The Impact of Smart Contracts on the Evolution of Commercial Contracts and Dispute Resolution Mechanisms

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Abstract:

Following the digital migration, technology integration has proved crucial in modern industries, including commercial law. In the realm of digital legal discourses, smart contracts have emerged and developed as a powerful executor of commercial contracts and dispute resolution strategies. Such contract evolution has significantly impacted overall contractual handling processes from legal and commercial perspectives. Contextually, this work delves into the multifaceted nature of smart contracts on commercial transactions and the consequent dispute resolution mechanisms involved. In doing so, the research investigates the smart contracts'

role in streamlining legal procedures, alleviating legal barriers and fostering dispute resolution. Additionally, the financial implication of this blockchain revolutionary technology in commercial contracts is assessed. By defining smart contracts and its functionality, the study advances automated contract capabilities and elasticities focussing on its influence on improving contracting processes and ability to minimize administrative costs. Furthermore, the accuracy and transparency levels in smart contract execution is examined. Afterwards, the study explores the legal and regulatory challenges hindering the adoption and implementation of smart contracts in diverse contractual contexts. Therefore, a detailed insight into the acceptance, legal liability and data protection concerns over the use of smart contracts is analyzed.

Additionally, the study investigates the way smarts contracts, by minimising interpretational issues through exact execution and offering a chronological record of contract-related events, contribute to the success of dispute resolution. Enforcement procedures in smart contracts have evolved significantly; a core focus of the study. For this reason, it dives into the financial aspects of smart contracts, highlighting the ways in which they accelerate enforcement processes and lower the cost of intermediary services. Undoubtedly, this study offers important insights into the transformational potential of smart contracts in business interactions and offers advice for managing the operational, legal, and

regulatory obstacles involved with their integration by thoroughly addressing the research questions.

Keywords: Smart Contracts, Commercial Law, Contract Evolution, Blockchain Revolutionary Technology, Commercial Law, Dispute Evolution, Legal and Regulatory Challenges, Enforcement Procedures.

تأثير العقود الذكية على تطور العقود التجارية آليات حل النزاعات

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ملخص البحث

في أعقاب الهجرة الرقمية، أثبت التكامل التكنولوجي أهميته الحاسمة في الصناعات الحديثة، بما في ذلك القانون التجاري. في عالم الخطابات القانونية الرقمية، ظهرت العقود الذكية وتطورت كمنفذ قوي للعقود التجارية واستراتيجيات حل النزاعات. لقد أثر تطور العقود هذا بشكل كبير على عمليات التعامل التعاقدي الشاملة من المنظور القانوني والتجاري. وفي السياق، يتعمق هذا العمل في الطبيعة المتعددة الأوجه للعقود الذكية المتعلقة بالمعاملات التجارية وما يترتب على ذلك من آليات حل النزاعات المعنية. ومن خلال القيام بذلك، يبحث البحث في دور العقود الذكية في تبسيط الإجراءات القانونية، وتخفيف الحواجز القانونية وتعزيز حل النزاعات. بالإضافة إلى ذلك، يتم تقييم الآثار المالية لهذه التكنولوجيا الثورية blockchain في العقود التجارية. من خلال تحديد العقود الذكية ووظائفها، تعمل الدراسة على تطوير قدرات ومرونات العقود الآلية مع التركيز على تأثيرها على تحسين عمليات التعاقد والقدرة على تقليل التكاليف الإدارية. علاوة على ذلك، يتم فحص مستويات الدقة والشفافية في تنفيذ العقود الذكية. وبعد ذلك، تستكشف الدراسة التحديات القانونية والتنظيمية التي تعيق اعتماد وتنفيذ العقود الذكية في سياقات تعاقدية متنوعة. ولذلك، يتم تحليل نظرة مفصلة حول القبول والمسؤولية القانونية ومخاوف حماية البيانات بشأن استخدام

العقود الذكية.

