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Blockchain Revolution: Intensifying Data Protection and Privacy in Block Chain Based IPR Systems

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Abstract:
Blockchain Technology, also known as Distributed Ledger System, collects the data stored in enciphered blocks, which are closely linked to hash pointers. These hash pointers, links one block to another, which together forms a chain, known as the Block Chain.
Blockchain and any other form of distributed ledger technologies, creates a trustworthy and a transparent record, by allowing multiple parties to a transaction to substantiate what will be entered in the ledger advanced.
It has a multi-faceted utilisation, where it can reserve and protect any type of data and can also, encrypt the Data in stored in Independent Data Blocks. These chains have an unaccompanied and unassisted time snaps, which secures the indivisible data, collected from consumers. This distributed ledger technology, creates a secure, time-stamped and immutable chain of information, which prevents counterfeiting and ensures that, the IP systems, are properly being traced.
Blockchain, also supports smart contracts, which are self-executing contracts with the terms of the agreement directly written into code. Smart contracts can automate the licensing and royalty payments for IP, ensuring that creators are compensated fairly and transparently.
It also facilitates the creation of decentralized marketplaces for buying, selling, and licensing Intellectual Property. Thus, this reduces the need for intermediaries and can also lower transaction costs, which increases the access to IP for potential buyers and licensees.
Therefore, where a particular society is adapting up, to explore the unexplored, protection of Intellectual Property by using Blockchain, could play a vital role in the development and expansion of the Indian Economy.
Thus, This research paper, aims to spell out the role of Block Chain technology, in protecting the data embedded in Intellectual Property Rights, which ensures to create a secure, transparent and a decentralised protection, for Intellectual Property Rights.

Keywords: Blockchain, Distributed Ledger System, Independent Data Blocks, Unassisted Time Snaps, Decentralised Marketplaces, Development and Expansion.

Background:
Blockchain Technology[1], has made far reaching changes in how the data is stored, managed and secured.

[1] The first major use of Blockchain Technology, has occurred with a creation of Bitcoin, in 2009.

Blockchain has transformed how the data can be secured for sharing IOT applications, which primarily focuses on Anonymity, Accountability, Transparency and not sharing the data with other third parties.
In addition, Block Chain inspired mechanisms, are ensured for a tight Data Processing systems, to provide Immutability and Protection against unauthorized data protection systems.
A stable Intellectual Property, requires a strong, well-built, secure, indestructible and an un-ascribable maintenance of records of Intellectual Property rights.[2]
Currently, the flawless rectification of data and its' continuous re-consideration, poses a substantial challenge.
With the advent of Blockchain, IT offices, can be benefitted by using these technologies, in the record keeping of IT registers.
The durability, constancy, solidarity, certainty and other federated features may be used throughout the life cycle of registration, of Intellectual Property like licensing, contractual agreements and enforcement.
Thus currently, Blockchain is used for the following activities.
It can confirm ownership, by providing a timestamp. IP holders and proprietors, keep Hashed Digital Certificates, De-centralised money, Smart Contracts[3] and innumerable, various data designs, in block-chain, to prevent it from counterfeiting and various attacks.
The data divide the in Intellectual Property System, which is maintained and taken care by the Part-takers, Contenders and Share-holders, whereby it does not require any Third-Party Interference. The conventional method for the protection of Intellectual Property, has already been prone to innumerable problems like Network Security Disruption, Slower Processing Systems and Repository Hitches, which makes it even more strenuous to provide an assurance that, the existing data that has already been stored is not prone to any attacks. Thus, blockchain helps not only in the help the minimization of litigations, by protecting the data, but also helps in the verification of correct ownership.[4]
Blockchains, can also ameliorate and bring together IP management effectiveness and foster the distribution of information, through ledger. The categorisation, arrangement and filing of data, can be done in a First to File regime[5], whereby it initiates the improvement of any database, and stamps out, the need for mediates and agents.
IP offices maintain records, either electronically or through documents. The records are well maintained by using Blockchain, whereby it ensures the authenticity and the genuineness of the data provided.These documents, are of an utmost significance and contain a significant corroborative value. It further provides an assistance, in the detection of forged, copied or pirated versions of various IP records. Thus, Blockchain

