

# **Corruption in Northern India: Can Blockchain Technology be used to help address the problem?**

## **Abstract**

A global issue with global consequences, corruption comes in a variety of forms. If left unchecked, it has the potential to impede economic growth and negatively affect organizations. Furthermore, corruption harms judicial and political systems.

Of all the major countries in the world impacted by the corrosive nature of corruption, India appears to be one of the most badly affected. On closer inspection, corrupt acts are especially prevalent in the northern part of the country, especially in Bihar, Jharkhand, Rajasthan and Uttar Pradesh.

From the misuse of public property for private gain to abuses of power, including extortion, this paper examines corruption in extensive detail. The author discusses the lack of transparency in Indian government and the institutional weaknesses that allow corruption to flourish, particularly in the northern states. In addition to discussing current theories of corruption, the author offers a novel theory of his own, based on a colloquial Hindi word and a quintessentially northern concept. The social and psychological costs associated with corruption are also discussed, as well as possible ways of reducing the levels of corruption in India.

*Keywords: corruption, defining corruption, psychosocial effects, theories of corruption, strategies for addressing corruption, blockchain technology*

## **Part 1: What is Corruption?**

Why is corruption so rampant in the northern part of India, especially in the states of Bihar, Jharkhand, Rajasthan and Uttar Pradesh? More importantly, what, if any, solution (or solutions) exist to address the problem of corruption in Northern India?

Though corruption is largely considered deleterious in nature, some researchers (Heywood, 1997; Goel and Rich, 1989) argue that it can have a positive effect, sometimes helping to speed up the implementation of policies which may be impeded by bureaucratic roadblocks. Although the *slippery slope argument* has its detractors (Rizzo and Whitman, 2003), it's not difficult to see how one "minor" transgression could act as a catalyst for more major transgressions. In fact, a snowball effect of criminal behavior exists, and its consequences appear to be highly destructive in nature (Gilad and Gulman, 2019).

The "grease the wheels argument" also outlines some of the positives associated with corruption, including the promotion of economic growth. On the other hand, the "sand the wheels" argument argues that corruption actually harms economic growth. In comparing the two perspectives, Méon and Sekkat (2005) found that, the majority of the time, the wheels are most definitely

sanded, not greased. As Mauro (1998) highlights, corruption actively discourages investment, as it results in a profligacy of resources. Moreover, endemic states of corruption harm the democratic fabric of societies. In addition, a number of studies have shown that acts of corruption, if systemic in nature, harm the wellbeing of citizens, both psychologically and socioeconomically (Ackerman, 1999; Charap and Harm, 1999).

Bowles and Garoupa (1997) argue that corruption solidifies the power held by state monopolies, by encouraging greater instances of behavior that appear to be criminal in nature.

Corruption also tends to result in a sort of commercial myopia, where countries with higher levels of dishonest practices are less likely to engage in foreign trade (Treisman, 2000). Other countries may be reluctant to engage in economic activities with countries known for corruption.

According to Bardhan (1997), corruption leads to capricious behaviors by officials who, unless sufficiently “compensated,” create unnecessary delays and bureaucratic barriers. This is how the sanding of the wheels generally plays out.

### Defining Corruption

Corruption is a complex phenomenon, which involves forms of dishonesty and fraud. Rose (2017) notes that corruption has a “multiplicity of causes and effects, as it exhibits many different forms and functions in very diverse contexts, ranging from a single act that transgresses a law or laws, to being a way of life for an individual.”

Shleifer and Vishny (1993) define corruption as: “the sale by government officials of government property for personal gain.”

According to Nye (1967), “Corruption is type of behavior which deviates from the formal duties of a public servant to obtain private gain unethical (close family, personal, private clique), pecuniary or status gains or violates the rules against the exercise of certain types of private regarding influences.”

Friedrich (1966) notes that a “pattern of corruption can be said to exist whenever a power holder, who is charged with indulgence certain unlawful and immoral activities, i.e., who is responsible functionary or office holder, is by monetary or other rewards not legally provided for, indeed to take action which favor whoever provides that rewards, thereby does damage to the public and its interest”

For the purpose of this paper, I defer to Nye’s definition, as it appears to succinctly capture the scope and scale of modern day corruption, especially in the northern states of India.

### Forms of Corruption

Various forms of corrupt practices exist, all of which revolve around a misuse *of resources for personal gain*. In countries where systemic acts of corruption are the norm, multiple methods of practices are used to deceive and obfuscate (Wang, 2012).

Acts of corruption include:

- *Bribery*
- *Embezzlement, theft, and fraud*
- *Extortion and blackmail*
- *Influence peddling*
- *Abuse of discretion*
- *Favoritism and nepotism*

Several approaches have been used to classify and differentiate between the above mentioned types of corruption, and group them accordingly:

1. FACT (corrupt practices by Favoritism, Authority, Competence and Tribute) (McMullan, 1961)
2. 4 P's (Preference, Power, Privilege and Payment) (Bardhan, 1997)
3. MAPP (Money, Assets, People and Power) (Vasileva & Vorobyev, 2014)

## **Part 2: Conceptualizing Corruption**

### Systemic Corruption in India

Often complex in nature, corruption has a corrosive effect; it hinders economic, political and social development (Gray and Kaufmann, 1998).

Furthermore, it tends to adversely affect policy making and overall governance. The corruption in India, it seems, can't be addressed by the implementation of more legal acts forbidding corruption. The reason for this is simple: laws already exist. Respect for them, though, appears to be lacking. According to Shaikh (2000), India's judiciary, legal enforcement establishments, and police force cannot be relied upon. Again, the reason as to why is simple: they, we're told, are part of the problem.

