CRYPTOSHELL AG

Neobanking Trade finance platform, BankEngine

The platform is a complex banking solution for international trade, which includes the most common banking instruments in a new, more transparent, quick, and trustworthy form with blockchain implementation.
It gives traders, producers, and end customers access to additional funding in the form of factoring, trade finance, and short-term and long-term loans. The platform also represents decentralized finance by providing access for private investors to one of the most stable assets without banks. Tokenization allows fractional ownership, enabling more individuals to invest in assets that were previously illiquid or inaccessible due to parameters like high risk and capital in those markets. Tokens can be traded globally without geographical restrictions. The platform reduces administrative costs associated with traditional asset transfers, making transactions more cost-effective. Blockchain provides even more traceability than any brand names. With AI built into the protocol, The platform can offer enough tools to analyze players in the market without attracting big consulting firms.
Our mission is to substitute overregulated and insufficient banks in the areas that suffer from the finance gap for decades.

Main Problem

Market asymmetry

The existing market asymmetry has exacerbated the widening gap between the developing world and global corporations. The expansion of trade during the era of hyperglobalization has been closely linked to the proliferation of global value chains (GVCs), predominantly controlled by leading firms headquartered in advanced economies.

According to the Asian Development Bank's (ADB) 2023 Trade Finance Gaps, Growth, and Jobs Survey, the trade finance gap has expanded to $2.5 trillion, with SMEs in developing markets being the most affected. Despite widespread recognition of this significant challenge, proposed solutions and new approaches to closing this gap have been scarce.

Based on the current financial environment — low growth, high interest rates, high inflation and large demand for capital investment — the trade finance gap is likely to continue to grow.

Simultaneously, we face a situation where the primary resources are located in developing countries, which are most impacted by these financial gaps. Africa, for example, is home to abundant reserves of critical minerals such as lithium, cobalt,

rare earth elements, platinum group metals (PGMs), copper, and graphite, positioning the continent as a pivotal player in the global energy transition.

However, when firms in West Africa do manage to access trade finance, they face rates that are significantly higher than the local policy rate, despite trade financing generally being considered low-risk due to the goods being shipped serving as collateral. The premium over local benchmark
rates range from 4-10 percentage points for large corporations and 7-17 percentage points for small businesses, compared to around one percentage point or less for firms in advanced economies .

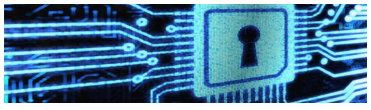
Many MSMEs either lack the necessary collateral or can't meet the risk assessment criteria for leveraging trade finance services. Compounding the problem, banks may feel that limited access to enterprise-related historical data constrains their ability to extend credit.
Another challenge complexity comes from the nuances and subsegments of the three primary product categories: documentary business, supplier-side financing, and buyer-led financing. Finally, MSME suppliers face particular challenges in the search for new clients and revenue sources that are essential to their growth, including institutional barriers and bureaucracy, lack of resources, and a lack of access to overseas markets. Digitization of trade processes and trade finance could alleviate some of these conditions by increasing transparency and freeing up resources. Progress on these issues has been slowed in part by the fact that trade finance has adhered to established and traditional technology approaches for many years.

Along with the rise of export market concentration, large firms have increased their ability to extract rents. Empirical evidence suggests that part of the surge in the profitability of top MNEs – a proxy for the very large firms dominating international trade and finance – together with their growing concentration, has acted as a major force pushing down the global labour income share, thus exacerbating personal income inequality. It has also led to unequal trading relations even as developing countries have deepened their participation in global trade.[3]

The platform is built on an ecosystem that allows us to reduce risk associated with commodity trading and interact with vetted parties both by our protocol and community. That streamline transactions and bring more financial opportunities to trustworthy players.

Existing solutions

The main development of products for the market took place in 2018-2019. Consortia are known to be a huge example of building ecosystems around the banks. The bankruptcy of many first-wave companies highlighted the conservative nature of the industry, particularly in terms of document handling practices.



Apart from changing the composition of participants, our platform differs from the first wave of solutions by two significant characteristics: the democratization of tools for private capital and a more developed infrastructure, the construction of which was impossible in 2018.

The platform will enable commodity traders to access liquidity and funding more easily, and at lower costs.

As an example of changing market relationships, let us consider trade finance and the tokenization of various types of commodities in suppliers' warehouses.