By Gupta Vinay, A Brief History of Blockchain (February 28, 2018, Harvard Business Review) https://www.sciencedirect.com/science/article/pii/S0267364918302218?casa_token=6TBcDlHP4iMAAAAA:QFmOkbpv_QNCM3j27h_N7CZJ0c_WHpsY7t6zXAz_RZUto5saIILcm-UbB5O6uw3SQi8wE1a9cDQ

[2] The emergence of projects like Ethereum, has made bitcoin more accessible and has made it easier for the public to use. Also, Ethereum has made the incorporation
For further reference, refer Article by Ethereum Foundation, https://www.ethereum.org/foundation.

[3] Also, Ethereum has made the incorporation of Smart Contracts, much more easier and convenient, which can solve, all sorts of reasonable and computational problems. By Hildenbrandt, Everett, Saxena, Manasvi, Zhu, Xiaoran, Rodrigues, Nishant, Daian, Philip, Guth, Dwight, and Roşu, Grigore, KEVM: A Complete Semantics of the Ethereum Virtual Machine (August 17, 2017). Refer https://ebooks.iospress.nl/volumearticle/46789

[4] Individual users, do not manage databases. Blockchain Schemes, allow users to manage their own information, within a Blockchain, without relying on a major company. Refer https://www.1kosmos.com/blockchain/blockchain-verification/

[5] First to file regime applies to Patent Applications, which means that, whoever is the first party to file a lawsuit, that creator has the Right to Claim the Patent. For further information, refer https://www.patenttrademarkblog.com/first-to-file-patent-rule/

thoroughly ensures that, whether the data maintained is correct or not, by real time record updation.[6] Blockchain reserves data in a distributed ledger[7], that utilizes to record, share and synchronize the transactions. Thus, either the originator or creator, could place their inventions, where it could be used as a compilation of various IP databases.

Smart contracts are Self-driven contracts[8], where the terms of agreement between the Buyer and Seller, are directly written into the code and then, they are registered through Blockchain, which will be immensely useful in authorising of contractual agreements, whereby these contracts can also lower the possibility of infringement, ensuring that the proprietary rights are thoroughly recorded. It also provides an assurance that the creators or inventors, to get compensation, so that the unchangeable records are transparent proof and helps to settle down disputes, in a convenient manner.

These Smart Contracts, also provides a Unique Identification Number[9], where it quickly helps to validate and also verifies the legitimacy of products, which also safeguards against the consumers. It enables a brand identity protection,[10] whereby it provides a distinct representation of digital assets. It also enables to monitor, of how a patented technology, can be used

Litreature review:

In a research paper titled, "Blockchain and Intellectual Property Rights – A Symbiotic Relationship", written by Enyogenkere Grace Esu, Babalola University, UAE. It has elaborated the role of Blockchain, where it said that Digital Assets such as Patents[11], Copyrights and Research Publications, there is a requirement for multiple assets during its' lifetime and a requirement and to connect these multiple assets, is where the role of Blockchain comes in.

Blockchain, connects all the digital assets, where there is a linkage that is created, by using all the digital assets by the ledger technology and potentially use it for an end to end life cycle or the maintenance of such asset. Here, irrespective of the IP systems, whether either it is Trademarks or Copyrights or Patents, it needs to be registered.

[6] Real time updates, refers to the instantaneous distribution of information, it ensures that the end users receive the most recent data, without noticeable delays. For more information, refer https://taggbox.com/glossary/what-is-real-time-update/#:~:text=Real%2Dtime%20updates%20refer%20to,access%20to%20the%20latest%20information.