بالإضافة إلى ذلك، تبحث الدراسة في الطريقة التي تساهم بها العقود الذكية، من خلال تقليل مشكلات التفسير من خلال التنفيذ الدقيق وتقديم سجل زمني للأحداث المتعلقة بالعقد، في نجاح حل النزاعات. لقد تطورت إجراءات التنفيذ في العقود الذكية بشكل كبير؛ التركيز الأساسي للدراسة. ولهذا السبب، فإنه يتعمق في الجوانب المالية للعقود الذكية، ويسلط الضوء على الطرق التي تعمل من خلالها على تسريع عمليات التنفيذ وخفض تكلفة الخدمات الوسيطة. مما لا شك فيه أن هذه الدراسة تقدم رؤى مهمة حول الإمكانات التحويلية للعقود الذكية في التفاعلات التجارية وتقدم المشورة لإدارة العقبات التشغيلية والقانونية والتنظيمية التي ينطوي عليها تكاملها من خلال معالجة أسئلة البحث بشكل شامل.

الكلمات المفتاحية: العقود الذكية، القانون التجاري، تطور العقود، تقنية البلوكشين الثورية، القانون التجاري، تطور المنازعات، التحديات القانونية والتنظيمية، إجراءات التنفيذ.

Introduction

It goes beyond any reasonable doubt that technology integration has inherently proved requisite for modern and efficient operation in diverse sectors. Ranging from healthcare to entertainment, the digital era has tremendously impacted operations in a move that has seen a significant demand for automated contracts. Across these diverse sectors, individuals constantly engage in contractual terms defining the terms, conditions and period in a move to keep their transactions legally binding. As a result, smart contracts have emerged as a transformative technology hence channelling a new age for commercial law. The phase has been characterized by a dynamic shift in the formation, execution and enforcement of contractual agreements. Derived from blockchain technology, smart contracts operate on self-executing, automated agreements with contractual terms encoded in the system. Unlike traditional hand-written contracts where intermediaries such as law firms and banks were mandatory, smart contracts utilize predefined contractual conditions to automatically execute and enforce themselves. Such a matter comes against the backdrop of the ever-rising need to reduce paperwork, alleviate complex negotiation processes and address lengthy dispute resolution procedures linked to contractual agreements. The automation capability, therefore, fosters streamlined execution processes and minimizes risks of errors and fraudulent transactions once the agreement is initiated and operationalized. Given such profound impact of smart contracts on contractual agreements, it has accelerated the pace of transactions as well as reducing administrative and operational costs.

Transparency and trust in business dealings remain crucial for the success of any business, an aspect that is highly appraised by smart contracts. Given blockchain technology's transparency and immutability, they guarantee that all parties have access to an unchangeable record of the contract and its execution history. The research explores the way smart contracts lessen the possibility of arguments and misunderstandings regarding the provisions of the contract leading to disputes. Moreover, smart contracts have the potential to greatly enhance commercial contracts' dispute resolution procedures. Conversely, pre-established dispute resolution procedures like arbitration or mediation clauses that take effect automatically in the event of a disagreement can be included in smart contracts. The process lessens the workload on courts and legal systems in addition to hastening the resolution process.

Research Questions

As a blueprint for the research, the study seeks to address the following questions:

١. What are smart contracts and how do they affect the evolution of commercial contracts?

٢. What are the legal and regulatory challenges facing the adoption of smart contracts in the commercial environment?

٣. How can smart contracts improve the effectiveness of dispute resolution in commercial contracts?

٤. What is the impact of smart contracts on reducing costs and expediting the enforcement of commercial contracts?

Defining Smart Contracts

According to Madir (٢٠٢٠), smart contracts are self-executing software programmes that are intended to execute the contract terms automatically when certain criteria are met. Using blockchain technology as their pillar, smart contracts present various features integral to their functionality in diverse sectors, including commercial law. By comprehending the diverse features of the contracts, it becomes possible to establish the operational framework of smart contracts. It is important to understand that smart contracts operate on a decentralized blockchain networks without intermediary control of the execution of the contract. Usually, these rules are recorded on a blockchain, a distributed ledger system, in the form of code The aspect implies that smart contracts are programmed with predetermined rules and circumstances that control their behavior, in contrast to traditional contracts, which rely on human intervention and enforcement methods. By distributing the contractual codes across the various nodes in the network, consensus mechanisms are embedded to ensure the validation and execution based on contractual terms and conditions (Madir, ٢٠٢٠). Furthermore, smart contract technology employs cryptographic techniques to safeguard the data transmitted across the network. Such a feature is highly imperative as it ensures that contractual codes become tamper-proof and safe from fraud. As an evolution of traditional contracting processes, the security ad-in feature acknowledges the sensitivity and different transactions particularly commercial ones and the likelihood of unscrupulous dealers and intermediaries. For this reason, smart contracts ensure that contractual codes are well-

protected with an end-end encryption to prevent potential alteration right from deployment, to execution and enforcement.

