



# SECURE LENDING SYSTEM USING BLOCKCHAIN

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## ABSTRACT:

For the last few years, blockchain has taken over the global financial markets with its disruptive power to transform various industries. While multiple sectors have experienced a positive impact on the blockchain, the lending market is also ready to be a part of it. The blockchain is all set to reconstruct the model of the peer-to-peer lending platform by bringing more trust and transparency to the system. Companies like SALT Lending, Lend it, and Jibreel Network have already launched a peer to peer lending platform using blockchain and smart contracts.

In a traditional lending process, people require intermediaries like a loan officer, banks, underwriter, and loan processor to build the trust. But adding middlemen and regulations to the process of lending leads to the high fees.

Also, applying for a loan or credit can take a couple of weeks, and the rate of interests differ widely around the world. For example, the rate of interest for lending money in different countries like Algeria, Argentina, Bangladesh, United States is 8%, 31.2%, 9.5%, and 4.8% respectively. So in this project we are going to develop a peer to peer lending block chain network which shall reduce many manual lending issues. Before the rise of banks, a peer-to-peer system of loans and repayments used to take place where transactions occurred just on the basis of trust. Then came in the concept of collaterals where one had to keep their belongings as security to get a loan. But over time as trust began to break and globalization came into picture, third parties and middlemen started to thrive as they provided that extra layer of safety which was much needed. But, with time the centralized nature of these third parties made the system very complex due to extra layers of regulations and time-consuming manual process leading to huge costs on consumer's part. To tackle these issues, people are looking towards blockchain technology as it is built on the peer-to-peer model, providing a trustless, decentralized and a secure platform for lending practices.

**Keywords:** blockchain, fintech, peer-to-peer lending; P2P, financial inclusion, financial

Aim:

P2P lenders using blockchain can help reduce delays, make quick approvals, eliminate the need for middlemen, and bring transparency. Blockchain-based P2P lending platforms allow investors to approve loans against residential properties, but the value of properties don't remain stable always. Moreover, the collateral provided

by the borrower is not verified by a legal authority while lending money through the P2P platform. But the credibility can never be changed as smart contracts enable auto-payment and enforce compliances.

### **Objective:**

Investors want to make money on any asset. In this digital age, not only fiat but also cryptocurrency development can also make lucrative business solutions. Investors can explore the development of the P2P lending platform with blockchain and cryptocurrency solutions, if they are not satisfied with lower returns with principal amounts in banks. Borrowers with poor credit scores for justifiable causes can collect money directly from investors with a Blockchain- powered P2P lending platform. The emerging age gears towards direct transactions with digital smart contracts and blockchain technology. Now, let us take a look at how to stamp your footprints in the business by launching these ideologies in blockchain-based P2P Lending Software Development.

### **Scope of The Project:**

**Basically our Project has International Scope as described below:**

#### **Education Loan Lending:**

It was only recently that research institutions and educational organizations began to accept alternative funding as a means of fundraising. Initiatives for this area may range from raising money to earn a degree to supporting innovative science programs. Furthermore, there is an ever-growing demand for student loans. However, not enough businesses offer this kind of refinancing.

#### **Car Financing:**

It is one of the business sectors that is rising fast. Crypto finance sites for P2P car loans assist borrowers in buying cars via a lending scheme or with bank loan assistance.

#### **Real Estate Lending:**

P2P crowdfunding is one of the most high-demand solutions in the real-estate sector. It tends to draw more and more investors. To raise the requisite seed capital for borrowers and to

produce extra income for everyday investors, these are attractive substitutes. P2P loans are far less costly than equity investments. The lenders are the first in line to get payoffs in case a proposal is on a halt. On the other hand, investors are more likely to take part in peer-to-peer investment schemes than to purchase shares in the firm.

## INTRODUCTION:

A common person might be more aware about the equity and stock markets, but the debt markets are much bigger. It is a trillion-dollar industry and is growing even faster than before courtesy emergence of Asian markets. But it is plagued with inefficiencies due to barriers in interoperability between regions and markets leading to liquidity risks. Blockchain technology- based lending provides a solution for this as it is based on a peer - to-peer model and can make the entire process smoother and safer leading to obsolescence of traditional banking system and third parties. A borrower sitting in any part of the world can access the loan market and lenders can bid to deliver it due to the decentralized nature of blockchain technology as geography is not a concern in it. According to a report by Santander, by 2022, blockchain technology can help banks save \$20 billion a year in infrastructure costs. Overall, blockchain technology adds transparency, reliability, trust in this complex lending process which will reduce parties' risk and decrease settlement delays. According to a report titled 'Peer-to-Peer Lending by End-User Types and Business Model type' the peer-to-peer lending market is projected to reach \$460,312 million by 2022, growing at a CAGR of 51.5% from 2016 to 2022. With such a huge growth potential, blockchain technology can empower the P2P lending market to make it reliable and faster process.

Traditionally lending process involves intermediaries like banks or lending institutions to build trust and reliability which leads to extra costs and several weeks for a loan to get cleared. Also, interest rates differ widely from country to country making global lending difficult. By using blockchain technology in peer-to-peer lending system, the role intermediaries can be minimized. Through the help of smart contracts 2, the lending process can be made fast as all the terms and conditions and regulations of the loan can be encoded in the contract. Also, smart contracts can be developed in such a way that they could autogenerate fixed interest rate of a borrower based on their profile or credit score.

Using blockchain in peer to peer lending could help remove intermediaries from the current system. Let's understand how P2P lending blockchain platform could help make the lending process more efficient.

1. Cost Reduction: Blockchain could reduce the costs by allowing the borrowers to deal with lenders directly.
1. Time: Blockchain could make the entire process quick by adding regulations in the smart contracts.
1. The different rate of interest: The smart contracts could auto-generate the fixed rate of interests based on the profile of a borrower.

Blockchain could connect borrowers and lenders from all over the world through a decentralized platform. The entire P2P lending blockchain process could become seamless and trustworthy.

Stakeholders involved:

1. Lenders: a person who lends the money.
1. Borrowers: a person who requests for a credit or loan with the intention of returning it within a certain duration of time.
2. Guarantor: a person who takes the guarantee of a borrower requesting for the loan.