For decades, India has had a number of high profile, political scandals. In the 90's, Governors, Chief Ministers, and even Prime Ministers were accused of engaging in acts of corruption. In fact, evidence of political leaders aiding and abetting in the proliferation of corrupt practices can be traced back to the late 1960's and early 1970's (Pavarle, 1996). From 1975 to 1977, the Shah Commission of Enquiry examined the corruption instigated by Sanjay Gandhi, a politician and son of Indira Gandhi, the first and, to date, only female Prime Minister of India

Sanjay Gandhi, the Commission concluded, had used his mother's power and influence to carry out illicit scams, most notably the Maruti scam (Bhandari, 2015), where Sanjay, who had no previous experience with cars, was awarded a contract to build India's first "people's car."

Though Sanjay received millions in funding, his company failed to produce a single vehicle. The enterprise was eventually abandoned, the money never returned.

Almost half a century later, according to the latest Corruption Perception Index report (2020), India is the 86th most corrupt country in the world, scoring well below a number of other countries in the Asian-Pacific region.

#### Northern India: Cluster of Corruption

Interestingly, according to the CPI report, the four most corrupt states in India are all located in the northern part of the country. What's more interesting is that they are all neighbors, with at least one state bordering another. Jharkhand, the fourth most corrupt state, borders Bihar, the second most corrupt state. Uttar Pradesh, the third most corrupt state, sits between Bihar and Rajasthan, the most corrupt state of the four.

#### Corruption in Bihar

In the latest Transparency India survey available (2019), 75% of Bihari citizens who participated admitted to paying a bribe to get access to resources, such as healthcare and/or education. 50% of respondents gave bribes several times (directly or indirectly); 25% paid bribes once or twice (directly or indirectly). Only 25% of those surveyed said they had managed to get access without having to pay a bribe. 47% of those surveyed paid bribes to personnel involved in property registration and land issues; 29% admitted paying a bribe to members of the police force; 18% paid bribes to office personnel (civil servants, members of transport offices, tax offices, etc.)

#### Corruption in Jharkhand

In Jharkhand, 74% of citizens who participated in the survey admitted to paying a bribe to get access to the abovementioned resources. Only 13% managed to get access without paying a bribe. 33% admitted to bribing police officers, while the remaining 67% paid bribes to personnel working in transport and tax offices.

#### Corruption in Rajasthan

78% of Rajasthan citizens surveyed "admitted to paying a bribe to get their work done, out of which 22% gave bribes several times (directly or indirectly) while 56% paid bribes once or twice (directly or indirectly)." Out of those surveyed, 22% said they paid no bribes. The authors note the following: "In terms of authority to which residents of Rajasthan gave bribes, 44% gave bribes to property registration and land issues. 33% paid a bribe to the police and 23% paid bribes to others (Electricity Board, Transport Office, Tax Office, etc.)"

#### Corruption in Uttar Pradesh

In Uttar Pradesh, 74% of citizens who participated in the survey paid a bribe in order to access healthcare or the assistance of police officers. 57% admitted to paying bribes numerous times, either directly or indirectly; 17% paid bribes once or twice, again, either directly or indirectly. Rather alarmingly, only 3% said they were never asked to pay a bribe.

According to the authors of the survey, "In terms of authority to which residents of Uttar Pradesh gave bribes, 24% gave bribes to property registration and land issues while 5% paid off the

Municipal Corporation. 34% paid a bribe to the police and 37% paid bribes to others (Electricity Board, Transport Office, Tax Office, etc.).”

## Existing Theories of Corruption

### Public Choice Theory

Public decision theory (Buchanan, 1962) takes the logic used by economic analysts to examine an individual's activities in the commercial sector and applies it to an individual's activities in a group setting. A fitting theory for governmental practices, Buchanan views individuals as rational actors who act in their own best interests. Initially, corruption may appear to be wholly irrational. However, the author argues, often, it is completely rational, especially if self-preservation is the goal.

Ostensibly, politicians act in the favor of the greater public, the people they represent. In practice, though, the primary thought process, regardless of whether they happen to be governors, legislators, lobbyists, or administrators, is one of personal gain and preservation.

### Institutional Theory of Corruption

The institutional theory of corruption (Sudibyo and Jianfu, 2015) examines the ways in which hierarchies, schemas, guidelines, and practices become entrenched within governments, and how such entrenchments affect social behavior. The theory examines the manner in which these systems come into existence, how these systems spread, as well as the role they play in social behavior.

### Corruption as a Virus Theory

Within organizations, corruption can be seen as a type of virus (Leonard, 2011). Most viruses, like COVID-19, for example, are self-replicating in nature, and tend to be destructive. The theory uses the damaging nature of viruses to highlight the negative impact of corruption. When one thinks of a virus, words like epidemic and pandemic immediately spring to mind.

A loss of life, a loss of freedom, a loss of individual autonomy, a loss of income, all of these are associated with particularly lethal viruses, like Swine Flu, for example.

By juxtaposing the words corruption and virus, the authors clearly highlight the destructive nature of corruption, as well as its contagious aspects.

### Jugaad Theory of Corruption

*According to Jugaad Innovation: A Frugal and Flexible Approach to Innovation for the 21<sup>st</sup> Century* (Radjou et.al, 2015), a book exploring the art of creative thinking, the word *jugaad*, when translated into English, means to 'hack.' The term references quick thinking, an ability to think laterally, to improvise, to remedy a situation through spontaneous and innovative means.

