## Paper 3: Challenges for Connecting Citizens and Smart Cities: ICT, E-Governance, and Blockchain

**Methodology**

[**ICT**](https://en.wikipedia.org/wiki/Information_and_Communication_Technology)**and Emerging Technologies for Cities and**[**Citizens**](https://en.wikipedia.org/wiki/citizens)**:**

Emerging technologies and [SC](https://en.wikipedia.org/wiki/Smart_City) models/paradigms were bringing a new wave of decentralized approaches, both in resource allocation, governance models, and opportunities for innovation.

* Section 3.1: Introduces blockchain and its use in the context of smart cities.
* Section 3.2: Presents some challenges for promoting more interactive infrastructure.
* Section 3.3 promotes the use of technologies that facilitate tourism and encourage visitors to explore a city.
* Section 3.4 introduces concepts of decentralized governance in the context of digital cities and the possibilities that systems such as blockchain are creating.
* Section 3.5 discusses how privacy may affect citizens’ experience and benefits in embedding privacy in products and services.
* Section 3.6 shows how the motto of smart cities can boost innovation and provide possibilities for novel initiatives.

**Summary**

In summary, some of the contributions of this work are:

This study highlighted the evolution of concepts surrounding cities, an intrinsic part of modern society. Assisted by intelligent city concepts and potential trend analysis, this paper contributes to an updated position on the challenges of cities, with suggestions of innovative opportunities, as will be summarized in Table 2.

* It has been observed that works of information with citizens and services from the literature mention (an interactive layer); that smart cities’ pillars are
* One of the expected goals of ICT services infrastructures throughout sensors is to provide relevant information for and digital equipment; citizens, but few applications are really
* These tools enable real-time focused on User Experience (UX); ICT information sharing such as
* They had the challenge of promoting the schedules of public transport, digitalization of cities’ services, thinking police and fire service stations, of users’ perspectives; events, parks, and outdoors
* This digitalization is the goal of activities, a transparent public administration, and the layer for technologies.
* The software industry is interested in attracting users to their platforms.
* Technologies aligned with the scope of SC have been bringing tools and discussions to this topic;
* Citizens can contribute to society through voting and other forms of social participation.
* modern forms of governance need to rely on digital technology; For achieving that, new frameworks need to be developed, providing easy access, facility, trust, and transparency;
* Decentralized technology is a key concept for governance and is just starting to be explored and investigated.
* Few applications and connections with cities and citizens are currently available in the literature, which is a challenge to be faced by researchers;
* They found out the distinct limitations when using public chains. Thus, private chain interaction with public chains can provide a framework for different applications that preserve citizens’ privacy and provide them a path for monetization.
* It was highlighted that those applications focused on citizens may promote decision-making more effectively, both in urban centers and in small communities. As emphasized, digital technologies possess an essential role to coordinate and optimize decisions, mainly due to the transformations regarding novel forms of governance.

**Limitations**

Have distinct limitations when using public chains. Thus, private chain interaction with public chains can provide a framework for different applications that preserve citizens’ privacy and provide them a path for monetization.

Paper 6: Bitcoin Pricing, Adoption, and Usage: Theory and Evidence

**Methodology:**

In this paper, the researchers conduct a vast number of findings. They discussed each of the sections by representing those data in table formats. Below, the types of manipulated data are presented serially.

Table 1: Types of Businesses Identified

Table 2: Known Addresses by Industry

Table 3: Entities by Industry

Table 4: Activity of Individual Users on Bitcoin

Table 5: Number of Addresses by Region in Training Dataset

Table 6: Percentage of Entities of each User Type in Training Dataset, excluding Mixing Entities

Table 7: Random Forest OOB Accuracy

Table 8: Distribution of Regions Predicted by Random Forest Model

Table 9: Cross-Regional Flow

Table 10: Industry-Region Flow

Table 11: Network Distance from Entity to Industry Weighted by Entity Transaction Volume

Table 12: Fraction of Entities of each User Type by Region

Table 13: Mapping from Countries to Regions used in Geographic Classification

Table 14: Mode of Best Factor Variables used in Random Forest Classification

Table 15: Mode of Best Time-Related Variables used in Random Forest Classification

Table 16: Average Value for Each Cluster for Best Variables used in Random Forest Classification

Table 17: Network Distance from Entity to Industry

Table 18: Distribution of Regions Predicted by Clean Random Forest Model

Table 19: Cross-Regional Flow Clean Model

Table 20: Industry-Region Flow Clean Model

Table 21: Network Distance from Entity to Industry Weighted by Entity Transaction Volume Clean Model

Table 22: Fraction of Entities of each User Type by Region Clean Model

Table 23: Network Distance from Entity to Industry Clean Model

Table 24: Random Forest OOB Accuracy using Clean Set Variables

**Summary**

In this paper, researchers tried to give us a brief idea about how the attributes of the anonymous users of Bitcoin can be inferred through their behavior. They found that users who engage in illegal activity are more likely to protect their financial privacy. The goal of this paper was to explore Bitcoin theoretically and empirically from the perspective of the market for Bitcoin, its price determination, and its usage.