## Literature Survey

### Review Paper 1:

Paper Name: Peer to Peer Lending using Blockchain

**Methodology:** This study is significant for the development of the P2P lending industry, particularly in developing markets such as in India. Existing platforms can consider various blockchain features that can help them in better resource utilization and access to extending their business globally.

#### Disadvantages:

A disadvantage of P2P lending is that a lender earns profit through repayments, while the borrower's gain is immediate. For reducing this, a smart KYC compensation solution provides vital insight into a borrower's repayment history and score.

### Review Paper 2:

Paper Name: P2P lending review analysis and overview of Lendit Blockchain Platform

**Methodology:** On its website, a borrower can enter their information, upload verifiable documents, and enter their requested loan amount. Lendit uses multiple verification sources to assign a quality score, a form of credit rating, to that request. Lenders offer bids for interest and repayment, spreading the risk rather than concentrating it, and reducing the overall interest rate in a reverse auction.

#### Disadvantages:

You may have to pay additional fees on top of the interest rate charged for the loan. You may have to pay a higher interest rate than that charged by traditional lenders if you have a poor credit rating.

### Review Paper 3:

Paper Name: Review: Impact of Blockchain Technology in Lending

**Methodology:** This paper analyses a pattern that helps SMEs to assess Loans taken from the bank through the usage of Blockchain. It's a decentralized system that records debt history – Debt repayment of debt default. With this system in place, SMEs would be able to gain access to loans even without any collateral.

#### Disadvantages:

The paper also covers how small and medium enterprises ES – that are low in risk but high in quality – can avail such loans without providing any kind of collateral. So it lags on dealing with working of the Product.

### Review Paper 4:

Paper Name: Blockchain, Herding and Trust in Peer-to-Peer Lending

**Methodology:** The blockchain can arguably support much needed financial inclusion in P2P lending by using technology not only to facilitate transactions, but also to assist in monitoring and bad loan recovery. This herding effect appears more pronounced for male investors lending to trusted female applicants.

#### Disadvantages:

It does only dealt with the dependencies and the trust between these two humongous systems. So it had a bit lag in discussing the core nature of the implementation process.

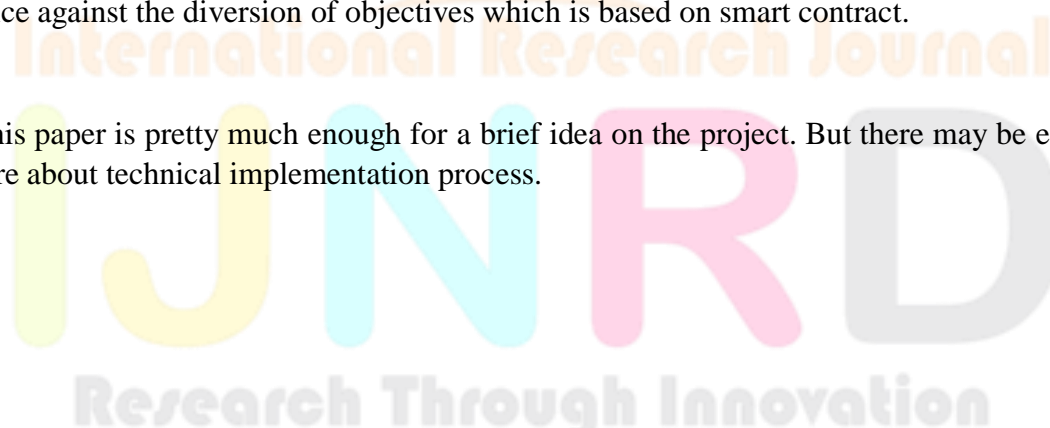
### Review Paper 5:

Paper Name: Blockchain Integration in P2P Lending for Developing Countries

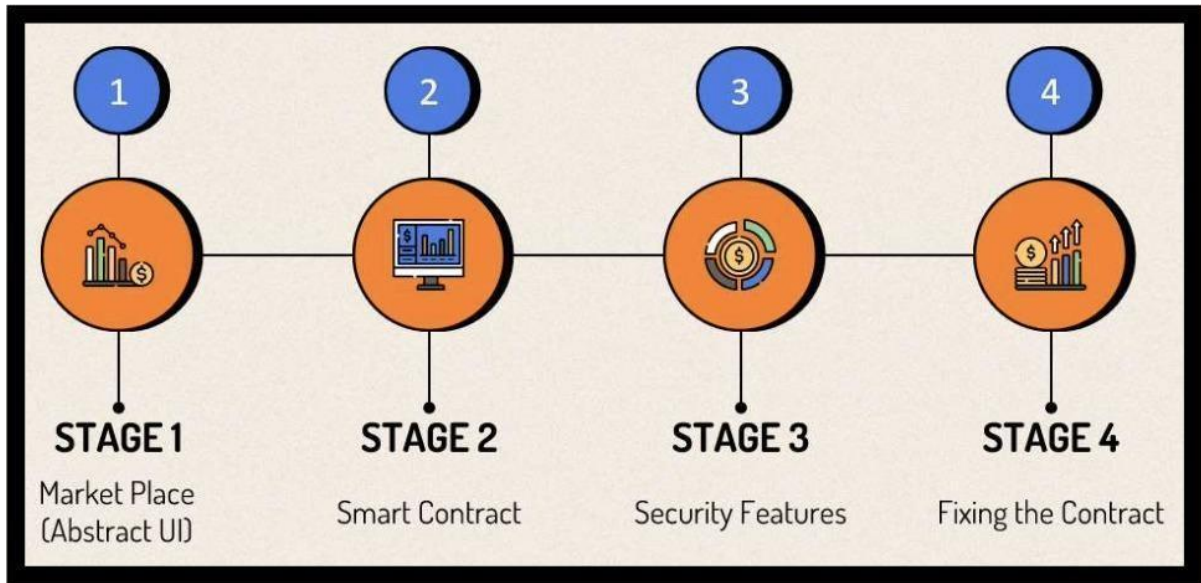
**Methodology:** The main contribution made by this article is: we developed a protocol and a business model of Peer-to-Peer (P2P) lending suitable to developing countries and accessible via mobile phone. The protocol integrates a service against the diversion of objectives which is based on smart contract.

