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Michael Bickers
Managing Director
BCR Publishing

Introduction

A successful receivables finance operation relies on an efficient software platform. Therefore, it is essential that for both bank and non-bank providers of receivables finance, a reliable system is employed that is right for their business. Although forms of receivables finance software have been available for several decades, in recent years the pace of technological advancement has been rapidly increasing. The level of sophistication now available in receivables finance technology has increased its importance as a consideration for both financiers and clients in the same way that working capital efficiency has become a key business focus.

Technology has come a long way in the receivables finance sector. Software developments such as in e-invoicing, mobile technology, cross-border and multi-lingual capabilities have all contributed to its growth. In recent years, much interest has been generated surrounding the use of mobile applications and also the potential of new technologies such as blockchain and big data applications in improving and securing industry processes. Developments are likely to continue at a rapid pace as use of receivables finance becomes more widespread.

Receivables finance technology must be structured to provide information with ease and efficiency. It must demonstrate the capability to manage high volumes of data, whilst managing risk assessment. Of course, these features need to be provided at a competitive price, as expansion in the market has brought many new players. And as competition in receivables finance itself forces pricing down the demand for more efficient systems increases.

This publication contains articles from leading receivables finance software providers, demonstrating their expertise in the sector. Thought leading discussion, review and commentary are included as well as information on systems and their ability to operate and provide efficient receivables finance solutions.

Broadly speaking, receivable finance technology is used in the following sectors:

Factoring

A factoring platform typically provides all the facilities required to operate and support a factoring service and all its variations and optional arrangements such as recourse factoring, non-

recourse, import, export, multi-currency, plus debt collection procedures such as dunning letter production, statement production, charges and finance availability calculations. The platforms should support an open-item based accounting model such that the balance outstanding on each invoice and each debtor account is always known. Platforms should provide risk management capabilities around collateral risk and a fraud detection mechanism. Localised business practice may require the support of late payment interest, handling of different payment instruments and the support of compliance and regulatory needs. Platforms may also need to provide specific functionality for niche industry sectors such as construction and recruitment or where stage payments are the norm and non-performance may be an issue.

Invoice Discounting

For invoice discounting the platform may provide all the above, but the service is usually conducted on a confidential basis i.e. the debtor is not aware of the arrangement. In addition, the platform may provide a shadow ledgering capability enabling the invoice discounter to precisely monitor the status of the client's ledgers or the ability to directly extract ledger information from the client's accounting systems.

Supply Chain Finance

Also known as supplier finance, reverse factoring, approved payables finance, and confirming, supply chain finance will have at the center of its operation a platform connecting supplier, buyer and financial institution that will enable very large and fast data flows through

the uploading of supplier invoice data. It should also have the capability for on-line payables approval by the debtor and on-line facilities for the supplier to view the consequential availability of funding, which may be straight-through funding or allow the client to select invoices to be paid early. Platforms may also offer a supplier on-boarding facility.

Trade Receivables Securitisation

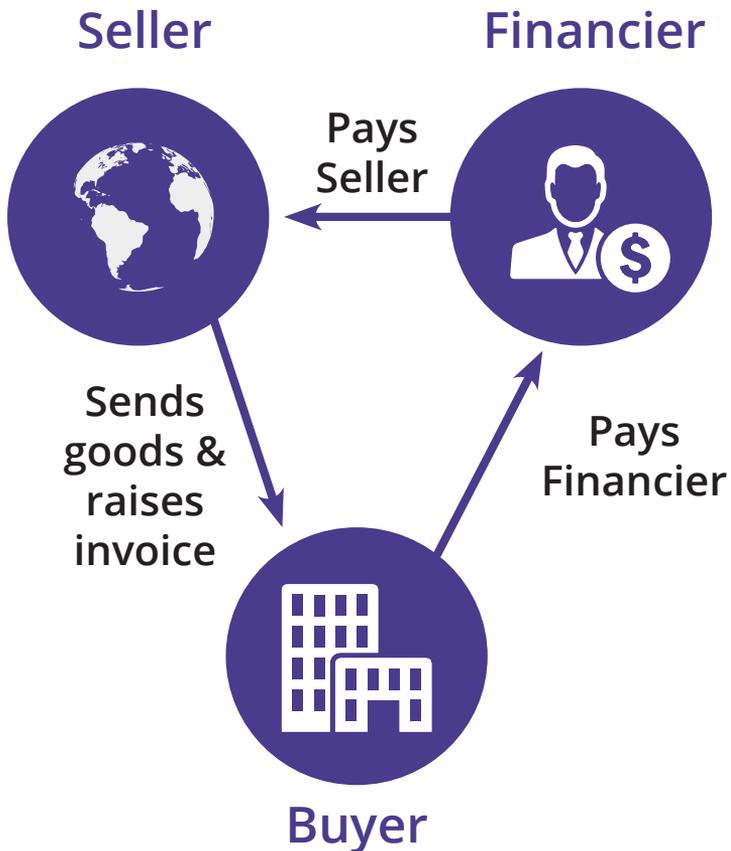
Trade receivables securitisation requires a system that can manage very large invoice data flows. It needs to have a cash matching capability and to be able to analyse and stratify the incoming invoice data so that the receivables can be risk weighted, priced and packaged accordingly for sale to secondary markets.