[7] The main advantage of Distributed Ledger Systems is that, is its ability to minimize Time-Consuming or Error Prone processes, whereby it works on the Principle of Decentralisation and operates on a P2P (Peer to Peer) network, where multiple ledger nodes, stores, validates and updates the ledger simultaneously. For further information, refer https://www.techtarget.com/searchcio/definition/distributed-ledger

[8]By creating a Smart Contract, the parties of the contract, can no longer have to trust the other party, for the breach of obligations of the contract, nor they have to have an Intermediary Party, to create Trust or enforce the Rules of Contract. Once the parties accept the Mutual Agreement, the implementation of contract begins, where the Transactions are Blockchain based ones.

[9] Assigning Unique Identifiers to participants of Smart Contracts, ensures that the contracts operate with precision, automatic transfers such as Token transfers, Payments and Conditional Transactions.
For further references, refer https://blockchainmagazine.com/ways-to-utilize-uid-in-blockchain/#:~:text=UIDs%20are%20integral%20to%20the,%2C%20payments%2C%20and%20conditional%20transactions

[10] UIs', streamline Know Your Customer processes, while maintaining the privacy and security of Personal Information. For more information, refer https://blockchainmagazine.com/ways-to-utilize-uid-in-blockchain/#:~:text=UIDs%20are%20integral%20to%20the,%2C%20payments%2C%20and%20conditional%20transactions

[11] These contracts are broadly classified into Non-Fungible tokens, which refers to Unique and Non Substitutable properties, whereby it can promote Transparency and Liquidity, in the Open Market Innovations. Also, the first NFT was Ethereum based, developed in 2017, by Larva Labs. The first NFT projects were Crypto Punks and Crypto kitties Project, where Crypto Kitties project was launched to provide protection to Blockchain games. For further reference, refer to https://www.nature.com/articles/s41598-022-05920-6

But as there is either only little or no protection granted, for the unregistered IP's, blockchain provides a decentralized ledger, for the protection of the IP rights. Also, Blockchain proves to be useful for Anti-Counterfeiting measures, where there lacks a traceability and source, from where the IP products are actually supplied, through the form of a chain. Thus, to prevent counterfeiting of various types of IP, manufacturers add their original IP which can be scanned by using Blockchain Technology. The products are connected either through Blockchain Connected Cards or Tamper Proof Seals. Also, only the authenticated participants, can be able to access various Blockchain Technology methods.

This research in detail, also elaborates about certain limiting factors of Blockchain, where there is a lack of awareness, or where there is a lack of understanding, of how it works. In other words, there is a common general public, is not having a clear-picture or a clear idea, of how a blockchain works.

Therefore, there is a requirement, for an improvement of the overall user experience. But as compared to before, Today, blockchain has improved, and has been much developed, more quickly, than what it was previously there.

Also, as Blockchain follows a standard method, it acts an obstacle, for the emerging developers and investors, where their rights are to be infringed on. Thus, in conclusion, even though research paper enumerates the fact that Blockchain Proceedings are highly Expensive and Time-Consuming, it provides an aid or assistance in the easy resolving of disputes. Licensing Agreements also paves a path for Smart Contracts, which is created on record and provides a way for Real-Time-Ledger.

In a Research Paper written by Anne Rose, titled "Blockchain: Transforming the registration of IP rights and strengthening the protection of unregistered IP rights" published on July'2020, it enumerates about the various advantages and disadvantages, on how the Intellectual Property Rights could be protected and the various advantages of registration. It also elaborates about the issues of registrability. For example, if it is a design [12](To be registered under the Designs Act, 2000) firstly we must see whether it is a new or an original design and then whether, does it have a separate distinct character or not. It emphasis on the point that, where the marks could be identified whether it is distinctive or not, completely depends upon its' usage. Later on, if the necessary changes were made for the actual use of trademark and then be registered on the official register. In other words, it says that, in what ways it conveys an overall impression or, the overall impact that is created or formed by the design, is different from the other designs in marketplace. Currently, the Design View Application and EUIPO (European Union IP Office) scrutinizes and checks the structure and stature of designs. If there are no protestations and objections raised by the registry, then the Design rights, may be registered from the date of application.