#### Disadvantages:

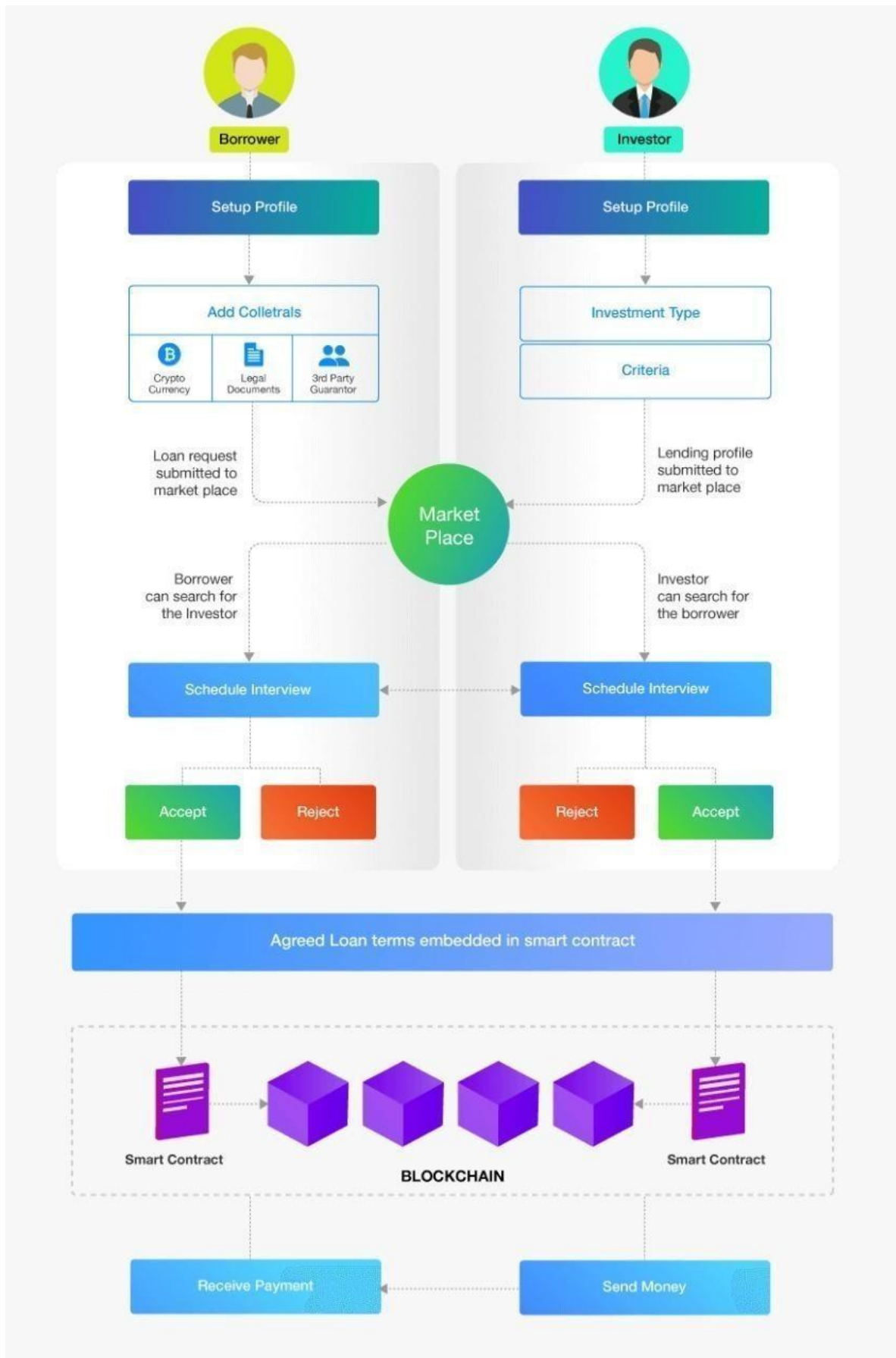
The content in this paper is pretty much enough for a brief idea on the project. But there may be elaboration is required and more about technical implementation process.



### Architecture Diagram:



**Flow Diagram:**



## Steps involved in our Design:

Step 1 – Lender creates a profile

A lender could create a profile with the information including:

- Personal Information (Name, Address, and ID number)
- Bank Account Information
- Type of Investment a lender wants to make. For example, a lender might wish to lend money to the borrowers requesting a loan for the business purposes.
- Criteria for different types of borrower, i.e., setting up the rate of interests according to the worthiness of a borrower.

The profile is submitted to the marketplace where lenders and borrowers could find each other.

Step 2 – Lender waits for the loan requests

Once the account is successfully created, lender waits for the loan requests from the borrower. As soon as any request is received, the lender schedules an interview with the borrower.

Step 3 – Borrower creates an account

A borrower setups an account with the following information:

- Personal Information including name, address, and government- approved ID
- Collateral- Crypto-coins, legal documents, and a guarantor.

Step 4 – Borrower sends a request for the loan

After creating the account successfully, a borrower can send the loan request to all lenders around the world. Smart contracts allow borrowers to send loan requests to the lenders who are interested in the type of investment a borrower wants to make.

Step 5 – Lender interviews the borrower

After receiving the loan request, a lender interviews borrower and asks the following questions:

- Why do you want to take the loan?
- What is your monthly earning?



- What is your repayment rate?
- How many times have you applied for the credit in history?