Forfeiting

The forfeiting platform structure tends to be similar to factoring with the exception that it may not need the capability of handling large quantities of invoices and a broad spread of debtors. This is because the transactions tend to be, singular, of a larger value and cross-border.

Asset Based Lending

This form of secured lending will consider all the assets of the client: receivables, inventory and fixed assets. From a lending perspective, platforms will have the ability to provide revolving or term loans. Due to the generally larger values, platforms may offer facilities to allow the loan to be syndicated with other lenders.



Typical arrangement in factoring, invoice discounting and supply chain finance



Daniel Huszár
Head of Sales
efcom

The challenge of blockchain in trade and receivables finance

The value of a single bitcoin is US\$7,141.59 at the time of writing, which has rallied from around US\$1,000 since April 2017. While the rise of bitcoin makes international headlines, it could distract from the bigger picture to see it as the first application using the blockchain protocol – in the same way that email could be called the first application of the Internet.

As with every new technology, use cases need to be tested and brought to market until something sticks. In recent months there has been a growth in promising blockchain applications, e.g. to track and verify the origin of diamonds (for a prospective buyer). The R3 consortium's very own blockchain platform and even the factoring of invoices via blockchain.

The aim of this article is to help you understand how blockchain works, using bitcoin as an example. I will then explain some of the challenges blockchain faces, and hopefully inspire you to think about possible applications in your business.

What is the blockchain?

All business is based on trust. Without that, there can be no exchange of value.

We can place trust in individuals as well as institutions and objects, such as money. A bank note of an official currency represents a value. One of the key elements why this works is, because it cannot be legally copied. Additionally, there are security measures, such as watermarks, which protect against counterfeit money. Within the digital realm, things get more complicated. Digital items can be copied conveniently, just as a picture can be sent to everyone on your contact list. With regards to digital currency, this results in the problem of double spending: one party can never be sure that one specific digital coin has not been spent on another transaction. The solution is to build a system - a network - where digital items cannot be copied easily: the blockchain.

This network contains a ledger, which contains all bitcoin transactions ever performed.

This ledger is shared and updated across the network. Take for example: a bitcoin transaction between party A and B. This transaction means a new line in the ledger is created. A 'block' is one page of this ledger and the next block contains all information of the block before - they are 'chained' together. Every transaction happening within the network has to be approved by a certain number of participants (nodes), before it is written in a computer code (chain) - this code makes up the distributed ledger.

Because of its unique disposition, the blockchain has some interesting features:

- Everybody within the network has access to the ledger, and once the transaction has been approved by the network and saved within the ledger, it is very hard to alter or to erase. This approval process solves the double spending issue.
- If a fraudulent transaction found its way into the network, it would be rejected as counterfeit by the other participants - the digital token could not be spent twice. Therefore the decentralized nature of the blockchain adds another layer of security to the network.
- Since all the information is shared, the network is very robust against attacks. If parts of the blockchain network would fail, the stored information remains intact, because it is shared by every participant.

But perhaps most importantly: transactions are not the only information that can be stored on the blockchain - rather virtually any data can be stored. This could either represent a value in itself, or a value within the real world

e.g. the history and ownership of a diamond. One could view blockchain as a tool to share information in a transparent and efficient way between multiple parties.

With all that said, why hasn't blockchain 'caught on' yet?

Challenges

The relationship between blockchain and trade and receivables finance might be an especially complex one, because of the harsh regulations on financial products within some countries. Cross-border trade adds another layer of regulations to consider. Furthermore, for the advantages of blockchain to really come into effect, it should be used for complex transactions with multiple parties involved - adding a political dimension to the technical and regulatory challenges.

Because of these specific challenges, we need an interdisciplinary team to make a blockchain project happen. This team might find itself confronted with the harsh realities of complex project work:

- Experts from business, law and technology do not necessarily understand each other's jargon; hence it is difficult to combine knowledge to find use cases for a new technology. We need to speak the same language to make this happen.
- Backend projects like this, which are aimed to overthrow basic processes of our business, are much harder to implement than a nicely designed frontend portal or app. (One of the reasons why Fintech companies can be so agile and quick in their project approach

- they simply do not have to transform so many legacy systems).
- As a result, projects like these get very complex with a lot of stakeholders and the challenge becomes again more organizational than technological.

How to approach a blockchain project

It might be tempting to imagine that progress in technology research is linear; but this is not the case because there are too many factors influencing what we would perceive as progress. The market, availability of technological advancements and the implementation are all factors that constantly change the reality of what is possible and what is not. As a result, the best chance we have to adapt is to use an iterative process, which means to constantly re-examine how to build a product and how to sell it - throughout the whole process.