Also, A Blockchain based entry can only upload Rights Management Information as a Time Stamped Entry[13], only if any Trustworthy Authority or any Trusted Party as such as where an IP office, or where a collective management, or an organisation is involved.

In the research paper titled "Blockchain Technology and Intellectual Property Rights", by BP Singh and Anand Kumar Tripathi, (on 17th May'2019), elaborates about the technologies and various possibilities, that it offers for various IP regimes and the other possible applications of Blockchain.

[12] For design thinking process, it is a Six stage Process (Understand, Observe, Ideate, Design, Prototype and Trust), which is used for the Organisers, in Fact finding and Decision Making and the outcomes are then, linked to the creator.

[13] Time-Stamping offers a decentralised and a secured means of keeping a track of the manufacturing processes. The company that produces the said equipment can observe how the maintenance work, was carried out.

In other words, this paper explains about how a strong blockchain could strengthen various IP regimes, ensuring and verifying about the correctness of data. Once the data is corrected, its' Genuinity and Authencity,[14] shall be verified.

A strong and a verifiable data, helps in verifying the IP rights. It helps in the synchronization of external data with the internal one, whereby it provides a consolidated platform, for syncing of Patent Literature. Also, this paper has mainly elaborated about how the nation has been benefitted, by Blockchain.

It poses a great advantage to the Micro, Small and Medium Enterprises (MSME's) to invest in their resources, (free domain) without their rights being infringed and verifies, whether the existing data entered is correct or not.

It has also elaborated on how the Government has enhanced blockchain. For example, Currently the organizations like NITI Aayog, provides for an entrepreneurial support, where it explores the use of Blockchain, in diverse areas like Education, Health-Care, Agriculture and various Wellness programs, whereby a separate institution was formed, which was called as the "Indichain", featuring one of the world's largest blockchain implementation.

Moving forward, the organisation has also released a paper discussed on panel by National Strategy for AI. Therefore, apart from the Central Government, the State Government has also shown its' enthusiasm, for bringing a transformative change in the Blockchain governance.

New Organizations like NASSCOM (National Association of Software Services and Companies), have also been formed, by the advent of Blockchains. Thus, in conclusion, this paper declares that, the sooner the IP offices start to implement Blockchain Technology, their work would become much easier.

In the research paper, "An overview of Blockchain Technology, for Intellectual Property Management", which was written by Ikram Ashgar, Oche A Egachi and Mark G Griffiths published on, it has been elaborated about the Distributed Ledger System, which is essentially a decentralised database, with no central administrators.

It is usually maintained by multiple persons, having a system of challenges that are faced by using while implementing protection for Intellectual Property, by using Blockchain.

Most of the Blockchains, requires converting IP into a hash key, distributed ledger. Thus, the fundamental problem by using third party services, is the authenticity of information, that is entered during registration. Furthermore, this research paper has provided for a detailed elaboration on Third Party Applications used for the protection of IPs', like Binded, Proof of Existence and Brienstein.

Binded,[15] is a Third Party platform for IP management, it creates a unique fingerprint for each image, that is stored in the vault and permenantly stores them in the vault. Also, once after registration, they provide a Copyright Certificate, which prevents them from infringement. Also, this paper has elaborated about the various challenges, that is currently being faced, by the usage of Blockchain.

Proof of Existence[16], is carried out by storing a Document's Fingerprint and it is embedded in the Bitcoin, to certify the document. The transaction is carried out, by generating a Unique Bitcoin Transaction, that contains the print of the document.

[14] A secure addictive manufacturing platform (SAMPL), was proposed to enable a Transparent Chain of Trust.

[15] They have claimed to have grown over 15,000 members, before being brought by Pixey, which is a mission, to Protect Copyrights, for Artists.

[16] In practice, Decentralised Proof, cannot be erased by anyone, as it is Anonymous and others cannot identify your Data. For further Information, refer https:// hwww.pluralsight.com/resources/blog/guides/proof-of-existence-in-the-blockchain-with-tierion-rethinkdb-and-pubnub#:~:text=Using%20the%20blockchain%2C%20you%20can,identify%20you%20or%20your%20data.