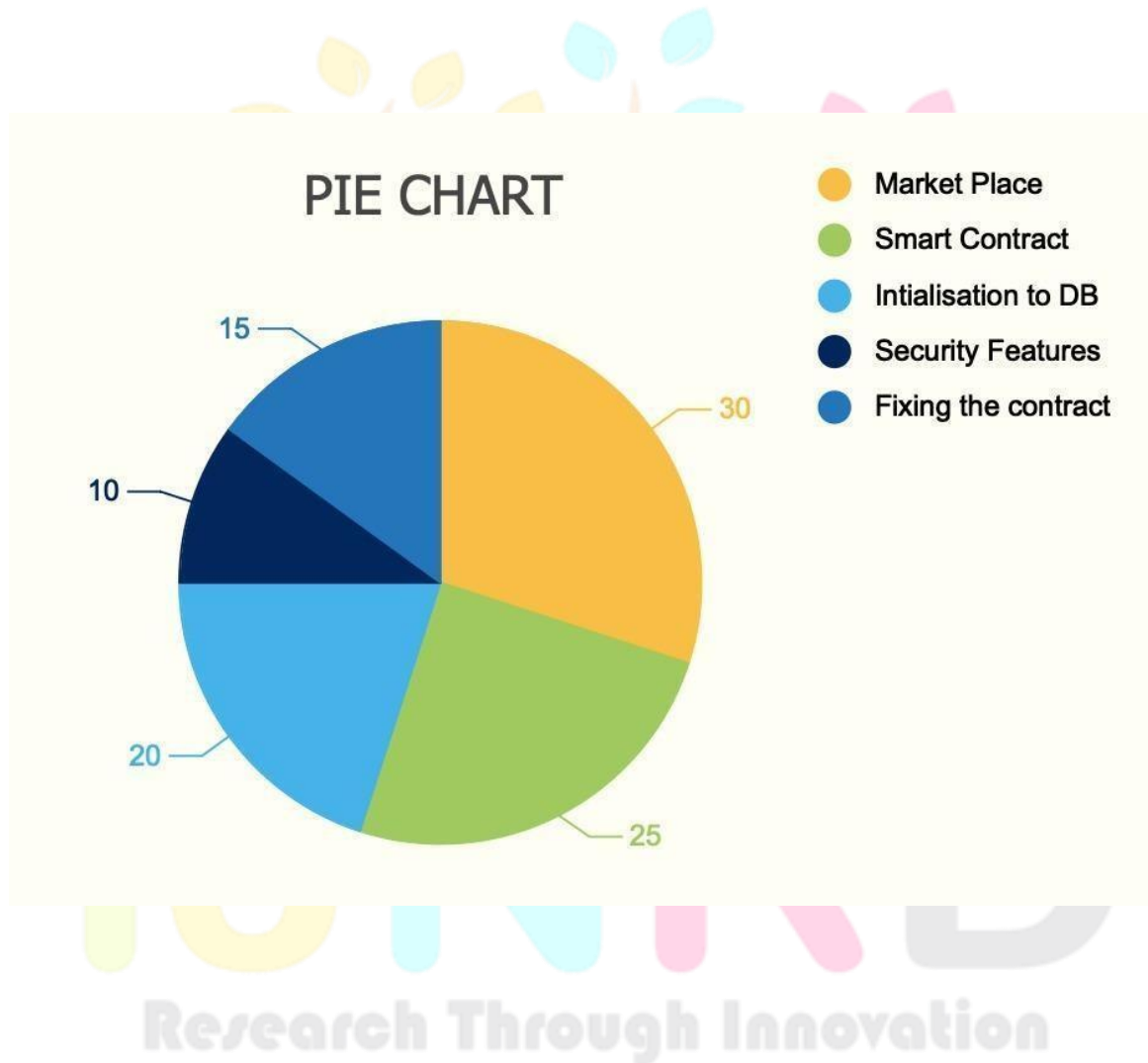
A lender can either approve or reject the loan application based on the above questions. Step 6 – Smart Contract fixes the rate of interest

If the lender approves the loan request, the smart contract decides the fixed rate of interest for different types of borrowers by checking their creditworthiness.

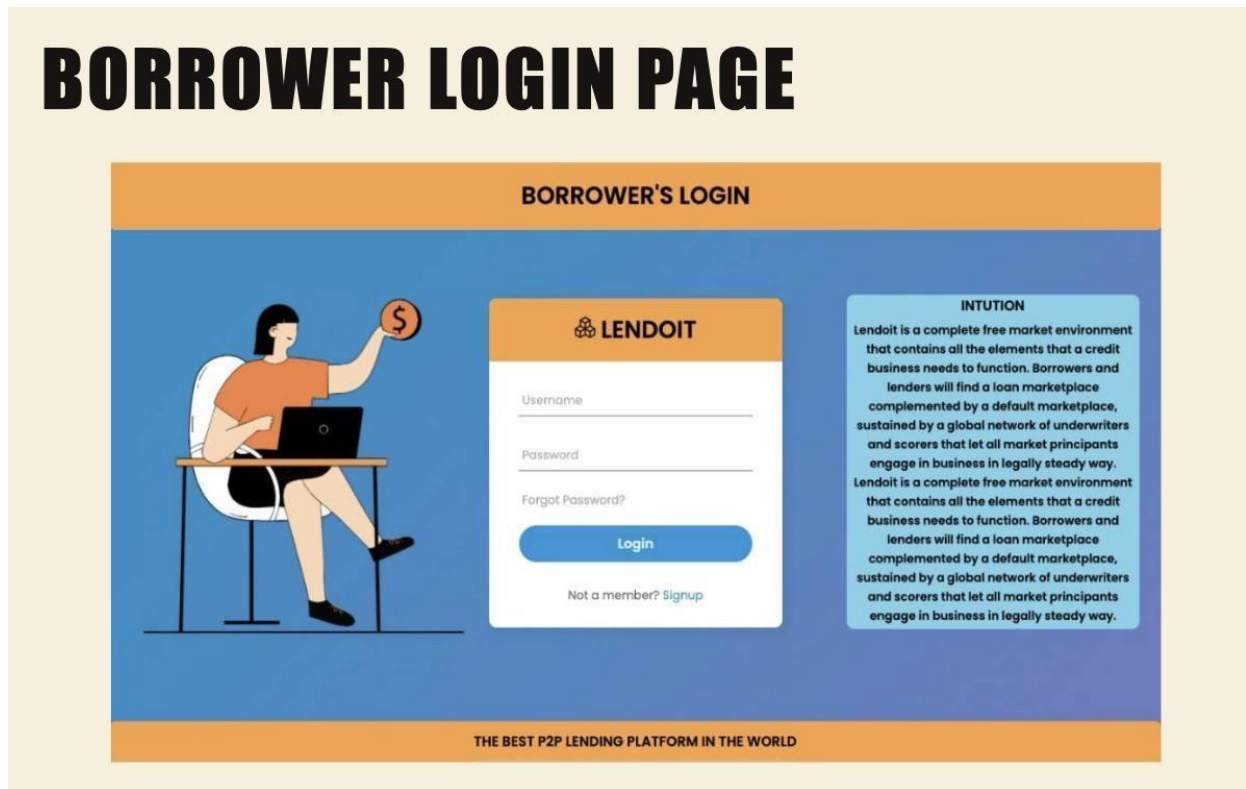
The borrowers can be categorized as high-risk, medium-risk or low-risk borrowers based on their repayment rates.