* The “digital currency” or “cryptocurrency” Bitcoin [Nakamoto, 2008] had attracted significant attention in the public press since early 2013 when its transaction volume and market capitalization became material
* An individual “owns” a Bitcoin if there is a ledger entry moving the Bitcoin to an address belonging to the individual; if the individual has the appropriate passcode, the individual can, in turn, authorize a ledger entry assigning it to another individual’s address
* Unlike a bank balance that can be viewed or manipulated digitally, an individual’s Bitcoin balance is not an “IOU” or a promise to provide funds on demand; the individual with the passcode associated with an address has complete control over its disposition, and that Bitcoin balance is not linked to anything else
* The first contribution of this paper is to show that two market fundamentals can entirely determine Bitcoin exchange rates: the steady-state transaction volume of Bitcoin when used for payments, and the evolution of beliefs about the likelihood that the technology survives
* This section builds a theoretical model of Bitcoin adoption and the determination of Bitcoin to dollar exchange rates, intending to show that there exists a coherent set of assumptions under which economic primitives entirely determine Bitcoin exchange rates
* Investors accelerate the evolution of the exchange rate path relative to users, whose risk aversion and effort costs can lead to opportunities for investor purchases of Bitcoin

**Findings**

This research papers model delivers the following:

1. In the absence of investors, if all agents eventually adopt Bitcoin, then there is a unique equilibrium exchange rate in each period, which is determined by supply and demand (economic fundamentals).

2. The steady-state expected exchange rate for Bitcoin is equal to the ratio of the anticipated transaction volume and the supply of Bitcoins.

3. Transaction volume, in turn, depends on the advantages of Bitcoin relative to other payment options. The initial supply of Bitcoins is irrelevant since Bitcoins are infinitely divisible. However, the total supply must be exogenous.

4. Beliefs about the quality of Bitcoin evolve and increase adoption over time, conditional on survival.

5. Bitcoin utilization starts lower when agents are more risk-averse.

6. The nature of learning and beliefs also influence the evolution of adoption and exchange rates.

7. Investors may buy Bitcoin, which decreases the adequate supply for users and increases the market equilibrium price.

8. The exchange rate increases proportionally to adoption in the absence of investors. It starts at a higher level and then grows more gradually to the steady-state in the presence of investors. At the same time, investors stop investing once a steady state is reached.

9. If an investor exogenously bought a certain quantity of Bitcoins and held them (or if some were lost), the exchange rate would adjust in proportion to the number taken out of the market.

* In Table 3, researchers summarized the results of our entity creation exercise. They show the number of addresses and entities categorized by industry. They found out that the average number of addresses per entity varies with industry type; for example, individual users have an average of 2.4 addresses per entity, with a median of 1. Since many addresses are involved in only one transaction, it was not surprising to see many single-address entities (19,654,960 out of 27,474,538 entities).
* Table 4 shows the fraction of transactions taking place with each type of known entity. We see that transactions among individual users are the majority of transactions, and large unknown entities are the second largest category. Among transactions with known entities, exchanges are the largest category, followed by gambling, contraband, and mining. It should be noted that our ability to identify known entities is almost certainly not uniform across categories, so the statistics should be interpreted with caution.

**Limitations**

In this paper, we were unable to find any loopholes. Still, as the paper described the network structure of Bitcoin and how users interact in the network, so we can explore the network structure more and more. Still, there is a high possibility that anything remarkable finding can not be found by doing further research at this moment. However, suppose the structure of cryptocurrency changes over the years. In that case, future researchers are highly welcome to explore more about the situation.

Paper 10: Trust in Blockchain Cryptocurrency Ecosystem

**Methodology**

This article is a general domain system review study that combines a formal literature review with domain requirements elicitation to identify the domain trust requirements. As such, it suffers from general repeatability and completeness issues common to the review and survey studies. It suffers from general repeatability and completeness issues common to the review and survey studies.

To deal with this problem, we have tried to complement requirements elicitation with a systematic taxonomy development method and systematic literature review to minimize repeatability and completeness issues. The elicitation was done on 56 sources that contained data analyzed and evaluated in this article.

**Summary**

This article presented a detailed discussion of the vital trust issues in the entire cryptocurrency ecosystem and suggested multiple immediate, short-term, and long-term solutions.

* Blockchain-based cryptocurrencies have been continuously evolving as a new form of money during the last decade
* They present a detailed analysis of the cryptocurrency-related trust issues
* There are multiple facets of trustworthy cryptocurrency systems; the community has agreed on the fact that solving the inherent technical and nontechnical issues in cryptocurrency platforms can lead to a more trustworthy, inclusive, and participative cryptocurrency economy
* The goal of achieving a highly trustworthy cryptocurrency ecosystem is not reachable within a short time
* This article presented a detailed discussion of the vital trust issues in the entire cryptocurrency ecosystem and suggested multiple immediate, short-term, and long-term solutions
* They present a comparative analysis of the top 10 cryptocurrencies that are holding about 85% of the total market capital
* They envision that these trust issues, if resolved, will lead to the development of a new generation of cryptocurrency systems whereby cryptocurrencies will be the main drivers of financial institutions and the mainstreams economy

**Findings**

They ensured the different combinations of key terms by following the systematic review research methodology presented in this paper.

* Blockchain systems operate as permissionless (open, public blockchains) or permission systems (private, consortium, and cloud-based blockchains). We have discussed the details of these blockchains in their previous work.
* The fraudulent ICOs quickly collect money from traders by selling their tokens in exchange for other cryptocurrencies and suddenly disappear from the cryptocurrency market. A recent study reports that 80% of newly launched ICOs in the year 2017 were scams.
* In addition, they can try to manipulate transaction amounts and hash addresses during transaction processing. Several security attacks have been reported in recent literature surveys.

**Types of Data They Used**

* Table I: Inclusion / Exclusion Criteria
* Table II: Quality Assessment Criteria
* Table III: Top 10 Cryptocurrency Platforms
* Table IV: Top 10 Cryptocurrency Wallets
* Table V: Risk Analysis of the Cryptocurrency Ecosystem concerning Stakeholders
* Table VI: Comparison of the Top 10 Cryptocurrency
* Table VII: Requirement & Potential Solutions for Trust Issue

**Limitations**

Future research can deal with the negative-focus type of the study that analyzes various scams and incentive mechanisms that break trust. For this type of study, the availability of research literature is even narrower.