Professor Rina Arya (2020) writes, “the best way of understanding the ethos of *jugaad* is by example and approach. In each case the motivation is always functional and often involves the

deployment of objects that have been adapted to fulfil a different function to what they were originally intended, all with the aim of fixing something that was broken or to improve efficiency.” Arya continues, “television screens suspended from the ceiling by cables propped up by plastic chairs, saucepans propped up by bottles with lighted candles underneath, handlebars on the back of a cycle being used to carry goods or passengers, the punctured plastic bottle which is used as a shower hose, tiffin boxes tied to a cycle are all typical examples found in households or on the streets.” Essentially, when faced with an obstacle, applying the principles of *jugaad* appears to pay dividends. How, then, can the term be applied to corrupt practices?

Professor Arya, in the same post, describes *jugaad* as both “a strategy for survival for some whilst also being methods or shortcuts for facilitating convenience.” Though Arya never implies that such ‘hacks’ are used for nefarious reasons, when applied to acts of corruption in Northern India, is it reasonable to view the actions through a *jugaad* shaped lens?

I think so. The world of politics is often viewed as a zero-sum game (Davidai and Ongis, 2019); survival, at least in a reputational sense, is very much a motivating factor.

Furthermore, as humans are largely creatures of convenience (Luke, 2008), the principles of *jugaad* - a quick fix, if you will - may very well be applied when faced with issues of an ethical or legal nature.

Should one pay a bribe to get immediate access to healthcare? By paying the bribe, perhaps, and I stress perhaps, an individual may view such an act as just another ‘hack,’ another obstacle that requires creative thinking.

As Ahuja (2014) notes, corruption in India “is all pervasive; leaving no section of life untouched.” In the authors words, “there are about forty ways of embezzlement; what is realized earlier is entered later on; what is realized later is entered earlier; what ought to be realized is not realized. It is possible to mark the movements of birds flying high up in the sky, but it is not possible to ascertain the secret movements of government servants”. This, I argue, is an extension of the *juggad* principle – lateral thinking applied to the act of embezzlement.

If an individual’s child is sick, for example, and the only way to access immediate healthcare is through the act of bribery, then, in this scenario, resorting to such practices appears to be highly rational.

Interestingly, Nigeria, Ghana, China and Brazil all have their own versions of *jugaad* (Hossain, 2016). In each of these countries, where variations of *jugaad* are practiced, levels of corruption are also exceptionally high.

### **Part 3: Effects of Corruption**

In each of the four northern states, as described above, corruption amongst police officers is, for lack of a better word, problematic. What are the societal consequences of such criminal behavior?

The answer, in one word, is costly. Police corruption negatively shapes the public's confidence in the fairness of the law, rescinds any sort of respect for legal norms, undermines departmental discipline, and harms the overall integrity of institutions (Getty, 2017).

Corruption is most severe when the climate in a police department not only permits the practice of corruption, but appears to actively encourage it. According to a report published by the Times of India (2020), in northern states, the most common type of police corruption involves the acceptance of bribes, and such acceptances appears to be closely linked with vices like gambling, prostitution, and the illicit use of drugs.

McGetty (2017) outlines the many ways in which police officers benefit through corruption.

He cites examples of officers receiving free drinks, meals, and other notable perks. Opportunistic theft from those arrested (as well as from actual victims of crime) also occurs. The 'framing' of individuals is also common. This, to be more specific, involves an officer or officers planting incriminating evidence, such as drugs, for example. By engaging in such criminal behavior, the officer or officers essentially 'frame' an individual.

Furthermore, the behavior of the police force profoundly shapes the character of the society in which they operate (Ahuja, 2014). This is not surprising. After all, police officers are paid to enforce the law, not to violate it. When the arbiters of the law are actively engaging in questionable acts, some of them illegal in nature, how is a healthy society (i.e. one that abides by laws and fundamental, moral principles) supposed to exist?

When one examines the four northern Indian states, worrying trends emerge that may – or may not – be associated with corruption. But surely, it is no stretch to say the following: the effects of such chronic, widespread, unethical behavior is of little benefit to broader society. Like any relationship, be it romantic or otherwise, a society cannot be truly stable without high levels of transparency and honesty.

### Literacy Rates

Literacy is a key indicator of socio-economic success (Bharucha, 2017). In India, especially in the four northern states, low female literacy rates appear to have a dramatically negative effect on family planning and population stabilization efforts (Poonam, Sumita, et al., 2017).

Nabamita and Deepraj (2016) demonstrate how lower levels of education, including suboptimal literacy rates, have a corrosive effect on civic duty among the citizenry. Higher levels of education, on the other hand, are positively associated with higher levels of critical thinking. A more informed citizenry tends to expect a greater degree of government transparency and accountability. Politicians, many of whom seek reelection, rely on votes. A more knowledgeable, engaged electorate, one assumes, would have higher standards and expectations from government.

A study by Aalok (2014) highlighted the ways in which female literacy is a strong predictor of autonomy and economic independence. India's literacy rate is at 75% (Sharma, 2019), well below figures in China, the United States, and the UK.

It is important to acknowledge the fact that India has 4% of the world's surface but roughly 16% of the world population. India is a huge country, significantly underperforming in crucial areas.