For example, lenders can set the low rate of interest for a low-risk borrower having good repayment rate.

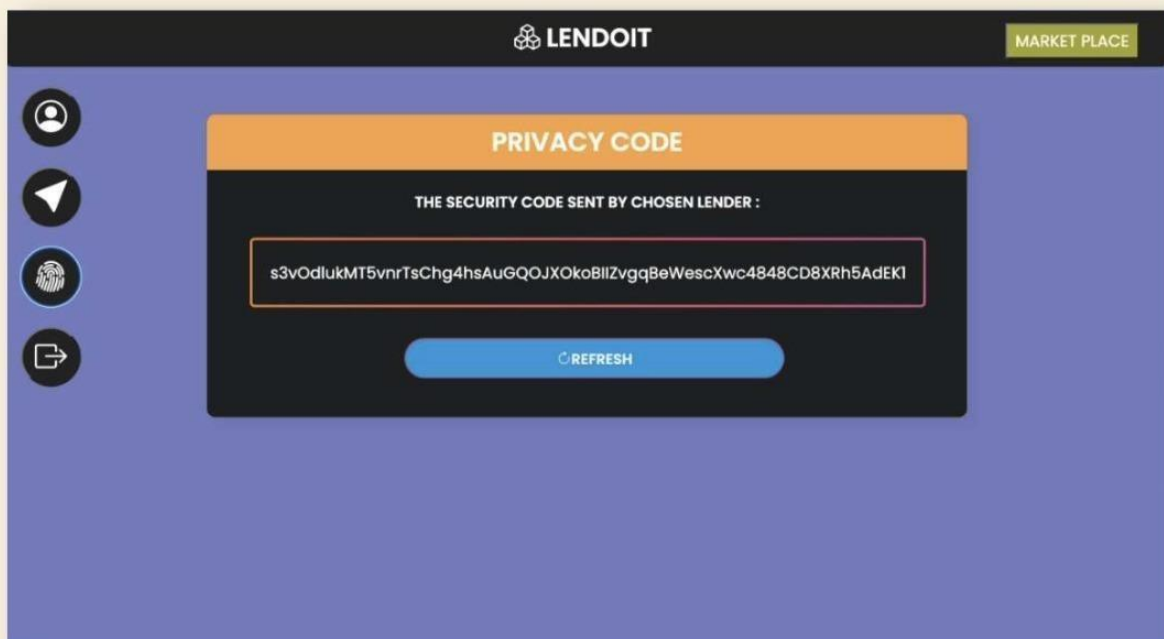
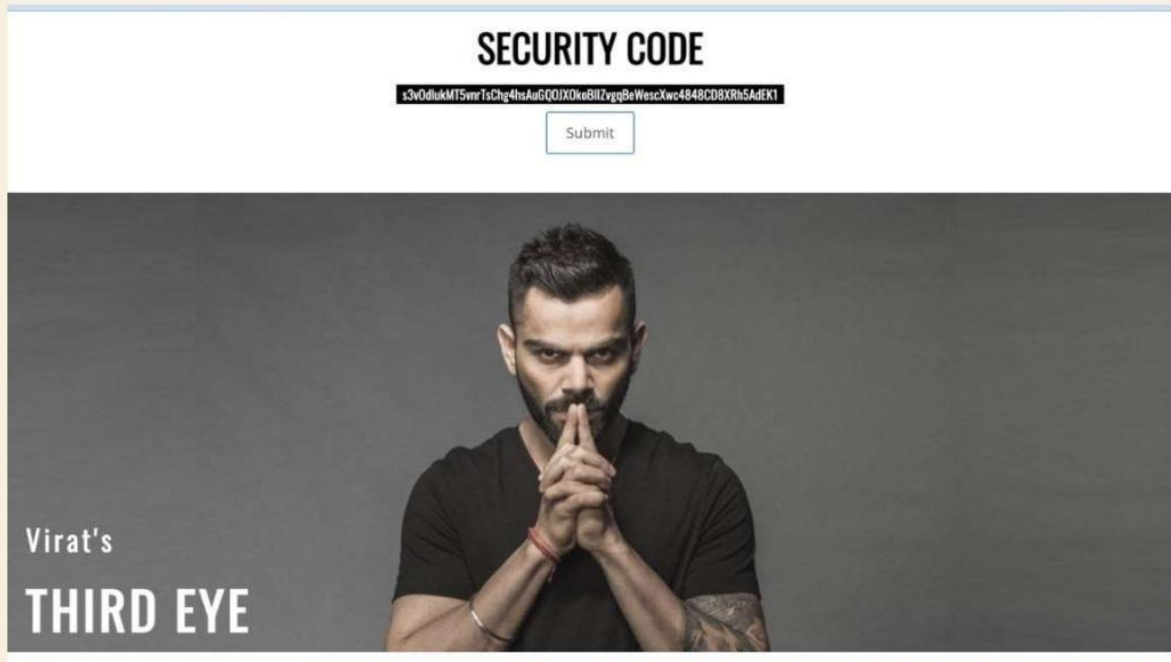
Using P2P Lending Blockchain Platform, the rate of interests remain fixed all over the world.



