Current Indian Judicial System: Issues and Blockchain Solutions

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Abstract Indian Judicial System is the strongest institution of the world's largest democracy. Its purpose is to give justice to innocent and punish the guilty. Yet pendency of thousands of cases is the matter of serious concern. Shortage of judges and infrastructure has been highlighted as one of the major reasons for the same. Undeniably corruption and counsel-side delays are other prominent reasons for prolonged delay. To mitigate such delays, there is a need for more accountable and transparent judicial system. This paper aims to overcome the current loopholes in Indian Judicial System with an application of blockchain system. The paper discusses sample issues faced by common man in court along with the alternatives available and provides blockchain solution as the substitute. This approach implicitly limits the advocates, agents, and court officials to exploit judicial system for the benefit of individual and culprits. The proposed system will help regain the trust of common man in the Indian Judicial System.

Keywords Indian Judicial System · Blockchain

1 Introduction

Nowadays, Bitcoin is the latest buzz in the payment system and has been a huge success in financial services. It is a decentralized cryptocurrency designed for the electronic transaction by Satoshi Nakamoto in 2008. All the transactions are recorded in a distributed ledger called blockchain. Blockchain is a continually growing list of linked records secured through cryptography. It is immutable and persistent [1]. These features of blockchain have made it a suitable technology for other domains including Internet of things, health care, identity management system, real estate and many more.

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Another significant yet ignored area of research is Indian Judicial System. Even though judiciary is a powerful tool, there are many loopholes in the existing system. All the players in the field, including judicial officials, advocates, police, and individuals, are exploiting these loopholes for individual benefits. It remains the very fact that, over a period of time, people have lost trust in Indian Judicial System. Pendency of cases for several years has been one of the major reasons for the same. A couple of crucial ingredients to stimulate the judicial process are power and money. A common man is generally devoid of both. Hence, Indian Judicial System is highly biased.

To overcome this sorry state of Indian Judicial System, blockchain is a very powerful technology. Inherent features of blockchain such as immutability can be used to make judicial process irreversible, undeniable, and unchangeable. This will expedite the judicial process to a larger extent. Officials will be accountable for any discrepancies. Secure transactions in the distributed ledger will reduce the malpractices in this field to a significant level. Persistency will help to store the record for a longer period of time and provide transparency. Accountability and transparency would hopefully expedite case proceedings, and hence reduce delay in closing cases.

2   Motivation

See Table 1.

Judicial system is the strongest institution in India. It not only provides the justice but implements the amendments and new laws passed by parliament. All citizens including actors, businessmen, politicians, saints and ministers come under jurisdiction and must abide the court order. Therefore, it is the most powerful system.

However, still crores of cases are pending in Indian courts. There are thousands of cases that are pending for more than 10 years [2]. It is the very fact that few people have lost their lives while fighting court case, struggled yet failed to get justice. Another important point to make note of is 80% cases filed are civil cases. Not surprising, then, World Bank's Ease of Doing Business ranks India at 77th position out of 190 countries [3] when it comes to enforcing contracts, which also includes quality of judicial process.

What is the reason that so many cases are pending in court? As per the report from Supreme Court and then Chief Justice, delay was due to an acute shortage of judges.

Table 1 Pendency of cases in Indian Judicial System [2]

Court (as on)	Pending cases		Cases pending for more than 10 years	
	Civil	Criminal	Civil	Criminal
Supreme Court (19 Feb 2016)	48,418	11,050	1132	84
High Courts (31 Dec 2014)	3,116,492	1,037,465	589,631	187,999
Subordinate Courts (31 Dec 2014)	8,234,281	18,254,124	611,658	1,432,079

This fact is supported by a Law Commission's report of 2009 stating, in Delhi High Court, 464 years would be required to clear the arrears with the present strength of judges [4]. However, can we say the shortage of judges is the only reason for delaying justice?