Moreover, transparency and immutability present advanced features of smart contracts making them highly distinguished and efficient among different contracting methods. According to Zheng et al. (٢٠١٨), The transparent nature of blockchain technology fosters easy-to-visualize transactions and contract executions for all participants in the network. Consequently, the parties verify the terms and conditions hence engaging on agreements they are well-versed in. Such a feature ensures that the execution history is clear to all parties hence fostering integrity and credibility of contractual agreements over the period stated. By utilising blockchain technology, these contracts function in a decentralised fashion hence limiting access by non-involved parties. In the long-run, smart contracts guarantee transaction transparency, security, and immutability; crucial features for contracting in the modern era.

Impact of Smart Contracts on the Evolution of Commercial Contracts

Drawing from the diverse performance capabilities, smart contracts present significant impacts on the evolution of commercial contracts. To begin with, smart contracts have revolutionized contractual agreements through the automation of the execution processes. As a result, the contracting processes have significantly been improved through precise interventions of agreed terms (Ferreira, ٢٠٢١). The manual intervention in traditional contracts was bound by the executors' commitments to yield to the contractual terms and condition. Following this reason, the situation was prone to delays, errors and often escalated disputes in instances of conflict of interest. Due to the evolution of smart contracts, a more streamlined approach to contracting processes has been established. The aspect has been evident in expediting negotiations where precise execution is enhanced as programmed. Such a move has further revolutionized contract enforcement processes which have historically been complicated with perpetual human errors. In handling agreements, the evolution of smart contracts has been linked to overall fulfilment of contractual obligations. Cannarsa (٢٠١٨) notes that automated execution fosters quick fulfilment of contractual obligations resulting into swift transactions in commercial agreements. Using the predefined conditions of initial negotiations, subsequent execution procedures constantly refer to them ensuring that none of the parties digresses from the stated terms and conditions. Therefore, the delivery of goods and services in such commercial agrees traces a well-defined path leading to the fulfilment of contractual obligations provided.

Following the evolution of smart contracts, commercial agreements have significantly experienced cost-savings in the transaction process. A study by Kirillova et al. (٢٠١٩) denotes that smart contracts contribute to cost reduction in commercial transactions through reduced overhead administrative costs associated with traditional contracts and middlemen. Since intermediaries such as banks and attorneys offer chargeable services when expending their services to contracting parties, the overall transaction cost is increased. In an economic era where cost-effective strategies are appraised through technology integration, the reliance on peer-oriented transactions without intermediaries have proved crucial. Cole (٢٠١٨) adds that smart contracts foster automated contract execution and record-keeping processes hence minimizing administrative overheads linked to paperwork transactions. It is important to acknowledge that paperwork use in banks and among legal professions is prone to distortion, loss of contractual agreements and strain in the retrieval of required documents. Such a matter implies that it becomes difficult to execute and enforce commercial contracts, particularly in the incidence of disputes. In the same breadth, the traditional manual verification and storage processes further stress the execution budget making smart contracts non-optional. The use of blockchain technology encoded with specific contractual terms and agreements helps commercial entities to achieve overall efficiency gains leading to effective cost utilization. While the legal implication of contracts remains crucial for contracting entities, commercial businesses' focus on reducing costs and maximizing profits cannot be understated (Kirillova et al., ٢٠١٩). The aspect points to the need to constantly ensure

that a "win-win situation" is achieved for contracting parties; a move that has seen the drastic evolution of commercial contracts through the adoption of smart contracts. By perceiving the legal process as a means of efficiency gains, contractual agreements have become synonymous to businesses. With smart contracts, commercial agents no longer view contracting process as an expensive and a barrier to effective business transactions but as an enabler of commercial activities.