ALL OUTPUTS SCREEN SHOT:



# SECURITY CODE



**LENDING CONTRACT**  
**WELCOME**

A personal loan agreement is a legal document that is completed by a lender and a borrower to establish the terms and conditions of a loan. The loan agreement, or 'note', is legally binding. This document is considered to be a contract and therefore the borrower shall be expected to abide by its terms, conditions, and governing laws. Payments must be paid on-time and per the instructions of the agreement. State Usury Rates - The maximum interest rate allowed to charge by a lender in the State.

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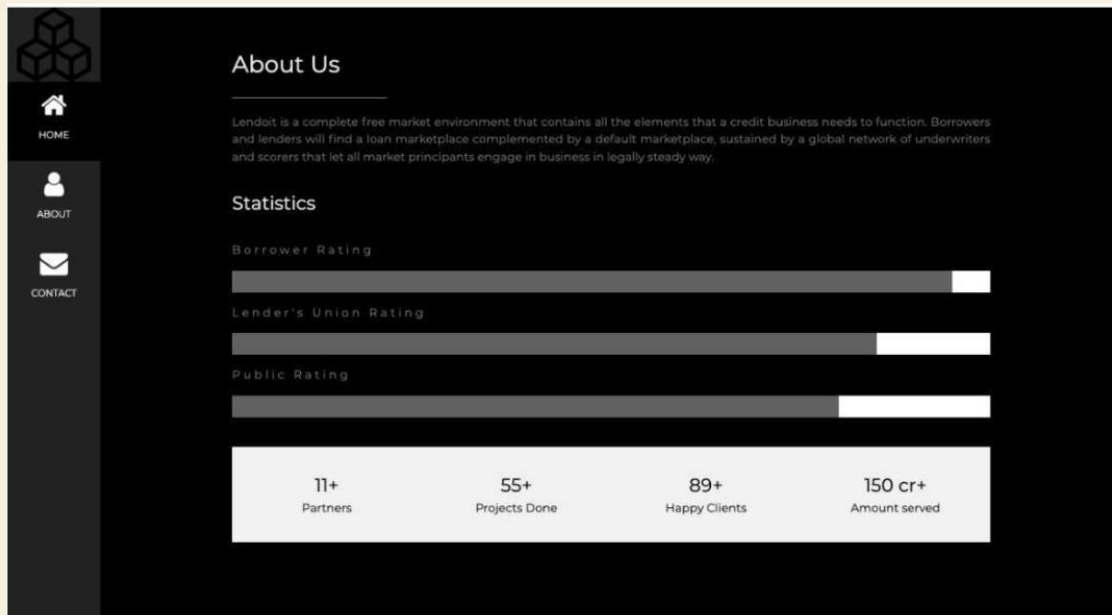
THE BEST P2P LENDING PLATFORM IN THE WORLD

# PROFILES

**LENDING CONTRACT**  
**WELCOME**

Name	Type	Rating	Action
Ruthvik Gogula	Company Leander	9.5/10	Lend Here
Virat Kohli	Company Leander	9.5/10	Lend Here
Mutyam Sandeep	Company Leander	9.5/10	Lend Here
Mukesh Ambani	Company Leander	9.5/10	Lend Here
Manish Malhotra	Company Leander	9.5/10	Lend Here
Salman Khan	Company Leander	9.5/10	Lend Here

# STATISTICS




**LENDOIT** MARKET PLACE

**YOUR DETAILS**


- Borrower's Name:** Praneeth Manusani
- Borrower's Mailing Address:** 1-4-7/A, LB Nagar, Hyderabad
- Borrower's Contact Number:** 8008939805
- Borrowers Aadhar/passport number:** 3977 8900 1234
- Borrowers Bank Name:** INDIA BANK


**Praneeth Manusani**


Type: Company Borrower  
Rating: 9.5/10



**Contact Me**


 ThirdEye Office, Delhi

 Phone: +91 7983475011


 Email: thirdeye@gmail.com

**Lender ID:**

CL050623



LENDOIT [Home](#)



### LENDING CONTRACT

# Thank You!!

A personal loan agreement is a legal document that is completed by a lender and a borrower to establish the terms and conditions of a loan. The loan agreement, or 'note', is legally binding. This document is considered to be a contract and therefore the borrower shall be expected to abide by its terms, conditions, and governing laws. Payments must be paid on-time and per the instructions of the agreement. State Usury Rates - The maximum interest rate allowed to charge by a lender in the State.