Let us dig more into it. Vidhi Centre for Legal Policy has conducted a study on 8086 orders passed by the Delhi High Court between 2011 and 2015. They have classified the cases as delayed if the cases have been pending for more than 2 years. As per Vidhi Centre, there are two perspectives for delay: Court-side delays and Counsel-side delays. The study concludes that 82% of the delays could be attributed to lawyers [5].

If we dig more into the ground reality, the current records including the statements and evidences get modified, updated, or even misplaced and deleted, for the purpose of delay and defeating the ends of justice. There is a very famous quote, 'Justice delayed is justice denied'. Means delayed relief is equivalent to getting no relief at all. Nevertheless, what's the way ahead? Can we deal with the core judicial issues to expedite the judicial process? Answer is yes. And it is possible through the emerging blockchain technology. Even if we are able to make 1% change in the existing judicial system, it will have social impact on millions of people. And people will actually start believing and regain faith in the judicial system. Thus, blockchain-based judicial system is the most prominent field to go ahead for discussion in this paper.

3 Existing Indian Judicial System

Judicial system is an important part of democracy and plays a crucial role in how democracy works. In current Indian Judicial System, there are two ways that a common man can approach court, viz. via advocates or through court officials as represented in Fig. 1.

In both the cases, legal procedure is an expensive affair. Common public has no or very limited knowledge about legal proceedings. They completely rely on advocates or court officials for any legal proceedings. There might be various reasons for same such as no legal knowledge, illiteracy, too busy or no interest to gain knowledge regarding legal process and so on. This blind trust on intermediaries might result in expensive dealings or in extreme case, cheating.

Fig. 1 General process to approach judicial system

4   Current Challenges

Below listed are the prominent challenges faced by current Indian Judicial System:

Accountability: None is held responsible for delay in current Indian Judicial System. Even though court officials might be justified in being overburdened, finally it is the common man getting pissed off.

Provenance: Provenance of data is lacking currently in Indian Judicial System. Originals can be easily forged and hence, questionable.

Transparency: Despite having privileges of certified copy for legal documents, Indian Judicial System lacks transparency mostly due to malpractices conducted by court officials.

Data Integration: Currently judicial officials have data records of only respective zones. Integration of criminal records across country will have better opportunity to track criminals and their past records to restrict unfortunate events in future.

Scalability: Current judicial system is not scalable enough to maintain a record of cases across the state.

In the Sect. 5, let us have an overlook of the proposed architecture for blockchain-based Indian Judicial System.

5   Proposed Indian Judicial System

Blockchain being an incorruptible distributed ledger technology can be used to overcome above-mentioned challenges in Indian Judicial System.

Current challenges highlighted in Sect. 4 can be tackled using blockchain-based Indian Judicial System depicted in Fig. 2. As a part of blockchain solution, police and lawyers will have to register through court official on blockchain. They will get walletAddress. Similarly, an applicant will have to register when he comes to court for the very first time. He will also get a walletAddress. Based on scenarios, these stakeholders can validate transactions in blockchain.