Another impact of smart contracts on commercial agreements is enhanced accuracy and transparency. According to Mik (٢٠١٧), smart contracts foster the accuracy of contract execution by ensuring precise execution of programmed terms. Such a matter has made it possible to reduce the ambiguity of commercial transaction where intermediaries were traditionally considered the sole interpreter of contracts. Noteworthy, such a matter posed risks of fraud and dishonest admissions and omissions of the contractual terms. Smart contracts provide transparent and reliable records of all contractual activities thus offering a trustworthy audit trajectory for involved commercial parties (Bhargavan et al., ٢٠١٦). Through creating transparent and immutable records of execution and enforcement processes, it becomes possible to foster accountability and trust among parties. Such precise and accountable execution of contractual terms reduces potential disputes in commercial transactions. Luu et al. (٢٠١٦) attribute increased investor confidence and stronger business relationships to streamlined execution and enforcement mechanisms effected through smart contracts. It goes beyond any reasonable doubt that all parties entering an agreement prefer a legal

mechanism that transparently reflect their terms of engagement in the transaction of goods and services. Smart contracts thereby provide a reliable audit trail for verification purposes with no loops for altering the agreements retroactively. As transactions move from one stage to the next, it becomes possible to infer to the contractual terms and make requisite steps in avoidance of any negative implications. Each contractual agreement is backed by various legal liabilities and the failure of traditional contracts to objectively address the issue has caused the dramatic shift to more smarter options. As a result, smart contracts' ability to enhance transparency and accountability makes it a preferred contracting method among commercial parties. The aspect further delineates the contractual obligation of each party by clearly defining functions, liabilities and remedies for dispute resolution.

Legal and Regulatory Challenges of Smart Contract Implementation

While smart contracts present multiple benefits in commercial transactions, it is important to note that they are still in the introductory stages in many jurisdictions. As a result, smart contract implementation has been characterized with immense legal and regulatory challenges drawing from the fact that blockchain technology itself is under contention. Such a matter relates to the increasing ethical and privacy concerns of entrusting automated systems with sensitive information such as contractual agreements. Drummer and Neumann (٢٠٢٠) posit that smart contracts will inevitably trigger conflicts with existing traditional contracting frameworks given the defective nature of machine systems. The assertion throws inquiries into the legal and regulatory implications surrounding smart contracts and the quest for realizing their full potential in commercial transactions.

One of the major challenges facing the implementation of smart contracts is the acceptance and recognition by judicial and legislative agencies. The acceptance challenge stems from the fundamental inability of traditional legal frameworks to fully accommodate smart contract's unique characteristics and functionalities (Giancaspro, ٢٠١٧). Such a challenge is further hyped by the fact that the larger judicial framework is predominantly based on traditional laws and provisions without flexible mechanisms of absorbing emerging issues. Drawing from factors such as digital divide and generally high implementation costs of new legal frameworks, smart contracts' absorption rate has been shrunk. As a result, courts on one hand support smart contract implementation

while other strongly oppose its implementation. Smart contracts operate on blockchain technology which greatly alter the novel execution and enforcement of contracts leading to resentment from conservative legal professionals (Temte, ٢٠١٩). The move is not only justified by the underlying legal paradigms but also substantiated by the constitution whose preset did not anticipate the effect technology advancement in legal matters. Given that supreme legal doctrines such as the constitution do not recognize smart contracts, its legal status remains ambiguous. With many states globally struggling to recognize its impact on the judicial system, its acceptance and consequent implementation is likely to delay even further (Giancaspro, ٢٠١٧). While the process seems to derail the entire implementation process, it is important for the consideration of a holistic approach in harmonizing smart contracts with existing and emerging legal frameworks.

Another reason for lack of express acceptance of smart contracts is its complex coding process and the existence of predefined conditions. The divergence from traditional legal principles underscoring the possibility of contractual changes along the transactional process attracts significant resentment as far as smart contracts implementation is concerned. By using complex coded terms, the legal system is logged out of the process leading to a breach of principles of contract interpretation. The system's dispute resolution mechanism is further challenged regarding court's interpretation of abstract coded terms in smart contracts. Such a matter against the need for standardized legal treatment of smart contracts across

jurisdictions to foster execution and enforcement of contractual agreements. The move plays a pivotal role in fostering trust and confidence of using such a legal framework. Legal professionals and enthusiasts have continually raised concerned over the lack of a consensus on legal standards and frameworks. As a result of these concerns, the efforts for effective implementation of smart contracts across varied jurisdictions has remained futile.