On the other hand, Bernstein[17] allows content creators, using the National Timestamping Authorities, where the platform provides for any Existence, Ownership and Content Development of any Asset. This platform enables Proof, by chaining the Certificates of Creative Processes Together.

First comes out the Authentication Problem, where it states that the Fundamental Problem of Blockchain of Third Party Services, lies in its' Authenticity of Information, which has been entered through registration but does not belong to the Blockchain native, cannot be assured a Blockchain. (Also known as, Garbage In, Garbage Out Problem).[18] Thus, until Authentication has been resolved, the Practical Application, can only be via through a Transmission of Networks.

Next, arises the problem of how to record and Transfer the Ownership[19] of Network. There is a requirement of Blockchain, to Transfer Ownership, without any Trusted Third Party or any Piracy Issues.

Furthermore, it has also elaborated about the Royalty Stability Problems[20], where several Third Parties, manage the uses of Physical and Digital Intellectual Property.

Research Problem:

Blockchain Technology, is used to create a secure, transparent and a decentralised system, for the protection and enforcement of Intellectual Property Rights by enabling reliable Provenance Tracking, Automatic Licensing and an efficient Cross Border Licensing management. The legal perspective on Blockchain Technology in India is evolving as India continues to assess and adapt its' regulatory frameworks, to accommodate blockchain innovations, while currently addressing it with the associated risks. Blockchain, has a widely recognised potential, especially in the registration, securing and enforcement of various IP systems. Despite the establishment of Blockchain based specific organisations like RBI and SEBI[21] which allows testing of Blockchain, still there are various potential Legal challenges, Jurisdictional and Cross Border Issues, that actually arises from its' implementation. However, its' decentralised and pseudonymous nature, poses a unique and regulatory challenges, especially within India's legal and regulatory landscape.

Research objective:

This research paper aims at a comprehensive understanding of the current framework of blockchain technology and its applications. The main objective of the research paper, currently focuses on addressing of the current issues in Blockchain and mainly, what major improvements, could be made in the existing legal and ethical scenario.

Research questions:

1. What role, does Blockchain Technology play, in the strengthening of Intellectual Property Rights and how can it be integrated with the existing IP laws?

[17] Bernstein, has a unique experience in Cryptography, where it was first introduced in 2007. For further information, refer to https://www.bernstein.io/how-it-works#:~:text=Therefore%20Bernstein%20is%20a%20new,proven%20cryptographic%20primitives%20and%20protocols.

[18] Usually, where the Blockchain is not authenticated, such method is followed.

[19] Smart Contracts, are transferred, based on Trust. For more information, refer https://www.expresscomputer.in/guest-blogs/revolutionising-property-transfers-how-blockchain-is-streamlining-processes/114683/

[20] Evaluvation of Payment of Royalties, is done in three types. Cost based, Market based and Income based.

[21] Notification of SEBI https://www.sebi.gov.in/media/press-releases/apr-2022/sebi-issues-operational-guidelines-for-security-and-covenant-monitoring-using-distributed-ledger-technology-dlt-_58133.html

2. Whether the current system of existing Indian Legal scenario, completely addresses the legal compliance of Blockchain technology?

Research method:

This research paper has drawn data from secondary resources, where it has drawn data from primary resource. The empirical research that was conducted by the other authors, serves as a secondary data. The laws that are used for analysis, serves as the main base for the paper. Thus, the sources are gathered are from reputable literature resources.

Research methodology:

In this paper, the author has opted for a Non-Doctrinal Research, to understand and explore about the concepts of Blockchain Technology.

Case Laws:

Blockchain, from the Indian Legal Perspective, it is still evolving. But, In other nations, cases have been filed, with respect to the laws.