An applicant, through his lawyer, can file a petition through front end provided using web3.js. This will lead to saving the petition file on IPFS and generate IPFS hash for petition. It would trigger event for court official to file the petition by providing relevant details such as IPFS hash of petition, applicant, accused and lawyer details, type of case and sections charged. These details will get stored on blockchain and applicant will get case number, court number and date for proceeding. By using the smart contract [6, 7], event will be triggered to intimate accused regarding filed petition through e-mail as depicted in Fig. 3. Next section discusses few sample issues faced by common man in Indian Judicial System and how they can be restricted by use of blockchain technology [8–10].
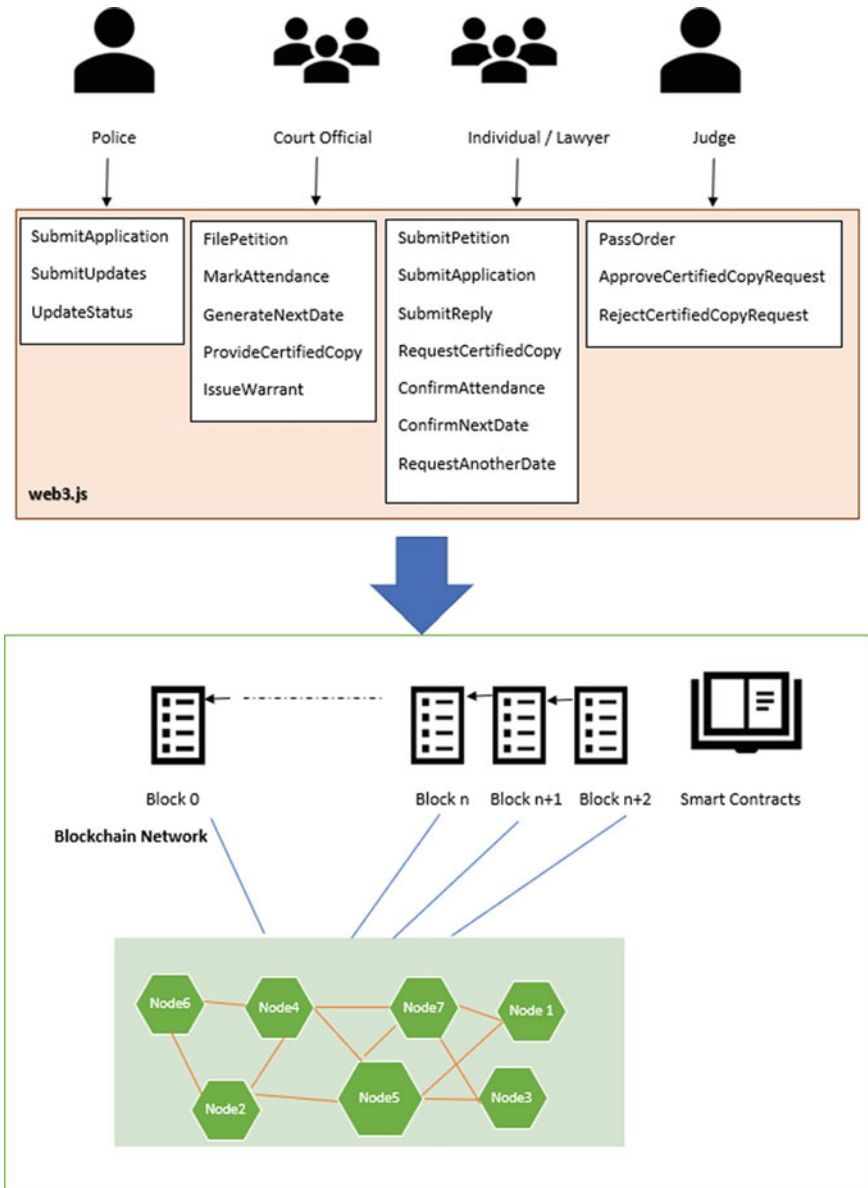
Fig. 2 Proposed Indian Judicial System

Scenario	New Individual
Invoked By	Court Official
Input	Name, age, gender, address, contactNumber, emailAddress, PANCardNumber
Output	walletAddress
Trigger Event	Email WalletAddress to individual
Event Details	walletAddress

Scenario	File Petition
Invoked By	Court Official
Input	caseType, currentYear, petitionIPFSHash, sections, complainant, lawyer
Output	caseNumber, courtNumber, nextDate
Trigger Event	Intimate accused
Event Details	complainant, caseType, caseNumber, caseYear, sections, courtNumber, nextDate, petitionCopy

Scenario	Mark Attendance
Invoked By	Court Official
Input	caseType, caseNumber, caseYear, individual / lawyer present
Output	attendanceUpdated
Trigger Event	Intimate concerned individuals to confirmAttendance
Event Details	caseType, caseNumber, caseYear, individual / lawyer present