As markets become more efficient, commodity trading is evolving into a low-margin service business. Increasingly, traders make their living by providing a solidly reliable logistics service between producers and consumers. These facets inherently raise the risk of transactions, contributing to the limited access for new or growing companies. Blockchain's cost-reducing capabilities will increase margins while its deterministic trust structure will drive accessibility within the market.

Factoring and invoice financing

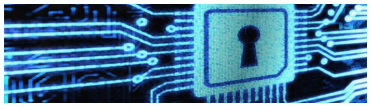
The platform serves as a decentralized data room for all invoices submitted, each of which has a unique record for the These invoices can therefore be made available as a shared source of liquidity for factoring and invoice financing. Furthermore, businesses can take advantage of the cryptographically secure nature of the Platform blockchain network to upload all of their financial documentation. Access to detailed financial data about a specific company or invoice can be granted only by the company itself or the recipient of the invoice. This enables real time auditing to be conducted, improves the credit scoring process, expedites credit approvals, etc.

That gives MSMEs easy access to short-term financing by turning their accounts receivables into tradable assets. This is achieved by tokenizing and publishing each invoice to blockchain in a secure matter, creating a whole new source of financing in the process. A new market will be created, where factoring firm, investment funds, insurance companies, P2P lenders and private investors can provide liquidity in accordance with their specific criteria and expected returns.

Apart from the network itself, a micro-factoring pool will be created which enables MSMEs to gain immediate access to liquidity by selling their invoices to the fund.

Financing Constraints

Invoice financing can be structured in a number of ways, most commonly factoring or discounting. This whole process involves a lot of manual work. It involves manually checking if invoices were submitted to creditworthy commercial clients, if those



clients agree with factoring of the invoice, if they confirm that goods or services were really delivered, etc. And all of this needs to be confirmed by written and signed agreements. This whole process is costly and time consuming which prevents MSMEs from utilizing factoring for smaller amounts. Also some of the bigger clines (for example food stores and chains) by default disallow transfer of invoices to 3 parties in order to reduce their manual work increase and to reduce risk of paying into the wrong account.

MSMEs have limited access to short-term (working capital) financing, as banks demand significant collateral and large amounts of documentation when approving finance.

MSMEs are at a clear disadvantage when dealing with a capital market in terms of credit rationing and finance gaps. These gaps in financing have driven the need for alternative sources of financing, such as factoring, even though service providers may charge up to 10% of the receivables as commission. Rates generally range from 1.5% to 4.5% for 30 days and up to 6% for 60 days. This of course all depends on the interest rate environment, debtor rating and the industry concerned. However, when applying a 3% fee to a factoring industry valued at USD 3 trillion and rising, global factoring revenues would come to approx. USD 70 billion per annum.

Invoice Verification Issue

Invoice verification is a critical tool for preventing fraud in factoring transactions. Beyond enhancing the security of the factoring process, it also expedites payments. Fraud can occur when a contractor or supplier deliberately submits false, inflated, or duplicate invoices, either acting alone
or in collusion with contracting personnel due to corruption. This makes invoice verification an essential and resource-intensive part of the factoring process.

The verification of submitted invoices involves several steps, including confirming that the invoiced services were delivered as claimed, inspecting and confirming that the quantity and quality of the invoiced goods were as stated, and ensuring that the works and materials met the invoiced specifications.

The implementation of blockchain technology with ERP connectors enables the automation of all processes involved in verifying the validity of submitted invoices. A publicly accessible history of submitted invoices on the blockchain allows for further automated assessment of their validity and associated risks.

Transferable documents

There are several key documents, the tokenization of which enables access to intra-platform trading across various legal entities.

Transferable documents or instruments, sometimes called «documents of title» typically include:

• bills of exchange
• bills of lading
• cargo insurance certificates
• marine insurance policies
• promissory notes
• seaway bills
• ships delivery orders
• warehouse receipts

The platform allows investors to manage the transfer of both rights and assets directly on the platform in various formats. This includes dividing ownership based on the share of rights, as well as offering the possibility of holding fractional rights or actual ownership of a tokenized asset. These assets, which are currently inaccessible to the broader public, can now be made available through the platform.

Financial Data Format

We use XBRL to present financial data prior to tokenization. XBRL (eXtensible Business Reporting Language) is an open international standard for digital business reporting, widely adopted across more than 50 countries. Each year, millions of XBRL documents are produced, replacing traditional paper-based reports with more efficient, accurate, and effective digital versions.