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## AGGREMENT DETAILS

December 1, 2021

**Borrower's Name:**

**Borrower's Mailing Address:**

**Borrower's Contact Number:**

**Lender's name:**

**Lender's Mailing Address:**

**Lender's Contact Number:**

**What's on Debt:**

**Loan Amount:**

**Intrest Rate:**

**When will be the Money be Borrowed?**

**Will the Borrower repay the sender in Schedules payments?**

**Final Payment is Due by?**

**Intrest Rate for Money not paid on-time :**

**Will there be a Pre-Penalty Payment?**

**The Penalty Amount:**

**Guarantor's Name:**

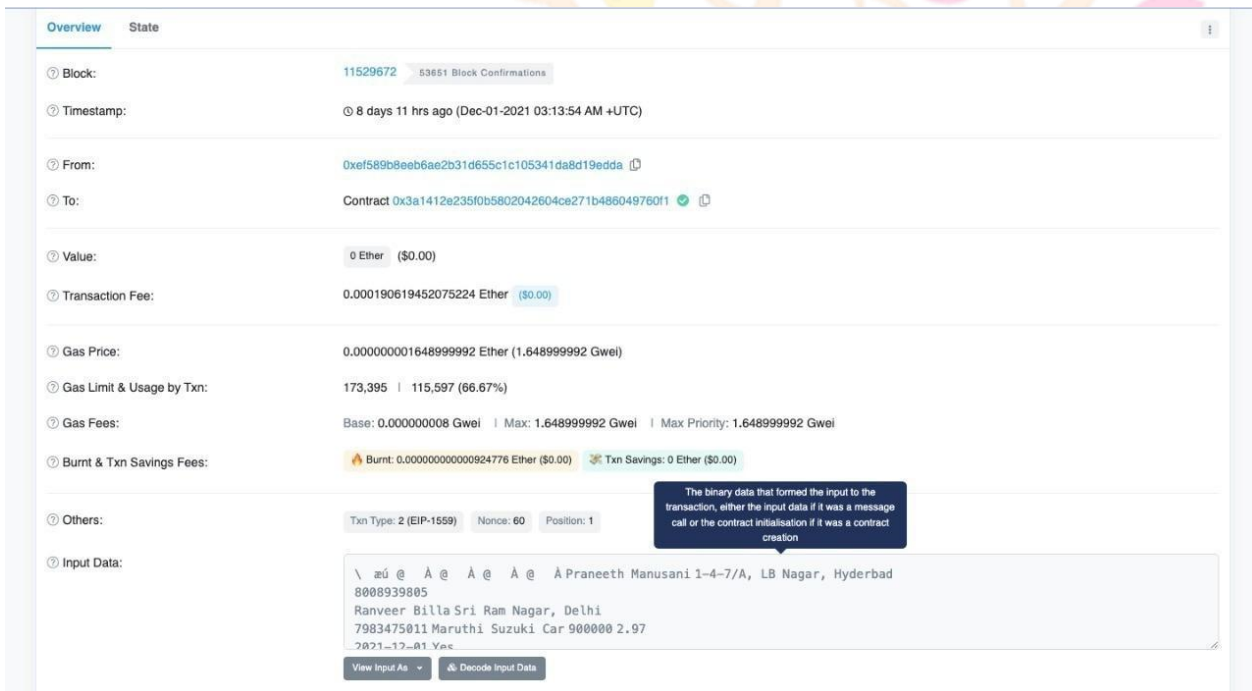
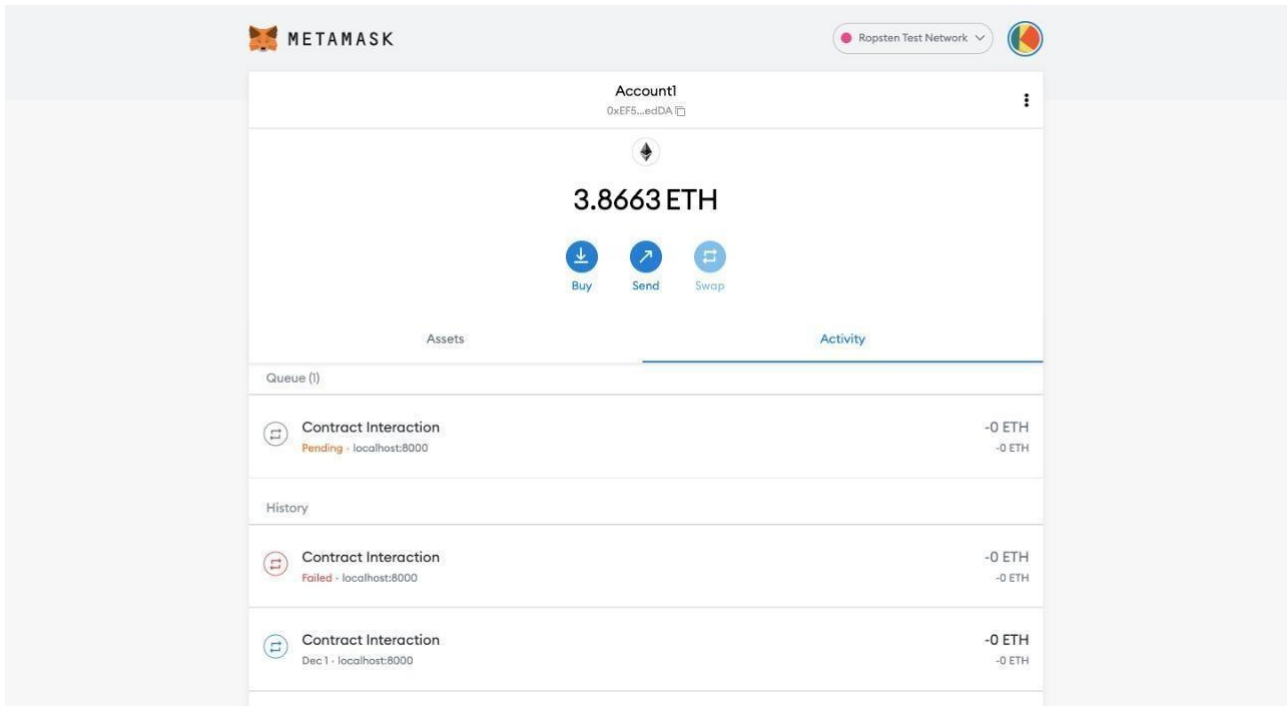
**Guarantor's Mailing Address:**