However, some states are doing better – significantly better – than others. Kerala, a state situated in the south, according to a Press Trust of India report (2020), has achieved a literacy rate of 96.2%. The four northern states, however, where corruption is most rampant, are among the least literate in the country. Rajasthan (69.7%) and Bihar (70%) have some of the lowest literacy rates across the land. In Kerala, compared to every other state, the gap between male and female literacy is the smallest, at just 2.2%. To put that in context, the gap at the all-India level is 14.4 percentage points, with male literacy at 84.7% and female literacy at 70.3%. In Bihar, Jharkhand, Uttar Pradesh and Rajasthan, the gap between men and women is in excess of 14%.

### Infant mortality rates

According to a paper published by Sofi (2020), at more than 720,000 deaths per year, India has one of the highest infant mortality rates in world. This means that, on average, close to 2000 deaths occur on a daily basis. As Sofi outlines, “India’s IMR is worse than that of its neighbors, such as Bangladesh, Bhutan, Sri Lanka.” Even though India is more economically powerful than these three countries, in 2019, as Sofi notes, “India spent only 1.5% of its GDP on Healthcare. According to UNICEF, 50% of all deaths below five (years of age) can be prevented by providing skilled health care at birth and quality postnatal care for the mother and baby. Undernutrition is associated with 50% of all under-five deaths. 53% of women in India have anemia. Good governance and adequately trained healthcare staff can together reduce neonatal deaths by an average of 24%.”

The numbers are extreme, especially in the four states, due to a sheer lack of primary health care facilities, as well as a lack of qualified doctors, beds, and clean water. In all four states, according to Sofi (2020), “the majority of these deaths (58%) are neonates- newborns younger than 28 days.” 60% of the primary health centers in India, especially in the northern states, lack stabilization units for newborns. Public health services, most notably in Bihar, are chronically underfunded.

### Child Trafficking

Each year, according to the latest research findings from *Global Report on Trafficking* (2020), more than 800,000 people are trafficked across international borders; up to 50% of these people are children. In India, child trafficking is an extremely prevalent issue, and one that has gotten worse in recent times (Bhattacharjee, 2020). The latest *Freedom United* report (2020), which I will use a reference point throughout this particular section of the paper, sheds some much needed light on the phenomenon of child trafficking, especially in the four states of Bihar, Rajasthan, Jharkhand, and Uttar Pradesh.

In India, as outlined in the report, it is estimated that close to 135,000 children are trafficked annually. That is an average of 369 kids per day. Over the course of a decade, between the years of 2008 and 2018, the trafficking of young girls (i.e. girls under the age of 18) grew by 65% (Bremond, 2019). Northern states like Bihar and Jharkhand have some of the highest rates of trafficking in the land. At the same time, these states also happen to have some of the highest



levels of police corruption, as already mentioned. The point, I argue, is a fair one to make. If the enforcers of the law are breaking the law, can the same people be trusted to enforce the law?

A recent report published by Delta 8.7 (2020), a knowledge platform dedicated to addressing issues pertaining to slavery, human trafficking, and forced child labor, Bihar, Rajasthan and Jharkhand are prime transit points and destinations for traffickers of women and children, many of whom are used for sexual purposes.

#### **Part 4: Using Blockchain Technology to Reduce Levels of Corruption in Northern India**

In this particular section, I will outline the ways in which blockchain technology, if implemented correctly, has the potential to create a more transparent system of governance. Furthermore, I will outline the ways in which acts of corruption become easier to detect, prosecute, and, one hopes, easier to prevent if blockchain technology is implemented.

What is Blockchain Technology?

Essentially, a blockchain is a distributed software network. It fulfils two functions: firstly, it acts as a digital ledger; secondly, by eliminating the need for an intermediary, it allows the secure, almost instantaneous peer to peer transfer of assets.

According to the Blockchain Institute (2020), “(j)ust as the internet is a technology that facilitates the digital flow of information, blockchain is a technology that facilitates the digital exchange of units of value. Anything from currencies to land titles to votes can be tokenized, stored, and exchanged on a blockchain network.”

In the same way that the internet revolutionized commerce and communication, blockchain possesses the power to revolutionize the ways in which governments operate (Ølnes & Jannes, 2017).

Unveiled back in 2009, blockchain is very much in its infancy. The technology was designed to allow the secure transaction of bitcoin, the world’s first and most popular cryptocurrency. Bitcoin offers a relatively safe, decentralized, peer to peer electronic cash system (Tan & Low, 2017).

Just like bitcoin, blockchain technology provides a permanent, traceable record of transactions. Moreover, the details of each transaction cannot be altered; blockchain provides users with a fully transparent system, displayed in real time, and immune from any outside interference. Like a traditional ledger, the movement of money, goods, data, etc. can be recorded on the blockchain.

Though the technology is still in its nascent stages, it appears to have the potential to transform centuries-old models of commerce and governance (Akram, 2017). For the uninitiated, understanding the fundamentals of blockchain can prove to be quite difficult. However, by embedding information in digital code and permanently storing it in secure, shared databases, the technology is capable of facilitating all manner of transactions and record keeping. From one off payments to multibillion dollar projects, anything that necessitates documented proof is trackable. Accountability, arguably for the first time in history, is guaranteed.

How can Blockchain be used to curb corruption and help the Indian population?

If embraced and implemented, how would blockchain technology help curb corruption, especially in Northern India, where the problem appears to be somewhat entrenched?