In essence, XBRL provides a standardized language for the authoritative definition of reporting terms. These terms can then be used to uniquely represent the contents of financial statements, as well as other types of compliance, performance, and business reports. By employing XBRL, reporting information is accurately conveyed and seamlessly tokenized onto the blockchain.

Core Calculations

The platform uses two core calculations for helping investors in evaluating investment opportunities. These two calculations are:

1. Opportunity Qualification and Risk Assessment
2. Predictive Behavior Credit Scoring based on existing banking approaches with Artificial Intelligence structure

Opportunity Qualification and Risk Assessment In order to provide lenders with risk

factoring information we are using Altman Z-score calculation formula. The Altman Z-score is the output of a credit-strength test that gauges a publicly traded manufacturing company's likelihood of bankruptcy. The Altman Z-score is based on five financial ratios that can be calculated from data found on a company's annual 10K report. It uses profitability, leverage, liquidity, solvency and activity to predict whether a company has a high degree of probability of being insolvent.

The original formula is as follows:

$\zeta = 1.2A + 1.4B + 3.3C + 0.6D + 0.999E$

Where we have:
A — Working capital / total assets
B — Retained earnings / total assets
C — Earnings before interests and taxes / total assets
D — Market value of equity / total liabilities
E — Sales / total assets

New York University Stern Finance Professor Edward Altman, published the Altman Z-score formula in 1968.

In addition to that in 2012, Altman released an updated version called the Altman Z-score Plus that can be used to evaluate public and private companies, manufacturing and nonmanufacturing companies, and U.S. and non-U.S. companies. We are using the Altman Z-score Plus formula to evaluate corporate credit risk.

Technology

The underlying inputs of the company financials are the invoices that are issued or received. With our technology, every invoice is tokenized and published to the blockchain through an automatic ERP connector. A blockchain is a distributed database, which makes the creation of a digital ledger of invoices and shares it among network nodes. Blockchain uses cryptography to allow each participant on the network to manipulate ledger in a secure way without a need for central authority. Time stamping is a basic blockchain function that permanently registers on the block the time that a particular action took place. The main advantages of building solution based on blockchain are:

1. Transparency and consensus helps to reduce costs and eliminate document fraud.
2. The immutability and digital uniqueness inherent to blockchain technology ensures that values are transferred securely
3. Data privacy is ensured by utilizing tokenization as a form of cryptography, giving parties access only to the information they have been given rights to.
4. Smart contracts ensure that the conditions agreed on between the parties are

executed flawlessly.

All these factors guarantee the full and irreversible traceability of the invoices submitted to our network (ownership, due date, payment, counterparty, etc.), making them tradable assets. The second stage in the development process will be devoted to setting up the liquidity pool, which will enable investors to benefit from both short-term financing and up to a year trade financing .

Company Credit Scoring and Automated Auditing. Financial items can be uploaded regularly to the blockchain, with a time-stamped record of every transaction made. The company then decides how much information it is willing to expose to the counterparty, with the benefits including increased transparency and the eventual ability to expedite the credit scoring process as a result.

Although companies tend not to make all of their financials public, they would benefit from greater transparency, not only in terms of streamlining their finance department or lowering the cost of audits, but also with regard to how the market perceives their company. After all, investors would be far more inclined to invest in a company that shows you what is going on all the time rather than a company, which gives only periodic updates and this includes both vendors and buyers.

With a shared public ledger, auditors and financiers such as factoring firms could have automated forms of analysis at their disposal to appraise the underlying health of a balance sheet, a powerful innovation that could automate aspects of the regulatory, audit and accounting processes. Moreover, such a tool would bring integrity to the system. All fraud would be much more difficult to carry out.

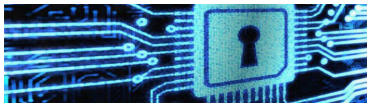
Smart Contracts

The smart contract design employs a modular structure, making it highly reusable and easy to upgrade.

Exchanging event-related information within a distributed ledger not only facilitates the necessary trigger events for goods to reach their final destination, services to be fulfilled, and suppliers to receive payment, but also automates these processes. The blockchain's capability extends beyond mere information exchange along the supply chain—smart contracts ensure that trigger events are not just initiated but automatically executed.

A smart contract is a tokenized computer process stored on the blockchain that automatically performs predetermined functions once a triggering event occurs.