In United States:

SEC v Telegram Group Ltd.,[22]

United States District Court, Southern District of New York(2020):

The Telegram Group Ltd., has developed the Telegram Open Network (TON) Blockchain and issued it's cryptocurrency.

Grams, through a private sale,[23] accredited investors in 2018. It raised funds about $1.7 billion, through these sales, for the development of the Blockchain Fund. These sales were conducted through a SAFT(Simple Agreement for Future Tokens) network. SEC, filed an enforcement action against Grams saying that it the securities are unregistered and results in violation of the Securities Act of 1933.

The main issue that was highlighted:

Whether Grams were Securities?

Grams were proven Investment Contracts (Securities) under the Howey Test, which was proven in **SEC v WJ Howey and Co.,**[24] and therefore, must be registered as Securities.

Decision: It was decided by the Court that, the Grams were Securities under the Howey test and thus, the investors purchased TON, with an intention of securing profit from them. The court also issued a Preliminary Injunction, which prevented Telegram, from distributing Gram.

Thus, telegram was made to pay a fine of $1.7 billion sale of Gram tokens, with an initial offering.

Similarly, In **Sec v Ripple Labs Inc (2020)**[25]

The US Securities and Exchange Commission, alleged that Ripple Labs, along with its' executives, Brad

[22] United States District Court, Southern District Of New York, 2020.

[23] Grams are a cryptocurrency Blockchain, whereby it is the first Proof of Work(POW) jetton, provided on Blockchain. For example, CoinEx, is one such jetton. For further reference, refer https://www.coinex.com/en/blog/8563-gram-the-pioneering-proof-of-work-jetton-on-the-ton-blockchain

[24] 328, US 293(1946)

[25] 20, Civil 10832(AT)

Garlinghouse and Chris Larsen, raised over $1.3 billion, through unregistered securities, offering by selling XRP tokens.

Also, specifically SEC argued that, Ripples sale of XRP, constituted an unregistered securities offering, which also resulted in the violation of Sec 5 of the Securities Act of 1933. The Court ruled that, Ripples' direct Sale of XRP, to institutional investors, were unregistered security transactions.

These transactions, create an expectation of the profits derived from Ripple's Efforts, meeting the criteria of Howey Test. Also, Ripple's Programmatic Sales on XRP, on Cryptocurrency Exchanges, were not classified as Securities.

The court reasoned that the buyers in these transactions, were unaware of Ripple's involvement, as it did not involve an exchange of money or investment, with an expectation of profit.

Thus, finally Ripple was fined with $125 million, for violations relating to institutional sales. A permanent injunction was issued, bearing Ripples from further violations, of Sec 5 of the Securities Act.

Thus, these rulings provided a transaction specific framework, for evaluating whether Digital Assets are securities or not. Also, it highlights the need for a clear regulatory guidance.

In **CFTC v My Big Coin Pay,**[26] it alleged that My Big Coin was involved in fraudulent activities, related to the sale of virtual currency called as "My Big Coin", which the agency classified as a commodity under the Commodities Exchange Act.

It accused the defendants, by mispresenting My Big Coin, as an actively traded asset on established exchanges. Also, the defendants argued that My Big Coin was not a commodity and therefore, CFTC lacked jurisdiction over the activities of its' operation. The court allowed CFTCs' claims of fraud to proceed, asserting that the agency had jurisdiction over the case.

Therefore, this ruling classified that CFTC has authority over virtual currencies, even if they do not directly involve in future contracts, as long as they belong to the broader category of communities.

In **United States v Harmon,**[27]Harmon was charged with operating an unlicensed money transmitting business, under Helix, which was a bitcoin "mixer" or "tumbler", whereby this service was designed to anonymize bitcoin transactions. Also, prosecutors alleged that Helix was used to launder more than $ 300 million worth of Bitcoin, often in connection with transactions with Dark web.

The government argued that, Harmon facilitated illicit activities, such as Drug Trafficking, through Helix. Thus, Harmon was eventually pleaded guilty to money laundering conspiracy charges and he admitted that, Helix had been used to transfer illegal funds, including Drug Trafficking.