Endemic cases of corruption and lack of accountability stifle social, economic and individual progress (Whitsel, 2011). Often, corruption flourishes precisely because of a lack of transparency, along with insufficient record-keeping and low levels of accountability (Peisakhin & Pinto, 2010). Blockchain, by design, operates on the fundamental principles of transparency and accountability. The current system of policing and record keeping is vulnerable to tampering. For example, excel sheets, word documents and folders stored on computer desktops can easily be deleted, shared, duplicated, or edited in a matter of seconds. Blockchain be used to maintain the integrity of criminal records, for example. Such records are highly sensitive in nature; the need for protection is paramount. Once stored on the blockchain, the records are unalterable and safe from the threat of manipulation, deletion, etc.

Furthermore, as the technology operates as a peer to peer cloud network, the data is decentralized; this ensures that highly sensitive data is not controlled by a single party. Moreover, under the current system of record storage, data is especially vulnerable to cyberhacks and cyberattacks. Even without the threat of an attack, a database might crash. Blockchain, through the process of peer to peer, decentralized operations, ensures the cryptographically enhanced security of data. By using blockchain technology to store and save criminal records (or marriage records, birth records, etc.), the integrity (i.e. the authenticity) of the data is fully maintained.

Using blockchain to combat child trafficking

Approximately one billion people worldwide lack any form of legal identification (Mahajan, Manyika, et al., 2019). This makes identification of individuals rather difficult. Furthermore, it creates an industry for illegal documents (fake passports, for example), which are routinely used in the trafficking of individuals, including minors. Clearly, if an individual lacks necessary identification, problems arise. If, for example, a child without identification documents goes missing, tracing his or her whereabouts may prove to be quite difficult. Additionally, even if victims of trafficking are in possession of legitimate identification, their employers may very well confiscate their documents. Such a move would give the exploiter even greater control over the victim's movements. Blockchain technology provides a solution. By using biometrics to identify an individual, a 'virtual identity,' which exists solely on the digital ledger, can be created. Paper documentation, which can easily be tampered with, is no longer required; instead, metrics like iris scans and fingerprints are used for identification purposes. Blockchain technology, immutable by design, could render forged documents obsolete.

Moreover, blockchain is a technology that transcends borders, meaning victims of crime, even without traditional forms of identification, have a greater chance of being identified and assisted (Tajbakhsh & Homayounvala, 2017). Another benefit of blockchain technology involves helping individuals who lack access to traditional bank accounts. Those of whom lack identification find it virtually impossible to open a bank account. Clearly, in 2021, lacking access

to a bank account is an economic disadvantage. Blockchain technology offers a solution, by enabling the accurate identification of an individual through biometrics, thus offering the possibility of greater financial inclusion.

### Using blockchain to improve healthcare

India is a member of the United Nations. Under Article 25 of the United Nations (1948), the Universal Declaration of Human Rights states that every man, woman, and child “has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services.”

Access to healthcare, as the UDHR highlights, is a basic human right. In India, however, especially in the northern states, access is most definitely not guaranteed. Although blockchain technology cannot guarantee easier access to healthcare services, it can be used to improve the ways in which healthcare is delivered.

For example, blockchain guarantees a degree of privacy not offered by traditional methods of record keeping. Because of the block structure on which this digital ledger operates, administrative personnel can only access entries that they are granted direct access to. This offers a greater degree of privacy to patients. Trust in the system should, theoretically speaking, grow, as patient confidentiality can be greatly enhanced via blockchain technology.

### Conclusion

My paper began with the question: what, if any, solutions exist to address the problem of corruption in Northern India?

Though I have not provided a definitive answer, I have attempted to offer a credible solution. Corruption, as detailed throughout the paper, is a genuine problem in Northern India. Throughout the region, accountability and transparency are sorely lacking. Blockchain, by design, eliminates the opacity of such systems.

Weaknesses in my paper, of course, exist. I am not situated in India. In fact, I am far removed from the country, so I write this as a spectator and commentator, though a deeply engaged one. Further research is most definitely needed. Any links between corruption and poor literacy rates, for example, are, at best, correlational. Many questions remain unanswered, like: what, if any, obstacles exist to the implementation of blockchain technology in Northern India? How costly would it be? How drastic would the changes be to the current structure of governance? How would such changes affect the lives of ordinary citizens?

Blockchain is an exciting technology. Built on sound technology, it largely removes human error and biases from the equation. However, the four states in the northern part of India are significant in size. Such a wide scale implementation of blockchain technology has never been attempted, at least not to my knowledge. Though the possibilities of a digital ledger providing a better, fairer, more transparent system of governance appear to exist, much planning would be required to actually implement such technology.

Blockchain is a democratic form of technology; such transparency may prove to be distasteful to certain sections of society, especially those of whom benefit, financially and otherwise, from the current systems of governance.

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## Bibliography

Aalok Ranjan Chaurasia, "Contraceptive Use in India: A Data Mining Approach", *International Journal of Population Research*, vol. 2014, Article

ID 821436, 11 pages, 2014. <https://doi.org/10.1155/2014/821436>Ackerman, S.R. (1999),

“Corruption and Government Causes, Consequences and Reform”, Cambridge University Press.

Ahirwar, R. K. (2020). Ethnomedicinal Investigations among the Baiga Tribes, District Anuppur, Madhya Pradesh, India. *Nelumbo*, 59(2), 181.

<https://doi.org/10.20324/nelumbo/v59/2017/120450>

Ahuja, R. (2014). *Social Problems in India: Third Edition (Fully Revised, Expanded and Updated)* (Expanded, Revised, Updated ed.). Rawat Publications.

Akram, W. (2017). BLOCKCHAIN TECHNOLOGY: CHALLENGES AND FUTURE PROSPECTS. *International Journal of Advanced Research in Computer Science*, 8(9), 642–644.

