

P2P LENDING BLOCKCHAIN SYSTEM

SCHOOL OF COMPUTER SCIENCE ENGINEERING

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Abstract—P2P lending blockchain – 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.

I. INTRODUCTION

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 technology¹ as it is built on the peer-to-peer model, providing a trustless, decentralized and a secure platform for lending practices.

II. EASE OF USE

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.

III. WHY BLOCKCHAIN FOR LENDING ?

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.
2. **Time:** Blockchain could make the entire process quick by adding regulations in the smart contracts.
3. **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.

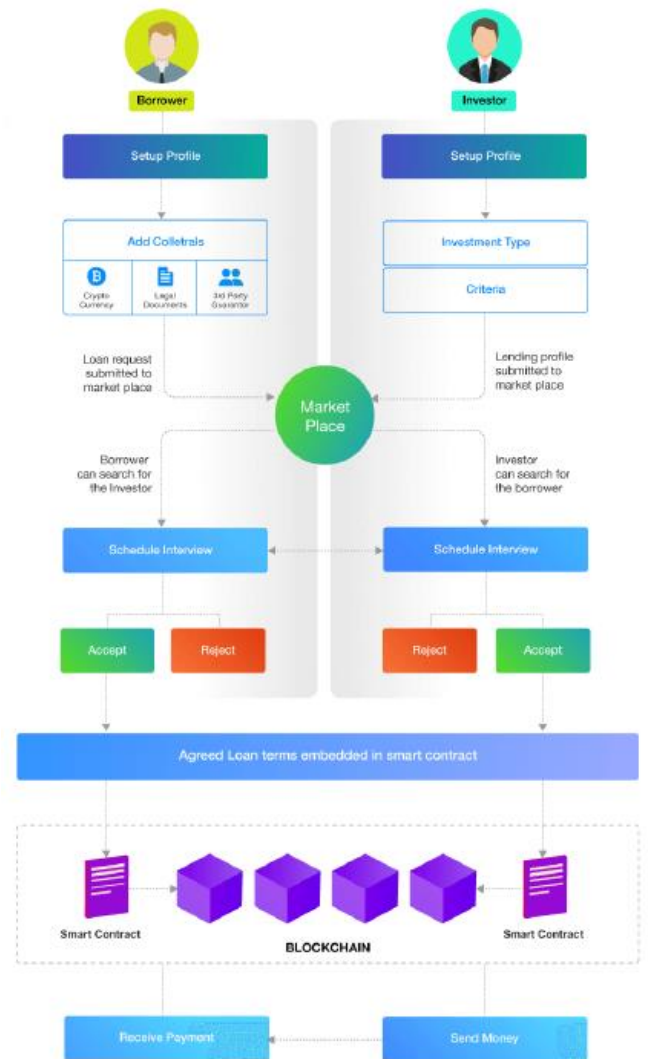
IV. BANK BASED LENDING VS P2P LENDING

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.

V. STAKEHOLDERS INVOLVED

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

VI. FLOW CHART



VII. STEPS INVOLVED

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 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 remains fixed all over the world.

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.

2. 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.

3. 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 robust 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.

4. 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.

VIII. BENEFITS OF BLOCKCHAIN TECHNOLOGY IN CONSUMER LENDING

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:

IX. CASE IN POINT

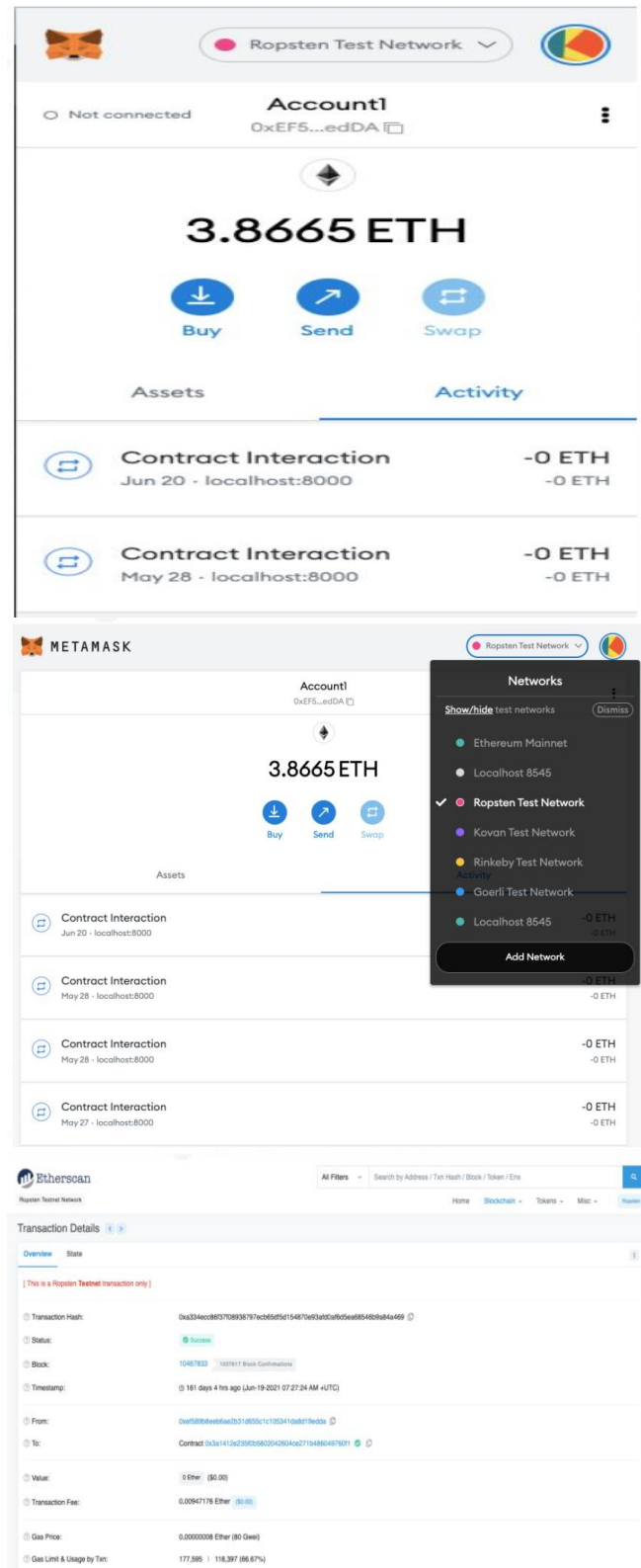
Recently Yes Bank has facilitated the issuance of a commercial paper (CP) of INR 100 Cr for Vedanta Ltd using blockchain technology³. This is one of the very first examples of blockchain based lending by a bank in Asia. Commercial paper (CP) is not usually backed by collaterals and are an unsecured money market instrument issued as a promissory note. Amid a CP market slowdown, yes bank has issued this commercial paper digitally by being an issuing agent. The recent slowdown in issuance of CP can be attributed to liquidity crisis in the market caused by frauds and defaults faced by IL&FS due to operational errors. The implementation of blockchain technology for the issuance of CP can help reduce the turnaround time for issuance and redemption of CP's and operational risks. Blockchain's transparent & decentralized nature will help to increase real time visibility of the loans. GR Arun Kumar, Group CFO, Vedanta Group, said, "Vedanta will benefit from the digitized and simplified workflow which shortens the laborious process running into hours to just a few minutes and complete transparency that this platform offers to all stakeholders."

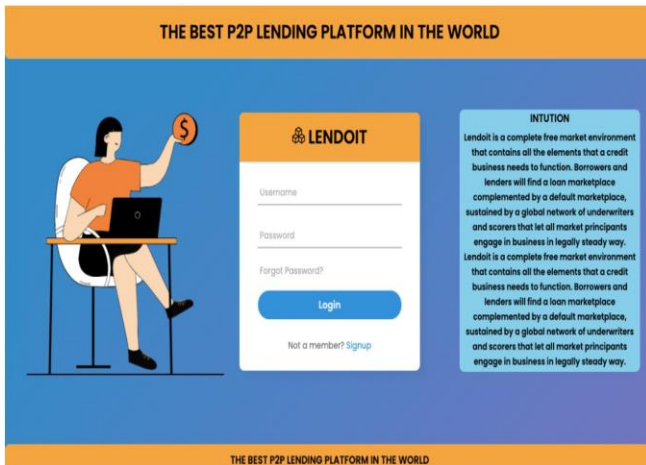
X. THE ROAD AHEAD FOR BLOCKCHAIN BASED LENDING

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.

XI. PLATFORM





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Job Report

TestProject

Execution ID: cEB9fJObEWWhCGzxFsOsXQ
 Platform: Web
 Job Name: Lendit Testing
 Project: First Web Project
 Ran By: Praneeth Manuani
 Agent: Praneeth_MacAir On Mac
 Started At: November 17, 2021 13:32:30 (UTC)
 Duration: 00:00:48.332
 Execution Method: Serial

Overall Summary



Tests Results

Test	Application	Duration	Result
Testing Lendit	Lendit	00:00:17.747	Passed

Name: Chrome
 Version: 95.0.4638.69

Detailed Report

Test: Testing Lendit
 Target: Chrome (v95.0.4638.69)
 Application: Lendit
 Duration: 00:00:17.747
 Result: Passed

LENDING CONTRACT

Borrower Details :

Borrower's Name

Borrower's Mailing Address

Borrower's Contact Number

Lender details :

Lender's name

Lender's Mailing Address

Lender's Contact Number