In **Commodity Features Trading Commission v McDonnell**,[28] it demonstrated that, privacy based Blockchain tools may face legal challenges, if perceived as tools, for illicit activities. It also argued that, McDonnell solicited funds from the customers, under the guise of providing expert trading advise and misappropriated those funds. Therefore, this case highlighted that CFTC has jurisdiction, over cryptocurrencies such as commodities, solidifying its' key role as a regulatory body in US. Thus, this case underscored the need for transparency and compliance with legal standards, in cryptocurrency related activities.

[26] Civil Action No. 18-CV-10077, 29-10-2020.
[27] 474 F. Supp. 3D, 76.
[28] 18-CV-0361.

In Europe:

ACCC v Blockchain Global Limited (2022):[29] it involves allegations of Deceptive Conduct and Fraudulent misappropriation of user assets by Blockchain Ltd., which operated the Cryptocurrency Exchange.

ACCC pursued legal action against Blockchain Global, asserting that the company failed to safeguard its' digital assets and by breaching trust.

It was further alleged, Blockchain changed its' terms of service and to distance itself from the exchange.

Therefore, the SC of Victoria, issued a freezing order on Blockchains' Global Assets and through this move, customers could potentially recover from the losses, if the fraud and misappropriation were substantiated during the trial.

Thus, this case underscores the challenges of holding cryptocurrency companies, accountable to jurisdictional complexity and asset volatility.

Blockchain from the Indian Legal Perspective:

In Singapore International v Quoine Ltd (2019):[30]

It argued that the trades were voidable, under the doctrine of Unilateral mistake, because the exchange rates were clearly anonymous. The court ruled that the traditional principles of unilateral principles could apply, but Quoines' claim failed as they had no knowledge of the mistake, when the trades were executed. The intention of the programmers' who designed the algorithm, was also taken into consideration.

Thus, Quoine was found to have held the cryptocurrencies assets on trust and breached the trust by reversing the trade, without any consideration.

The court held that Quione, breached both Contract and Trust and Damages were awarded instead of specific performance, given the high volatility of cryptocurrency prices.

Union of India v Internet and Mobile Association of India(2020):[31]

It was held that, while the RBI has a regulatory authority over their potential currencies due to their virtual payment systems, it has not provided sufficient evidence of harm, caused to the regular entities.

The circular was disproportionate, as it imposed a blanket prohibition, without considering less intrusive measures.

Thus, the court struck down on the circular grounds of proportionality, anoting that a blanket ban was unjustified, without empirical damages to financial institutions, as related to cryptocurrency.

Findings:

Authenticity and Immutable Proof of Ownership:

When an Intellectual Property is registered, a Timestamp is created Permenantly, where once the Data is entered into the Blockchain, it cannot be removed or altered, without the consent of the whole entire Network. This feature, makes the record of Ownership reliable and it cannot be modified. Also, Ownership Records on a Public Keychain, can be verified by anyone, making it easier for the Third Parties, to confer an Ownership, without relying on any Central Authority. Also, each digital asset, can be represented by an Unique Cryptographic Hash, where a code, is generated from that specific Asset's Data. Even a small

[29] 2020, VSC 92.
[30] B2C2 Ltd., SHC(I) 3, 2019.
[31] AIR 2021 SC 2720, AIR ONLINE 2020.

minor alteration to the code, would result in a completely different Hash Value, which evidently shows that the particular IP system, has been tampered.

Tokenization of IP Assets:
Before Tokenization, the Intellectual Property goes for a thorough review and the assets are separated into separate tokens, where the systems of IP resides. The possession, adaptability and distribution of tokens, are then regulated by Smart Contracts, where after a thorough verification, the IP rights are provided to the appropriate parties. Also, it opens up new revenue systems for content creators and artists.