<https://doi.org/10.26483/ijarcs.v8i9.4950>

American Medical Association. (2020, October 21). *7 things about EHRs that stress out doctors*. <https://www.ama-assn.org/practice-management/digital/7-things-about-ehrs-stress-out-doctors>

Arya, R., 2020. *Jugaad: A study in Indian ingenuity and improvisation*. [online]

<https://blogs.lse.ac.uk>.

Available at: <https://blogs.lse.ac.uk/southasia/2020/03/09/jugaad-a-study-in-indian-ingenuity-and-improvisation/>

Bardhan, P. (1997). Corruption and Development: A Review of Issues. *Journal of Economic Literature*, 35(3), 1320-1346. Retrieved February 15, 2021, from <http://www.jstor.org/stable/2729979>

Bhandari, B. (2015). "Emergency and Sanjay Gandhi: How Maruti's origin lies in cronyism, corruption and blackmail". Business Standard.

Bharucha, J. P. (2017). Socio-Economic and Demographic Determinants of Indian Youth Financial Literacy. *International Journal of Asian Business and Information Management*, 8(4), 15–28. <https://doi.org/10.4018/ijabim.2017100102>

Bhattacharjee, Y. (2021, February 10). *Stolen lives: The harrowing story of two girls sold into sexual slavery*. Magazine. <https://www.nationalgeographic.com/magazine/article/stolen-lives-harrowing-story-of-two-girls-sold-into-sexual-slavery-feature>

Blockchain Research Institute. (2020, February 20). *An Intro to Blockchain*.  
<https://www.blockchainresearchinstitute.org/an-intro-to-blockchain/#:%7E:text=A%20blockchain%20is%20a%20distributed,of%20assets%20without%20an%20intermediary.&text=Anything%20from%20currencies%20to%20land,exchanged%20on%20a%20blockchain%20network>

Bowles, R., Garoupa, N. (1997), “Casual Police Corruption and the Economics of Crime”, *International Review of Law and Economics*, 17, 75-81

Bremond, P. (2019, October 13). *Human Trafficking in India*. Dianova.  
<https://www.dianova.org/opinion/human-trafficking-in-india/>

Broadman, G.H. and Recanatini, F. (2000). *Seeds of Corruption: Do Market Institutions Matter?*. The World Bank Europe and Central Asia Regional Operations Poverty Reduction and Economic Management Department.

Buchanan, J. (1962). [*The Calculus of Consent : Logical Foundations of Constitutional Democracy*] [By (author) James Buchanan] published on (December, 1962). The University of Michigan Press

Burchfield, K. B., & Silver, E. (2012). Collective Efficacy and Crime in Los Angeles Neighborhoods: Implications for the Latino Paradox\*. *Sociological Inquiry*, 83(1), 154–176.  
<https://doi.org/10.1111/j.1475-682x.2012.00429.x>

Charap, J., Harm, C. (1999). “Institutionalized Corruption and the Kleptocratic State”, IMF Working Papers, No: WP/99/91.

Davidai, S. and Ongis, M. (2019). The politics of zero-sum thinking: The relationship between political ideology and the belief that life is a zero-sum game. *Science Advances*, [online] 5(12), p.3.

Available at: <https://advances.sciencemag.org/content/5/12/eaay3761>

*Exporting Corruption 2020 - Publications*. [online]

Available at: <https://www.transparency.org/en/publications/exporting-corruption-2020>

Figueira-McDonough, J. (1992). *Social Service Review*, 66(2), 324-326. Retrieved February 21, 2021, from <http://www.jstor.org/stable/30012173>

Freud, S., Strachey, J., Freud, A., Strachey, A., & Tyson, A. (1964). *The Standard Edition Of The Complete Psychological Works Of Sigmund Freud - Volume XII - (1911-1913): The Case of Schreber, Papers on Technique, and Other Works*. Hogarth Press and the Institute of Psycho-Analysis.

Freud, S., & Strachey, J. (1976). *The Complete Psychological Works of Sigmund Freud (The Standard Edition) (Vol. 1-24 Volume Set) (Complete Psychological Works of Sigmund Freud) (1st ed.)*. W. W. Norton & Company.

FRIEDRICH, C. A. R. L. J. (1966). POLITICAL PATHOLOGY. *The Political Quarterly*, 37(1), 70–85. <https://doi.org/10.1111/j.1467-923x.1966.tb00184.x>

Furstenberg, F., & Hughes, M. (1995). Social Capital and Successful Development among At-Risk Youth. *Journal of Marriage and Family*, 57(3), 580-592. doi:10.2307/353914

Getty, R. M. (2017). Police corruption: preventing misconduct and maintaining integrity. *Police Practice and Research*, 19(6), 620–621. <https://doi.org/10.1080/15614263.2017.1415732>

*Global Report on Trafficking in Persons - 2020 - World*. (2021, February 2). ReliefWeb. <https://reliefweb.int/report/world/global-report-trafficking-persons-2020>

Heywood, P. (1997), “Political Corruption: Problems and Perspectives”, *Political Studies*, 45(3), 417-435

Hossain, M., 2016. Frugal Innovation: A Systematic Literature Review. *SSRN Electronic Journal*, [online] Available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2768254](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2768254)

Michal Gilad, Abraham Gutman, and Stephen P. Chawaga, *The Snowball Effect of Crime and Violence: Measuring the Triple-C Impact*, 46 *FORDHAM URB. L.J.* 1 (2019). Available at: <https://ir.lawnet.fordham.edu/ulj/vol46/iss1/1>

Goel, K.R. and Rich, D.P. (1989), “On the Economic Incentives for Taking Bribes”, *Public Choice*, 61(3), pp. 269-75

Glover, E. (1960) *The Roots of Crime*. New York: International Universities Press.