The process of determining legal liability pertaining to errors and malfunctions of smart contract systems presents a dire legal and regulatory challenge for its implementation. Madir (٢٠٢٠) expounds that legal principles and frameworks are not ascribed to a one-fits-all mechanism hence disputing the possibility of a self-executed system to replace traditional legal framework. The challenge is manifest through bugs and vulnerabilities that arise in error handling of the smart contract systems which do not define whom to bear legal responsibility upon such occurrences. In instances where the consequences go beyond control, smart contracts can result in serious financial losses and damages. With this in mind, critics of smart contracts have constantly expressed discontent in the systems error handling abilities hence hindering its effective implementation. Additionally, the precedence of smarts presents unclear contractual intent as opposed to traditional contractual frameworks. More often, courts assess whether errors committed in contract execution emerged from negligence, unforeseen circumstances or purely negligence (Varavka, ٢٠٢٠). As a code-based system, the sources of errors remain abstract leaving no room for judicial inquiry into the intrinsics of the error caused. The factor further affects the overall framework for contractual

formation where acceptance may have resulted from system bugs or unforeseen processes. Delving into the legality of such systems, therefore, implies that they present serious challenges when it comes to the overall process of execution and enforcement (Sanz Bayon, ٢٠١٩). Therefore, such legal and regulatory backing places significant concerns regarding the authenticity, integrity and adoption of blockchain technology into commercial transactions. Before taking such the implementation debate into consideration, the consideration of streamlining procedures to foster error handling, contractual intent and contractual formation remains imperative. With such a strategy, it is possible to ensure that smart contracts not only appraise a short-term streamlined process but also becomes legally sustainable over time.

With the surge in concerns regarding data privacy and security when using digital platforms and systems, similar concerns have barred smart contracts implementation. Such a matter transcends the fact that compliance with data protection regulations of smart contracts has not proved satisfactory. Commercial contracts present extremely sensitive pieces of information of parties involved and blockchain's immutable nature cannot be overlooked (Lee& Khan, ٢٠١٩). By exchanging sensitive information between parties, smart contracts fall short of regulatory provisions such as the EU's General Data Protection Regulation (GDPR) which demands total compliance to data safety and protection measures. Specifically, GDPR grants individuals the right to affect the erasure of their personal data from affiliate systems and platforms (Rostad& Koenig, ٢٠١٩). Given smart contract's immutable nature, data shared on the

platform falls short of the requirement since deletion attempts do not guarantee permanent erasure of already shared data. Personal data linked to financial transactions for parties involved in commercial transactions present a key target for scammer\s and other malicious parties hence jeopardizing both the safety of the commercial activity as well as participants' personal data. At the same time, coping up with the evolving regulatory requirements poses a serious challenge for an encoded blockchain system (Gucciardi, ٢٠٢٣). The technical complexities compromise the overall compliance as the safety measures cannot be assessed based on existing legal framework. Such a matter implies that a more thorough approach to assessing the smart contract systems should be adopted before embarking on the implementation journey. To effectively address these legal and regulatory challenges, concerted efforts by developers and legal professionals should be enhanced to ensure effective implementation of smart contracts.

Impact of Smart Contracts on Cost Reduction and Expedited Enforcement Procedures

Smart contracts offer a range of impacts in terms of cost optimisation as well as speedy and simplified procedural processes. Because of blockchain's inventive character, smart contracts have been developed and we are at the turn of the corner with a new generation of greater efficiency and lower costs in many sectors. The most significant of its numerous admirable effects include the effort to do away with the previous support function of middlemen like banks, law firms and notaries. There are many other implications of this, especially in the area of cost savings in enterprising transactions. This kind of mediator has traditionally created something of an impediment to business dealings due to their mission of affirming and executing contracts, ensuring its completeness and minimal risks. Even though this scenario results in lower costs and time delays, there are many financial and time penalties tied up with these middlemen based system. Trots are taken for document certification, banks charge commissions for processing and verification of transactions and attorneys to have their legal advice and contract drawn up. Furthermore, a cascade of delays, which is common to the serial process of the traditional transaction mode involving many intermediaries, also complicates the workflow and contributes to the aging of the process, which makes it more expensive and inefficient.