Smart Contracts, for the license of IP and Royalty Payments:
The idea of licensing IP Rights, through Blockchain is appealing, as it removes the requirement, for any Third Party involvement or any other additional external support. The contract is a Self-Executing one, where the Terms and Conditions, controls all the terms and conditions of the contract. For instance, the code will dictate when a royalty payment is due based on the agreement and will send funds to the appropriate IP holder.

Challenges in Legal Recognition and Jurisdictional Ambiguity:
In India, there is no specific law that governs or directly regulates Blockchain. Even though the principles of Blockchain are implemented in SEBI and RBI, there is no specific legislation as to how to govern the Blockchain transactions. Also, Blockchains operate at an International Level, with Nodes spread across Multiple Countries, making it very hard to establish, a Single Governing Jurisdiction. Also sometimes, Jurisdictions vary on the standards to authenticate records. The particular Blockchain, needs to meet the particular standards, in order to overcome these ambiguities. Thus, developing International Global Standards, would overcome such difficulties.

Reduction in Counterfeiting of IP systems:
In Blockchain, there is a Corresponding Unique Identifier (like a Tag Number or QR code), which would verify the Product's origin. Thus, a consumer can scan the code, for verification of the Authenticity of the Code.

Valid Evidence, in IP infringement and Dispute Resolution:
Blockchain provides for a Time-Stamped Record, that is, where an Original work was uploaded, it can be shown as a Proof of Evidence. Its' timestamp, can be used to verify the Logo, Invention or Design, or any other information, at any designated moment.

Limitations:
Even though Blockchain Technology, proposes for a secured transaction of IP records, its' accuracy, relies on the input of initial data. If the transactions are recorded incorrectly, then it would become difficult to rectify, because of Blockchain's immutability. The fraudulent information entered, could be perpetuated, leading to potential ownership disputes that undermines the reliability of blockchain as an IP record.
Further, the protection that is given by blockchain, is immutable in nature, but it becomes problematic, while dealing with IP disputes like Data modification or Data removal. For instance, if any Copyrighted

material, is added to Blockchain, then it becomes difficult, either to modify or remove that particular chain, it rises compliance issues and also, handling of infringement cases becomes difficult.
Also, Blockchain is Highly Transparent and Publicly Accessible. Some IP assets like Trade Secrets, cannot be stored directly on the Blockchain, without a compromise on their secrecy. Thus, as there are constant tensions between transparency and confidentiality, it makes blockchain unsuitable, for certain types of IP protection.

Future Scope:

1. As Blockchain Technology is evolving, so is the demand to meet the Growing Legal Standards and Regulations, to govern its' use in Intellectual Property. This could also include Global Agreements, that recognises Blockchain Records, as a Valid Proof of IP Ownership, whereby Standardised Regulations, makes Blockchain, an Universally Recognised tool for IP Protection.
2. It also helps, in the tracking of Authenticity and Origin of Goods, whereby it helps in Prevention of Counterfeiting of various IP Systems.
3. It can also be integrated with other Technologies like AI and Iot, to create models for IP management, whereby this approach provides security and efficiency, particularly in Digital Spaces, where Multi-media content is accessed or shared frequently.
4. Blockchain's immutability, can serve as a Valid and a Tamper-Proof Evidentiary Record, which in IP disputes, whereby this can remarkably lessen the time, for Re-Solving of disputes.

Recommendations:

Some of the recommendations suggested are:
Encourage international IP offices, to adopt to Blockchain based compatible databases, that allows Cross-Border Transactions and Interoparability.
Implement a Standard Data, for the recording of Assets in Blockchain.
Establish Government based or IP office endorsed Blockchain Registries.
Enforce Smart Contracts and Secondary Sale Royalties, that allows Original creators, to receive Royalty for their works.
Develop International NFT Standards, specifically for IP assets, clarifying the Rights and Limitations associated with NFTs'.
Standardised NFT licenses, can indicate whether the buyers have received their respective ownership. Also, Legal Standards can help consumers, to avoid misconceptions.
Implement a Blockchain based IP Dispute Resolution Mechanism, whereby this mechanism could refer to disputes to a Blockchain based Arbitration Body.

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