Gray, Cheryl W. and Daniel Kaufmann, 1998. “Corruption and development”, in *IMF/World Bank, Finance and Development*, 35(1): 7

*Human Trafficking in the Indian State of Bihar: Prevalence and Characteristics*. (2020, August 11). *Delta 8.7*. <https://delta87.org/2020/06/human-trafficking-indian-state-bihar-prevalence-characteristics/>

*India’s child trafficking trade revealed*. (2020, May 22). FreedomUnited.Org. <https://www.freedomunited.org/news/indias-child-trafficking-trade-revealed/>

Insights Editor. (2021, February 1). *Corruption Perception Index 2020*. INSIGHTSIAS. <https://www.insightsonindia.com/2021/02/01/corruption-perception-index-2020/#>

JONES, M. A. R. S. H. A. L. L. B., & JONES, D. O. N. A. L. D. R. (2000). THE CONTAGIOUS NATURE OF ANTISOCIAL BEHAVIOR. *Criminology*, 38(1), 25–46. <https://doi.org/10.1111/j.1745-9125.2000.tb00882.x>

Kalam, M. A. (2019, November 1). *The Closed Nature of Indian Universities*. The India Forum. <https://www.theindiaforum.in/article/closed-nature-indian-universities>

Loyalka, P., & Liu, O. L. (2019). Computer science skills across China, India, Russia, and the United States. *Proceedings of the National Academy of Sciences*, 116(14), 6732–6736. <https://doi.org/10.1073/pnas.1814646116>

Sharma, R. K. (2019). Library and Information Science Literacy in India: History- Development, Growth and Present Status of LIS Literacy in India. *International Journal of Trend in Scientific Research and Development*, Volume-3(Issue-2), 573–578. <https://doi.org/10.31142/ijtsrd21433>

Leonard, E. K. (2011). Coping with Corruption. *International Studies Review*, 13(3), 535–537. <https://doi.org/10.1111/j.1468-2486.2011.01058.x>

Li, L. (2018). Moral Economy of Corruption - Guanxi Networks in China's Courts. *SSRN Electronic Journal*, 19–29. <https://doi.org/10.2139/ssrn.3191708>

Luke, T., 2008. The Politics of True Convenience or Inconvenient Truth: Struggles over How to Sustain Capitalism, Democracy, and Ecology in the 21st Century. *Environment and Planning A: Economy and Space*, [online] 40(8), pp.1811-1824. Available at: <https://journals.sagepub.com/doi/10.1068/a40158>.

Mahajan, D., Manyika, J., & White, O. (2019, February 12). *Nearly one billion people have no form of legal ID*. McKinsey & Company. <https://www.mckinsey.com/mgi/overview/in-the-news/nearly-one-billion-people-have-no-form-of-legal-id>

Mauro, P. (1998), “Corruption: Causes, Consequences and Agenda for Further Research” *Finance & Development*, 11-14.

McMullan, M. (1961). A Theory of Corruption. *The Sociological Review*, 9(2), 181–201. <https://doi.org/10.1111/j.1467-954X.1961.tb01093.x>

Meon, P., & Sekkat, K. 2005. “Does corruption grease or sand the wheel of growth?” *Public Choice*, 122(1/2), 69-97.

Mohamadi, M., Rafiey, H., Mousavi, M.T. *et al.* Which institutions are most corrupt? Prevalence and social determinants of bribery in Tehran. *Crime Law Soc Change* 74, 175–191 (2020). <https://doi.org/10.1007/s10611-020-09886-2>

Nabamita, D, & Deepraj, M. (2016). DO LITERACY AND A MATURE DEMOCRATIC REGIME CURE CORRUPTION? *Journal of Economic Development*, 41(2), 1–26. <https://doi.org/10.35866/caujed.2016.41.2.001>

Nye, Joseph S., “Corruption and Political Development: A cost-benefits analysis” *American political Science Review*, Vol.61. No.2, June 1967, p.417.

Ølnes, S., Ubacht, J., & Janssen, M. (2017). Blockchain in government: Benefits and implications of distributed ledger technology for information sharing. *Government Information Quarterly*, 34(3), 355–364. <https://doi.org/10.1016/j.giq.2017.09.007>

Pavarala, V. (1996). *Interpreting Corruption: Elite Perspectives in India* (First ed.). SAGE Publications Pvt. Ltd.

Peisakhin, L., & Pinto, P. (2010). Is transparency an effective anti-corruption strategy? Evidence from a field experiment in India. *Regulation & Governance*, 4(3), 261–280. <https://doi.org/10.1111/j.1748-5991.2010.01081.x>

Poonam, S., Sumita, M., Shalini, C., & Neha, G. (2010). Impact of literacy on contraceptive practice in Indian perimenopausal women. *The Journal of Obstetrics and Gynecology of India*, 60(6), 521–523. <https://doi.org/10.1007/s13224-010-0048-6>

Press Trust of India, Posted by Nandini. (2020, September 8). *International Literacy Day 2020: Kerala most literate state in India, check rank-wise list*. Hindustan Times.