Smart contracts, on the contrary, go a step further in the use of a decentralized pursuit that changes conventional all these. The smart contracts with blockchain technology filling in the role of cutouts on account of the predetermined

situations that will activate the contracts are making it possible to automate and execute contracts. The automatic exchange of digital assets leads to the circumventing of the intermediates so that not only the cost, but also the delays are reduced greatly. Smart contracts fall within the category of decentralized systems which as their name suggests can be programmed to execute transactions autonomously thus operating without any input of human or outside authorities. The smart contract arranges the business dealings of the parties by automatically implementing the code which is complexed to such an extent that it meets the predefined conditions of the contract. Santis Sargan, as per the ٢٠١٩ study, the level to which automation is possible kills the risk of errors and disputes related to manual contracts, while in the meantime quickens the process of deal-making. In addition to that, because smart contracts are based on blockchain and thus are safer, nobody can get around it since it is an immutable record of those transactions. This transparency, in turn, reduces the risk between the parties to the transaction, and expenses serving as risk-mitigation techniques are no longer necessary. All the repational data is placed in a blockchain which declines the chances for contract disputes and puts in place an irrefutable string of transactions, that improve the accountability and make legal process easier.

Smart contracts simplify the especially transacting, resulting in considerable cost saving for instance, the removal of middlemen. Blockchain technology extends the processes involved in digital contracts by removing the need for intermediaries such as banks and solicitors. The next step in blockchain technology consequently reduces the need for

these intermediaries because transactions can be done directly between participants (Zheng et al., ٢٠١٨). Considering the fact that middlemen rarely exist in trading of cryptocurrencies, the trader is likely to earn much more from the saved fees. Banks collect fees for transaction authorization and verification; lawyers also charge for the preparation of legal contracts and enforcement of legal procedures. Smart contracts ensure this benefit as it makes businesses able to spend zero on all these transaction fees thus the transaction fees are drastically of low amounts. Also, the quickness and simplicity of transactions is shown by the broadened features of contracts which enable the fulfilment of contractual tasks without human involvement. Through the use of built-in predetermined criteria, smart contracts have the criteria encoded into the contract (Varbanova, ٢٠٢٣). A fulfillment of such conditions is all sufficient for triggering the that subsequently conduct the agreed upon transactions. The time and resources are less because this automation becomes the mechanization for which most of the parts of the whole process from agreement to execution are simplified. As compared to traditional contracts where human interference is almost impossible to eliminate, smart contracts allow automating the deal execution process from start to finish. These are the areas where the robotics can be helpful. As just fewer people are needed, the costs associated with human labour and supervision are reduced, and the time is saved.

The natural qualities of blockchain technology such as traceability and truth make operational costs low and its performance excellent (Mik, ٢٠١٧). With respect to the fact that blockchain is a permanent record, it favors transparency

by providing all important players access to similar information even during the process of transaction. It is because of the improved confidence that emerges due to full transparency in the community that such costly risk management strategies like auditing or insurance are no longer required. Blockchain-based smart contracts allow the organisations to get rid of the high costs associated with the administration and execution of the contracts (expenditure optimization) which contribute to less expenses (Sklaroff, ٢٠١٧). It is done simply by making human interventions less important in the organization and the operations system as much as possible. Smart contracts invoke a new paradigm regarding performance speeding and cost reduction, thus, making an important step forward in comparison with the existing enforcement system. Unlike traditional cases that consume a lot of time and money, smart contracts don't require lengthy lawsuits to operate but instead cosume just a small amount of time to execute. This is one of the most widely retained strengths of smart contracts, where they make it possible to execute instantly on either condition. This implies that the technology could play a role in situations where it is not practical or possible for humans to get involved in the legal enforcement procedures, and thus, it will relieve the human staff from dealing with such matters. As Savelyev (٢٠١٧) has noted, the enforcement process requires filing complaints, hearings and court attendance. The process usually consumes a copious amount of time and money. Through initiating swift and competent executions, smart contracts bypass the objective process, and thus, expedite the performance of legal cases.