Scenario	Issue Warrant
Invoked By	Court Official
Input	caseType, caseNumber, caseYear, applicationIPFSHash, orderIPFSHash
Output	exhibitNumber
Trigger Event	Issue Warrant as applicable and Intimate concerned police officials
Event Details	warrant

Scenario	Assign Next Date
Invoked By	Court Official
Input	caseType, caseNumber, caseYear
Output	nextDate
Party Present	confirmDate or requestAnotherDate
Party Absent	automaticConfirmDate
Trigger Event	Intimate concerned individuals by email
Event Details	caseType, caseNumber, caseYear, nextDate

Scenario	Request Certified Copy
Invoked By	Individual / Lawyer
Input	caseType, caseNumber, caseYear, exhibitNumber
Output	certifiedCopyNumber
Trigger Event	Judge Approval
Event Details	caseType, caseNumber, caseYear, exhibitNumber
Approved	Trigger Event for applicant to payCharges
Charges Paid	Trigger Event to email Certified Copy
Rejected	Intimate reason for rejection

Scenario	Inward Entry
Invoked By	Court Official
Input	caseType, caseNumber, caseYear, sender, sentDate, subject, documentIPFSHash, receiver, receivedDate
Output	inwardEntryNumber
Trigger Event	Intimate concerned individuals by email
Event Details	inwardEntryNumber, sender, sentDate, subject, receiver, receivedDate

Scenario	Outward Entry
Invoked By	Court Official
Input	caseType, caseNumber, caseYear, sender, sentDate, subject, documentIPFSHash, receiver
Output	outwardEntryNumber
Trigger Event	Intimate concerned individuals by email
Event Details	outwardEntryNumber, sender, subject, receiver, sentDate

Fig. 3 Blockchain judicial solutions

6 Judicial System Issues and Blockchain Solutions

Let us have a brief overview as to where and how the intermediaries have the chance to affect the judicial processes in the current scenario.

1. Next Date
2. Warrant Issuance
3. Certified Copy
4. Marking Attendance
5. Inter Department Communication
6. Regional Language Limitations

6.1 Next Date

General Process: As per the current judicial system, Hon'ble Judge assigns the next date for case proceedings. Generally, the court official, sitting next to the judge, notes down the next date on paper for respective case. Hon'ble Judge might also note down next date for respective case on his reference paper but there is no hard and fast rule.
Deviation: Advocates of the court generally have a good rapport with court officials. Advocate can bribe the court official and ask him to pen down next date as per advocate's will and wish. For instance, Hon'ble Judge has given next date as 27th January for a case but court official has noted down next date as 15th May. Now, loophole in

the current judicial system is there is no video recording or audio recording allowed in court. System reflects the next date entered by court official. Now as a victim, one might appear in court as per the next date given by Hon'ble Judge, i.e. on 27th January and find that the case is not on board that day. A victim or his advocate can appeal for 'hearing on board', i.e. hearing on the same day but is mostly rejected by Hon'ble Judge due to no substantial reason to take the matter on board. Rather case hearing is done on next date reflected in system, i.e. on 15th May. The victim is at loss. Very easily a delay of more than hundred days is introduced.

Alternatives: Victim or his advocate may challenge the discrepancies observed. But, generally government department supports its staff. In rare case, a departmental enquiry is initiated. Even though the enquiry process is carried out and the judicial official is found guilty, the enquiry is not closed. And, in Indian Judicial System, there is no time limit to close departmental enquiry. In the worst case, if the enquiry is closed and judicial official is not found guilty, the same person cannot file another complaint against the same judicial official throughout his tenure.