Smart contracts can involve multiple parties, such as lenders, borrowers, buyers, sellers, and others. Once tokenized, the terms cannot be altered. For instance, if a



smart contract is established between a lender and a seller outlining agreed borrowing conditions, the contract will automatically initiate a payment event. The payment is automatically processed once confirmation is entered into the system. With smart contracts, legal terms and conditions are embedded in the code, enabling the automatic execution of the contract's defined functions.

This architecture also prevents duplicate invoice factoring, as the contract will not permit additional financing for an invoice that has already been financed. Invoice duplication has been a significant
barrier to making invoice factoring solutions more accessible to MSMEs, but the integration of blockchain technology effectively eliminates this issue.

The main difference between Platform and other blockchains is that each party sees only a subset of the ACS and a subgraph of the global transaction graph, also known as the party's view. This party specific view is always a valid ledger that can be verified locally by the party's node; a party need not trust any other party for verification. Upon receiving a transaction or sub-transaction, a party's node will verify three things: that the transaction is consistent with the party's view, that the transaction conforms with the logic written in the smart contracts, and that the transaction is properly authorized.

The platform enables users to create their own subnets. A party can connect to a single or multiple subnets. And if a party is connected to multiple subnets, the protocol can synchronize digital asset transactions across them. This design ultimately enables privacy, performance, and scalability in a decentralized environment.

Forfaiting

Forfaiting is used to finance long-term receivables by purchasing long-term debt obligations, such as bills of exchange or letters of credit, from exporters. A forfaiter, typically a specialized financial institution, acquires these obligations for periods ranging from several months to several years. This is a non-recourse form of financing, meaning the forfaiter assumes all risks of non-payment.

The automation and efficiency gains enabled by blockchain technology can significantly reduce the costs associated with forfaiting, including intermediary fees, administrative expenses, and potential costs related to delays.

Letter of Credit

When applied to letters of credit (LCs), tokenization converts the traditional LCs into digital, programmable tokens on a blockchain network. These digital tokens embody all the specific terms, conditions, and obligations associated with the LC, ensuring that each transaction is secure and efficient. This digital representation on a blockchain not only enhances the security and transparency of trade transactions but also streamlines the process, making it more agile and responsive to modern trade demands.

A report by the ICC states that a typical trade transaction involves up to 27 documents, 9 of which relate to the transfer of possession, and can cost up to $80,000 per transaction. This process can take up to 2–3 months to complete.

In total, 4 billion documents are traded at any given time in the trade ecosystem.

The diverse range of regulations across different countries adds complexity to traditional LC transactions, particularly in cross-border dealings. Sanctions and lack of agreements between countries can hinder LC processes. The largely paper-based verification process, despite existing SWIFT standards, leads to potential delays and fraud risks.
The physical transfer of a Letter of Credit can take up to 5 to 10 days (about 1 and a half weeks) from the invoice generation to finally reach the bank. A tokenized LC can be processed in a few hours.

As every party involved can access a reliable and unalterable record of transactions, Platform greatly reduces discrepancies and disputes.

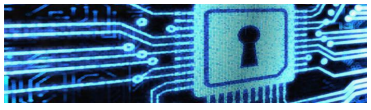
According to a ICC report for SMEs, 60% said Digital Letters of Credit or eBills of Lading would improve working capital Management. This is important because Working Capital is the most common form of trade finance, behind letters of credit.

LCs Tokenization also allows the development of convenient standardized exchange with tradable digital forms of LCs which lead to easier and less risky exchange of rights.

Escrow agent

In cryptocurrency transactions, an escrow service acts as a trusted intermediary, safeguarding the interests of both the buyer and the seller. During a trade, the escrow service holds the agreed-upon assets until specific conditions are met, reducing the risk of fraud or default and building confidence among all parties involved.

Smart contract-based escrow systems automatically release funds once predefined



conditions are satisfied. Unlike traditional escrow services, smart contracts do not require a centralized authority, as they self-execute when the terms of the agreement are fulfilled. This approach enhances transactional trust, efficiency, and transparency.

Long term loans

Based on the amount of data that network participants are willing to disclose, professional investors can make informed decisions regarding long-term loans using platform metrics and analytics. This approach also enables non-professional participants to contribute to the collective capital pool, fostering broader participation in investment opportunities. Securing traditional long-term debts with assets owned by businesses abroad often faces challenges, primarily due to regional regulations and ownership requirements. Platform mitigates some of these risks, providing a more accessible and secure investment environment.