insurance organisations in saving between 3 and 11 billion USD through reduced overhead expenses, which in turn could assist each individual client in saving up to 980 USD. This demonstrates that the implementation and expansion of smart contracts could unquestionably become the “next big thing,” saving billions of dollars in overhead costs while also improving the process as a whole. When it comes to the execution of contracts, block chain technology have the potential to completely transform the game. However, it is a less profitable choice in India due to the legal ambiguities. Smart contracts have not achieved the traction they should have, and ambiguity remains strong, as a result of the lack of a regulatory agency that verifies the admissibility and enforceability of a smart contract under the existing laws. Is a smart contract intended to actually create a contract or is it merely intended to carry out a contract’s provisions? This is a crucial point that needs to be addressed. This might make it clearer whether or not smart contracts can be governed by the current legal rules. The enforcement of “reasonable security policies and procedures” as stipulated under the IT Rules, 2011, remains difficult because the entire process is decentralised and no single institution manages the data originating out of any transaction. The aforementioned regulations lay out specific principles for safeguarding sensitive personal data from any potential harm caused by third parties using a computer resource.

There are many areas like syndicated loans which are dependent on paperwork and faxes, thus leading to inefficiency. It is very important for these sectors to begin implementing cutting-edge technologies like smart contracts. But for this transition to happen, the government must stop being silent on the subject and devise strategies that will enable organisations and people to shift to effective, affordable systems.

Since they have their own set of restrictions and hazards, which have been covered in the paper, smart contracts do not, in fact, have a pervasive application, i.e., they cannot be used arbitrarily to any industry. They work better in situations where calculating risks is easier since the code’s limited language can grasp the instructions.

The rapid development of technology that aims to reduce the risks and expenses related to human capital includes smart contracts. Indeed, they greatly reduce the possibility of human error, yet it cannot be denied that machines have their own biases and flaws, in addition to the impossible challenge of controlling their operations.

Thus, establishing legal liability presents a plethora of difficulties. Smart contracts are still in their infancy and need a boost to take off in the Indian market. Legislators must be loud about their opinions on the numerous legal issues relating to smart contracts if they want to make smart contracts part of system.

The government and parliamentarians, especially in developing countries, may not be ready to commit the necessary financial and human capital to pave the way for the development of smart contracts, which is a major barrier to their acceptance as the standard. However, it is important to consider the advantages of implementing this technology.

Furthermore, the Indian market is seriously threatened by regulatory issues. Even if no new rules are created, the government must update the pertinent sections of the IT Act and the Indian Evidence Act, 1872, to include smart contracts in their scope and stay up with modern technology. For smart contracts to function in India, the government will need to change some current statutory rules and deal with difficulties on many different levels. The ability of the legislators to keep up with the ever evolving world of block chains and smart contracts will be an interesting thing to watch.

A significant barrier to advancement in the field of smart contracts is the unclear legality of crypto currencies. Consequently, the Government must take a definite position on its legality. If large-scale adoption of smart contracts occurs in India, the legal sector will need to adapt to clients' shifting needs. This paradigm change may result in job losses and force legal professionals to reconsider how they conduct their business. On the positive note, it might also promote alliances between start-up businesses, software companies, and law firms for the benefit of all. By embracing technology and utilizing it to their advantage, legal practitioners could provide better services to their clients. As a result, smart contracts shouldn't be viewed as an imminent harm.