Blockchain Solution: Design an algorithm to generate next date for proceedings based on factors such as case type, sections, case age, number of cases pending in court, priority, individuals involved, holiday and judge vacation. Let the individual and/or lawyer, present in court, confirm next date. They can request for another next date in case of unavailability on assigned next date by providing considerable reason for unavailability. Intimate all concerned through e-mail regarding next date.

6.2 Warrant Issuance

General Process: In current court proceedings, judge issues an order for say recovery of fine. As per the process, judge passes an order against the application filed by complainant or respondent. The order simply states that based on given scenario, issue recovery warrant against the accused for recovery. This warrant needs to be issued by court official to concerned police as the case may be. Police needs to take appropriate action and report in considerable time for further action.

Deviation: Even though Hon'ble Judge has passed the order to issue recovery warrant, the court official does not issue the recovery warrant for months unless followed up by concerned individual or advocate. It keeps pending for several months if not traced. If issued, it is difficult to keep track as to when it was dispatched to police for further action. Also, police may delay the action due to several reasons thus defeating the purpose of justice.

Alternatives: Chase court official, court constable and concerned police officials for prompt action.

Blockchain Solution: For Indian Penal Codes section, under which a warrant is issued, there are pre-defined warrant format issued by the state government. Smart contracts can be developed that, on issuance of order, automatically generate the warrant through smart contract and add an action for concerned police blockchain. Police can submit the report to court through blockchain so that it cannot be modified later.

6.3   Certified Copy

General Process: If certified copy of any case related document is required by an individual, he needs to either request his advocate or apply for the same through agent. One can also apply for any certified copy on his own. The application needs approval from concerned Hon'ble Judge and only then the certified copy is issued.

Deviation:

1. In Indian Court, currently, charge for one page is ₹4. Therefore, for copy of an interim order, any application or a reply of 5 pages, ₹20 are to be paid. But advocates charge ₹500 minimum which is very costly. Similar is the case to get certified copy through agents. Positive part is, through advocates or agents, the certified copy might be available in a day or two based on the rapport of the advocate/agent with the court official.
2. Another problem faced is while providing a certified copy, a page or two might be skipped specially when the document requested is a large set. For example, a chargesheet. To get the missing pages, individual has to file a fresh application for certified copy.

Alternatives: On the other hand, if an individual applies for certified copy on his own then generally court officials are reluctant to entertain such applications. Even if they do, one needs to follow up for months to get a certified copy.

Blockchain Solution: Let the soft copy of all the legal documents filed in court be stored online using IPFS and hash of each document be stored in blockchain. Since an individual generally has access to all the documents filed in court for the respective case, except the Xerox submitted, provide an interface to apply for certified copies, pay online and an interface for Hon'ble Judge to approve or reject the request. On approval, e-mail the digitally certified copy to the individual. An individual can track the status online and neither he has to pay extra nor court official can delay it. Moreover, no possibility of any valid document being skipped in the certified copy since document's integrity can be verified using hash stored on blockchain.

6.4   Marking Attendance

General Process: In several Indian Courts, till today attendance of the complainant, respondent, advocates, public prosecutor, etc., for a case is marked on paper by court official, the case paper referred to as 'Roznama'. Court official simply writes today's date stating who all are present. A brief regarding today's proceeding and next date. This is later signed by concerned Hon'ble Judge.

Deviation: A court official, if bribed by an advocate, easily marks the absent as present by stating say for example accused no. 1, 2, 3, 4 are present even if accused no. 3 is absent. Since there are around 150–200 cases per day, it is not feasible for

the Hon'ble Judge to check whether the attendance marked, and entry made by court official is correct or not, they blindly sign it relying on court official.

Alternatives: If such a blunder is traced by individual, one can complain to concerned Hon'ble Judge or to higher authorities such as District Judge. In best scenario, even if one can prove the absence of the person marked present, the case papers are not updated, modified or rectified in any situation.

Blockchain Solution: Let the court official make entry for each individual present or absent in blockchain. And others present for respective case, confirm it.