By smart contracts we have brought to the front the

era of contractual enforcement which is innovative at its core as it offers a revolutionary alternative to the conventional processes executed via long trials and costly litigation practices. Smart contracts spin around this principal, i.e., the rationale behind their smart execution is that they perform on their own as the contractual requirements become valid. The core innovation of this system is twofold in that ١) it bridges the divide between human arbitration/suggestions & purely automated enforcement of contract obligations – enforcing the requirement of human involvement at certain steps of the enforcement process (Martinelli, Chauvenet, ٢٠٢٢). In the past it has been a complicated process to enforce the contracts which includes several legal procedures that take quite a times as well as substantial financial commitments. Typical punishment methods are complex ones: for example, starting the claim, next, legal procedures, and talking with the lawyers are only a few ones of these points. However, these processes may be broad-ranging and demanding and for companies are expensive and their assets are often exhausted. However, with the entrance of smart contracts, this environment is poised to undergo a significant departure. Instead of the goal posts being moved with the fulfilment of finishing line, smart contracts are intended to introduce an automated and effective way of contractual fulfilment that is not driven by the bias of human calls or unofficial committees. These smart contracts contrast with the traditional systems, as they do not require a human being to do the inspection and intervention periodically which could be the prior case.

The unique feature that smart contracts possess is the ability to have all the stipulated conditions included in the

contract itself rather having them bound to external conditions. Such contract programs perform operations by themselves in cases of fulfillment of certain conditions and rules as soon as the requirements are completed. Liquidating these entities thus does not require the participation of third camp which ultimately reduces the time taken and the amount of money spent on enforcement. Along the utilization of blockchain technology, a smart contract acts as a platform that leads to total transparency and is secured and where transactions are executed. As the ledger is not centralised, each of the exchanges will be stored safely and eludes tampering if some entity attempted to do so. Thus, the same kind of enterprises do not exist that would not make the selected order an inseparable and irreversible one.

To further increase the feeling of confidence among the partners, openness that minimizes the chances of discord and litigation is promoted. Besides that, smart contracts' immediacy made it possible to process transactions efficiently and quickly which was not like the complicated process and delays when transactions were carried out using traditional methods (Varbanova et al, ٢٠٢٣; Gucciardi et al, ٢٠٢٣). The intelligent contracts ensure that the task completion is done within the stipulated time, for instance transferral of money, assets exchange and contract fulfillment, and therefore feasibility and cost of operation have been improved. In an article by Sanz Bayon dated ٢٠١٩, he comments that commercial contracts provide an easy, reliable, and economic substitute for the old-fashioned ways used previously, hence revamping the world of contractual execution. The smart contracts aim at offering businesses a way to channel through the complexities of

agreements, speed up procedures and eliminate human error, so that they can see the results with clarity. This in turn boosts productivity as well as enhances innovation in the modern business environment which leads to the rise of the product quality. Terms of contracts are laid out in the smart contract so that once the requisite conditions are fulfilled, it will automatically trigger the transaction without any human involvement (Nzuva, ٢٠١٩). Besides the speed of implementation that allows to avoid legal and time-consuming concerns this also elevates the effectiveness and cuts-down related unnecessary costs.

Besides, the combination of smart contracts' autonomy-based characteristic together with the transparency and immutability of blockchain disappear the disputes settlement processes. Smart contracts provide transparency and assuredness through their immutable record of the parties' interaction which are being posted on a distributed ledger (blockchain) [Pilavci, ٢٠١٩]. The ability to utilize blockchain technology to create smart contracts helps to hasten the process of dispute resolution, as this technology not only is immutable, but it is also transparent. Using both the blockchain technology and the smart contracts underlie tamper-proof, transparent, and expressive guideline for certifying and validating the data that have caused conflict in a business, thereby replacing the traditional dispute resolution. One of the primary smart contract attributes is its auto-execution capability, which makes the contractual terms be performed as long as criteria are met. This match of these two features with the properties and deletion blockchain leads to its significance in the rule of the resolution of disputes. Smart contracts are the way

agents can open and make available a field for transitional conditions of parties and recording this information on an immutable and decentralized blockchain ledger. The fact that blockchain enables transparency of information is the reason that people who are involved are able to see the same information and it cannot be changed. Due to the ability for all parties to verify the smart contract conditions put in place individually, this transparency removes any of the inevitable ambiguity and issues that could surround conditions of the contract. The use of smart contracts decreases the chance that the contract will be disputed because of a variety of possible interpretations of the terms agreed upon, as such records play as an irrefutable record of conditions of the transaction that is not open to different interpretations. A smart contract omits long drawn-out court cases and tiresome evidence collection that is associated with traditional dispute resolution mechanisms but gives a clear and verifiable transaction trail (Luu et al., ٢٠١٦). The fact that records in the blockchain ledger are linked on a time line may help resolve the dispute as the two sides can look at those events that triggered this conflict. It enhances this transparency and enables parties involved to connect more thus shaving off efforts and time spent to mediate conflicts.