**Guarantor's Contact Number:**

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Research Through Innovation





Research Through Innovation

## Conclusion:

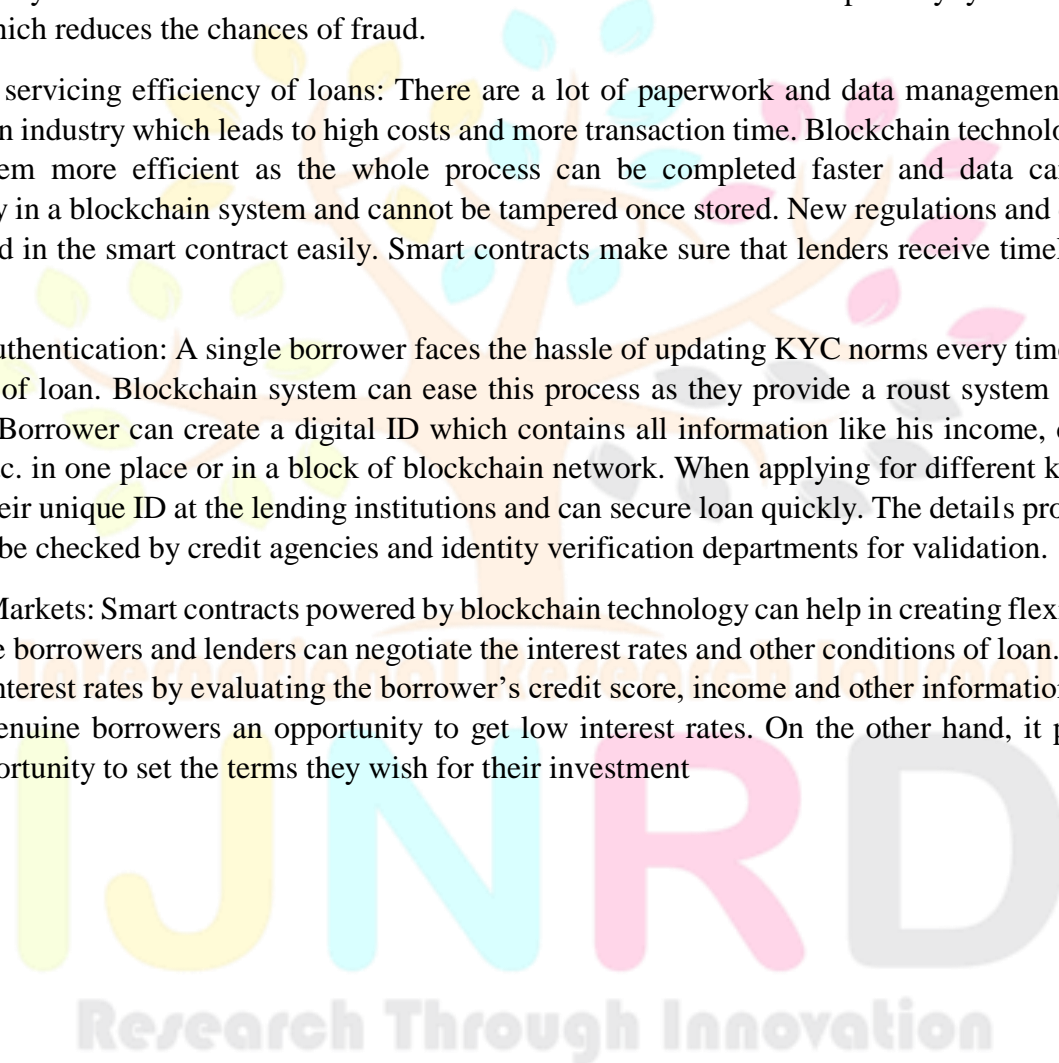
P2P lending is a boon to borrowers with broken credit scores and to lenders who take higher degree of risk for higher returns. While the default instance is few in developing markets, they are high in matured markets. With its improved processing performance, smart contracting and permissioning, Enterprise blockchain is of immense use for P2P lending platforms. Cost efficiencies, reducing time for onboard new members, issue and recovery of loan and compliance can all be done using this technology. Hence, blockchain can help in the development of the p2p lending industry. Blockchain technology has proved to be useful in many fields like cross- border payments, trade finance, settlements and consumer lending is also a sector which can benefit immensely from it. Here's how blockchain can help consumer lending industry:

1. **Low operational risks:** Financial markets were plagued by news of fraud and defaults of loans provided by government backed lending institutions. Decentralization of data improves security and takes off risk of counterparties. Blockchain technology is based on hyperledger fabric and it provides a common platform and not controlled by an individual financial institution which enables to transparently yet securely share information which reduces the chances of fraud.

1. **Improved servicing efficiency of loans:** There are a lot of paperwork and data management challenges involved in loan industry which leads to high costs and more transaction time. Blockchain technology can help make the system more efficient as the whole process can be completed faster and data can be stored chronologically in a blockchain system and cannot be tampered once stored. New regulations and changes can also be encoded in the smart contract easily. Smart contracts make sure that lenders receive timely payments automatically.

1. **Identity authentication:** A single borrower faces the hassle of updating KYC norms every time they apply for some kind of loan. Blockchain system can ease this process as they provide a roust system for member identification. Borrower can create a digital ID which contains all information like his income, credit score, loan history, etc. in one place or in a block of blockchain network. When applying for different kinds of loan they can use their unique ID at the lending institutions and can secure loan quickly. The details provided in the unique ID can be checked by credit agencies and identity verification departments for validation.

1. **Flexible Markets:** Smart contracts powered by blockchain technology can help in creating flexible markets for loans where borrowers and lenders can negotiate the interest rates and other conditions of loan. Algorithms can calculate interest rates by evaluating the borrower's credit score, income and other information and thus it provides the genuine borrowers an opportunity to get low interest rates. On the other hand, it provides the lenders an opportunity to set the terms they wish for their investment



## Future Work:

### The Road Ahead for Blockchain Based Lending:

The concept of blockchain based lending might bring in a new era in the lending business as automatization of loan agreements can vastly improve the process, but blockchain technology itself is in its nascent stage with a lot of new updates every day. Building a blockchain network itself is very costly and requires great technical expertise. Also, the volatile nature of cryptocurrencies may prove to be a barrier to entry for new peer-to-peer lending start-ups. There are a lot of legal uncertainties around cryptocurrencies in many countries which also is a hindrance. Automatization of evaluation of customers and finding their credit scores require robust oracle systems, which at this point are in their development stage. Many consumer lending companies are in their planning stage at this point of time except a few early adopters. But, blockchain technology is the technology for future and it lays groundwork for great transparency and efficiency in lending environment and analytics give the firms the edge they need to convert this transparency into decision making. This new version of age-old peer-to-peer lending system has the potential to completely revolutionize financial lending by adding accuracy and efficiency to the outdated centralized system.

Auto-payments using Smart Contracts: Borrowers can make the payments using smart contracts embedded with a crypto-wallet. If a borrower does not pay installments timely, the smart contract adds late fees to the actual amount and upgrades it on the ledger. So, if a borrower abides by the terms of the loan, the smart contract would automatically deduct penalties. P2P lenders using blockchain can help reduce delays, make quick approvals, eliminate the need for middlemen, and bring transparency. Blockchain-based P2P lending platforms allow investors to approve loans against residential properties, but the value of properties don't remain stable always. Moreover, the collateral provided by the borrower is not verified by a legal authority while lending money through the P2P platform. But the credibility can never be changed as smart contracts enable auto-payment and enforce compliance



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