<https://www.hindustantimes.com/education/international-literacy-day-2020-kerala-most-literate-state-in-india-check-rank-wise-list/story-IodNVGgy5hc7PjEXUBKnIO.html>

Pring, C. (2019, January 8). *Global Corruption Barometer – Africa 2019: Citizens’ views and experiences of corruption | Afrobarometer*. <https://Afrobarometer.Org/Publications/Global-Corruption-Barometer-Africa-2019-Citizens-Views-and-Experiences-Corruption>. <https://afrobarometer.org/publications/global-corruption-barometer-africa-2019-citizens-views-and-experiences-corruption>

Radjou, N., Prabhu, J., Ahuja, S. and Roberts, K., 2015. *Jugaad Innovation*. 1st ed. Random House, p.11.

Rizzo, Mario; Whitman, Douglas (2003). "The camel's nose is in the tent: rules, theories, and slippery slopes". *UCLA Law Review*. 51 (2): 539–592.

Rose, J. (2017). The Meaning of Corruption: Testing the Coherence and Adequacy of Corruption Definitions. *Public Integrity*, 20(3), 220–233. <https://doi.org/10.1080/10999922.2017.1397999>

Shaikh, A. (2020). Study of the Anti-Corruption Laws in India and the Social Justice System of India. *SSRN Electronic Journal*, 113–119. <https://doi.org/10.2139/ssrn.3553435>

Shleifer, A., Vishny, R.W. (1993), “Corruption”, *The Quarterly Journal of Economics*, 108, 519-617

Sofi, J. (2020, October 8). *Why India has a high infant mortality rate?* Times of India Blog. <https://timesofindia.indiatimes.com/blogs/poverty-of-ambition/why-india-has-a-high-infant-mortality-rate/>

Sudiby, Y.A., & Jianfu, S. (2015). Institutional theory for explaining corruption: An empirical study on public sector organizations in China and Indonesia. *Corporate Ownership & Control*, 13(1-8), 817-823. <https://doi.org/10.22495/cocv13i1c8p1>

Tan, B. S., & Low, K. Y. (2017). Bitcoin - Its Economics for Financial Reporting. *Australian Accounting Review*, 27(2), 220–227. <https://doi.org/10.1111/auar.12167>

The Times of India. (2020, December 23). *Rajasthan: Accused of corruption, RPSC chief lodges complaint with police*. <https://timesofindia.indiatimes.com/city/jaipur/rajasthan-accused-of-corruption-rpsc-chief-lodges-complaint-with-police/articleshow/79927522.cms>



The Times of India. (2020b, August 18). *19 children rescued, 9 human traffickers held in Gorakhpur*. <https://timesofindia.indiatimes.com/city/varanasi/19-children-rescued-9-human-traffickers-held-in-gorakhpur/articleshow/77601336.cms>

Tajbakhsh, M. & Homayounvala, E. (2017). Forensically ready digital identity management systems, issues of digital identity life cycle and context of usage. *International Journal of Electronic Security and Digital Forensics*, 9(1), 62. <https://doi.org/10.1504/ijesdf.2017.081781>

Transparency International. (2020, November 17). *What People Think: Corruption in Latin America & the Caribbean - News*. Transparency.Org. <https://www.transparency.org/en/news/what-people-think-corruption-in-latin-america-the-caribbean>

Transparency India. (2019, November). *India Corruption Survey*. Local Circles. <https://transparencyindia.org/wp-content/uploads/2019/11/India-Corruption-Survey-2019.pdf>

Transparency International. (2020a, May 28). *Global Corruption Barometer: Latin America and the Caribbean 2019 - Citizens' Views and Opinions of Corruption - Publications*. Transparency.Org. <https://www.transparency.org/en/publications/global-corruption-barometer-latin-america-and-the-caribbean-2019>

Transparency International. (2021b, February 4). *Asia*. Transparency.Org. <https://www.transparency.org/en/gcb/asia/asia-2020>

Transparency International. (2021b, February 9). *CPI 2020: Eastern Europe & Central Asia - News*. Transparency.Org. <https://www.transparency.org/en/news/cpi-2020-eastern-europe-central-asia>

Transparency International. (2020b, November 17). *What People Think: Corruption in Latin America & the Caribbean - News*. Transparency.Org. <https://www.transparency.org/en/news/what-people-think-corruption-in-latin-america-the-caribbean#>

Transparency International. (2021, January 28). *CPI 2020: Sub-Saharan Africa - News*. Transparency.Org. <https://www.transparency.org/en/news/cpi-2020-sub-saharan-africa>

Treisman, D. (2000). The causes of corruption: a cross-national study. *Journal of Public Economics*, 76(3), 399–457. [https://doi.org/10.1016/s0047-2727\(99\)00092-4](https://doi.org/10.1016/s0047-2727(99)00092-4)

*Universal Declaration of Human Rights*. (2020, June 1). United Nations. <https://www.un.org/en/universal-declaration-human-rights/index.html>

Vasileva, V. M., & Vorobyev, A. N. (2014). Corruption Markets: An Analytical Framework for Assessing Anti-Corruption Campaigns. *SSRN Electronic Journal*, 313–328. <https://doi.org/10.2139/ssrn.2537348>

Whitsel, C. M. (2011). Counting the Costs. *Problems of Post-Communism*, 58(3), 28–38. <https://doi.org/10.2753/ppc1075-8216580303>

Wikstrom, Per-Olof, and Robert J. Sampson. (2003). "Social Mechanisms of Community Influences on Crime and Pathways in Criminality." Pp. 118–48 in *Causes of Conduct Disorder and Serious Juvenile Delinquency*, edited by Ben Lahey, Terrie Moffitt, and Avshalom Caspi. New York: Guilford Press

Wilson, Julius. (1987). *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press