Required some additional ingredients apart from the legitimacy and integrity of the transactional data as is needed for building confidence from both parties and the contractual compliance. The impartial blockchain-powered smart contracts help to establish the transparency and prevent data reconciliation when businesses deal with each other (Bhargavan et al., ٢٠١٦). This lies in the immutability of a blockchain based data set, which is responsible for the trust

of a smart contract in negotiating and taking responsibility for the underlying terms of contract. Through its approximably faultless transaction recording, blockchain technology wherein this offers unmatched security, transparency, and trust from decentralization and distributed ledger systems. Irreversibility is another important characteristic of a transaction in blockchain. A transaction cannot be in any way changed or removed after it is submitted and confirmed by the network, and therefore saved in blockchain. Businesses will see some amazing positive outcomes in regard with honoring contractual duties whilst adopting blockchain and smart contracts. They can alleviate the hassle and risks usually coupled with long-winded procedures and exorbitant professional fees by employing ١٠٠٪ solid and verifiable transaction records. The smart contracts carry out enforcement through their automatic contracting creation and the transparency and immutability of the transaction records, which speed up the process of enforcement, thereby saving time and money related to the dispute resolution. Besides, smart contracts' accelerated enforcement procedures are saving the companies on extra money which is historically spent on costly legal actions and, thus, the process of dispute resolution is becoming more effective. A smart contract can simply be called 'the economy and the fast process followed by the replacement of this middleman human error', by significantly removing the need for this intermediary services. As Giancaspro (٢٠١٧) remarks, the attribute of immutability ensures that the contract data is always reliable, while it becomes the verifiable and trusted way of keeping the records for all conditions for the concluded contracts.

Smart contracts absolutely benefit companies, and the degree of this benefit impacts execution of the innovations that would spur the present dynamic nature of business sector. A smart contract of blockchain and blockchain database are two technologies for which businesses can conduct and enforce contracts as well as have a stable and reliable framework to operate on. The Supremacy of Smart Contracts for business and its benefits in term of efficiency and cost of settlement is certain while the disputes and legal problems were lowered by guaranteeing the truth and integrity of transactional data. Smart Contracts as an emerging prominent electronic tool allowing companies to reach for innovation and proceed transaction is more relevant given the rising tendency of the old-type economy turning into a digitally augmented one.

Conclusion

In a world where commercial activities have taken a more multinational and oversees operational approach, the contractual agreements have also evolved drastically. Drawing from the points above, smart contracts present a paradigm shift in commercial contracts particularly in streamlining contractual processes. Given the evolution is other spheres and sectors of the economy due to technological advancement, the legal landscape has braced itself for a more technology-oriented operation. While the process may seem seamless, the adoption of smart contracts presents multiple legal and regulatory hinderances. Specifically, the apparent struggle between traditional legal frameworks and emerging concerns makes it difficult for the effective implementation of the blockchain technology in multiple fronts. However, the growing research and judicial inquiry into the technology's transformative potential is key in enhancing efficiency, cost minimization and alignment with modern commerce requirements. As individuals and organizations become more inclined to modern operational models, the court system must also evolve to embrace these changes. At the same time, disputes have remained inevitable in commercial transactions and the rising concerns regarding the legal and regulatory provisions on the use of smart contracts cannot be overlooked. The coding of the systems must also be made in a way that facilitates easy detection of faults across the system as well as the consideration of formal verification methods that align with existing legal frameworks to avoid unprecedented occurrences. By establishing a more robust framework for improving compliance and overall operation of smart

contracts, the move can provide businesses with agile and confident options for manoeuvring the digital terrain. The global discourse is ever-evolving and the rigidity of laws, particularly on commercial grounds should be reconsidered to ensure that it is not exempted from the broader system. Such an inclusionary motive ensures that commercial contracts are systemized into digital systems hence fostering a holistic approach to justice. In conclusion, smart contracts present high potential for diversifying and making commercial transactions more efficient hence the need for its proponents to re-address the legal and regulatory concerns for streamlined operations.

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