6.5 Inter Department Communication

General Process: Documents being submitted by police are directly given to concerned court official without any means for concerned individual to trace. Documents from other departments, courts when received, an entry is made in Inward Register. Similarly, documents sent from court to police are directly given to court constable, whereas documents to other department are sent after an entry in Outward Register.

Deviation:

1. Documents given to or received from police officials may be missed or may not be traceable. Moreover, concerned individual has no knowledge regarding any progress in this front.
2. Concerned individual is not informed regarding any letter received in court regarding his matter. Concerned court official may not take necessary action for received letter.

Alternatives: Keep a check on Inward/Outward entry if any communication from other department is expected. This is generally not allowed for common public.

Blockchain Solution: Entry for any document related to a case should have an entry in blockchain. This will enable provenance and traceability. Concerned individuals will be informed. Officials accountable for delay can be held responsible.

6.6 Regional Language Limitations

Scenario 1

General Process: In State of Maharashtra, most of the documentation work by court officials is done in regional language Marathi. All the legal documents such as warrants are issued in Marathi.

Issue: The problem arises when inter-state communication is required. An order in Marathi is incomprehensible for officials in Kerala.

Alternatives: Beforehand, concerned individual needs to inform judicial officials to issue warrant in English.

Blockchain Solution: Since English is designated as the official language of the Government of India by the Constitution of India, English should be preferred for inter-state communication. By using event-driven smart contracts, this can be easily achieved.

Scenario 2

General Process: In State of Maharashtra, lower courts have court stamps available in regional language, i.e. Marathi. For any affidavit, if court stamp is required in English, process is that concerned official, for example, Police, needs to justify the need for English Stamp. The request for new stamp by concerned officials is forwarded from lower courts to District Court. After the approval of Principal District Judge, the request to create stamp is forwarded to Government Printing Press. Court official needs to collect the stamp from Government Printing Press.

Deviation: Concerned official, i.e. police may delay to put up the request to concerned Hon'ble Judge. After forwarding the request to District Court and Principal District Judge's approval, there may be delay in putting up the request to Government Printing Press. Finally, even though stamp is created by Government Printing Press, the stamp might not be collected by court official. Court official might be reluctant to visit Government Printing Press since they are not officially intimated of stamp being ready by Government Printing Press. Government Printing Press does not inform the concerned department as they handle state-level stamp request for all Government offices. Overall, this delays the entire process by several months or even year if not traced.

Alternatives: Individual needs to track the concerned police and court officials to check availability of new stamp. In the worst case, individual himself needs to visit Government Printing Press to ensure that stamp is ready. In any case, court official needs to visit Government Printing Press to collect the stamp.

Blockchain Solution: Provide an interface to raise request for new stamp. Let entry be made in blockchain for new request, Principal District Judge's approval, request to Government Printing Press, availability of new stamp and collection of stamp by court official. None can deny the fact that they were not notified or informed. Since blockchain is immutable, the concerned can be held accountable for delay if any.

Thus, blockchain can be used in an efficient way to improve the judicial process.

7 Conclusion

Judiciary is one of the strong pillars on which democracy stands. Pendency of cases for several years defeats the very purpose of justice. As rightly said, justice delayed is justice denied. This delay can be reduced to a considerable level by limiting the way current Indian Judicial System is exploited by advocates and court officials. Current Indian Judicial System lacks accountability and transparency. This can be efficiently catered by use of blockchain framework for Indian Judicial System. Immutability of blockchain paves a way ahead for tamper-resistant legal record management. None

can modify, delete or add a new entry in past nor deny the existing ones. Cryptographic hash in blockchain enables the provenance of legal data. Streamlining the judicial process with blockchain makes the system more traceable and secure. This will benefit the society at large as none will have privilege to derelict the duty and misuse the judicial system for individual advantage. Regaining the trust of common man in Indian Judicial System will be the ultimate aim of the proposed blockchain solution.

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