In summary:

- A possible solution is to work towards small goals, incrementally. To start with a small project, that has a defined, applicable outcome. If the benefit turns out to be good, the project can be scaled to become a bigger project. If not, the team learned valuable lessons about the technology and each other's perspective on it.
- Ideally, every organisation would have a research & development team (or just one person) to explore these ideas – in my opinion; only through experimentation with emerging technology can we build the use cases of tomorrow.

- Changes within the market through emerging technology can only be a threat if we would miss out on these incremental steps and have to adapt everything in a short period of time (like the music industry in the wake of mp3).

One starting point could be to try and mirror a real-life supply chain finance transaction on the blockchain. This would allow adding multiple parties to test the validity of the approach. One of the expected advantages would be that every participating party (e.g. buyer, seller, credit insurer, etc.) has access to all relevant information and by this, speeding up the process while adding transparency. After some time, many transactions will be stored on the blockchain with an interesting added value: all this information could be used as a record of performance for all participating parties, like a rating. This would allow even smaller companies to establish trust with bigger players on the market, since actual business performance (e.g. quality of goods delivered) would be used as a predictor of future performance. This could prove especially helpful for developing markets, where quality rating data is hard to come by.

A more complex undertaking from the start would be to build a central registry of invoices on the blockchain to combat double-assignment.

In conclusion, the most important aspect is to start working with emerging technologies early. It doesn't matter if it is a small research and development team, or enthusiasts working under the umbrella of an institution such as FCI or a large bank - the future will be built in small steps.

Let's start today.



Robert Meters
Head of Marketing & Sales
Global Business & Financial Services
Prof. Schumann GmbH

Digitalisation in the invoice finance industry

Companies in the invoice finance industry are currently performing a balancing act. On the one hand, their operative business must be ever more cost and time efficient in order to be able to survive on the market and to gain competitive advantages. On the other hand, companies have to invest increasing amounts of time and money in fulfilling regulatory requirements. In order to master this balancing act, digitalisation of processes is essential.

In addition to this companies in the invoice finance industry have to adapt to the changing strategies of the market participants. For example, these days the selling of claims is increasingly performed via online portals. The factoring customer sets up the sales inquiry and then transfers the claim (invoice) that is being sold to the factoring provider in a secure online area. A decision is usually made on the inquiry within a few seconds and the factoring customer can receive payment directly, via the settlement system of the factoring provider if desired. Equally, it must be possible to service not only individual claims but also a complete

portfolio in one transfer. In order to perform these processes efficiently in terms of time and cost a suitable IT solution is indispensable.

The decision that is displayed almost immediately in the portal is the result of a complex checking process that takes place in the background, and includes not only the debtors of the factoring customer, but also the factoring customer himself. In the credit risk management system of the factoring provider this process can be performed completely or partially automatically. For this purpose an individual set of rules for making decisions on such applications is entered in the credit risk management system. All decisions then take place on the basis of a standardised rule system and the standardised automated processes derived from it. The limits and tolerances can be flexibly and individually defined and adapted to requirements. This makes fast but at the same time secure decisions possible. The applications to sell claims are checked taking into account all of the risk-relevant information, securities

and, for example, an insurance limit agreed by a credit insurance company. To achieve this, the system has at its disposal standard interfaces to information agencies and credit insurers. This allows the automatic collection and evaluation of creditworthiness information from the agencies. Via the standard interfaces to credit insurance companies the system can then automatically obtain credit insurance limits and, when necessary, apply for limit increases in good time or deal with top-ups and excess of loss policies. For this purpose single or multiple policies are recorded in the credit risk management system. Both the credit insurance of the factoring provider and that of the factoring customer can be taken into account. The decision on the application then takes place either automatically, based on the rules, or recommendations for the decision are presented to the staff of the factoring provider. If desired the decision can be communicated to the factoring customer immediately via the portal. In addition an integrated simulation tool can be used to perform stress tests. These simulate the effect that changes in the initial parameters would have on the decision.

Modern credit risk management systems also include a workflow engine to replicate company-internal processes and to integrate them into the process control in the contract systems of the factoring provider. This supports the staff responsible for credit risk management in all the necessary processes. All these processes are fully documented in order to guarantee that they remain comprehensible at any time in the future. The processes can be created and adapted flexibly using modelling tools.

In addition to increasing the efficiency of business operations, the fulfilment of regulatory requirements also presents a significant challenge. There are, for example, specific legal requirements in the areas of compliance and KYC that companies in the invoice finance industry must observe. Specifically, the identity of contractual partners must be established before contracts are concluded. The financial beneficiaries of the contractual partner must also be determined, and company and personal data must be compared with blacklists and sanctions lists (PEP, AML, CFT). If this legislation is not complied with, there is the threat of substantial monetary and non-monetary ('naming and shaming') penalties. These have increased further as a result of the 4th EU Anti-Money-Laundering Directive. In addition to the regulatory legislation, self-imposed requirements and company-internal guidelines are of particular importance. These include, for example, internal block lists.

IT solutions can support the factoring provider in meeting all of these requirements. For this purpose the different stages of the checks are integrated into an IT-supported credit risk management system. The processes can be represented completely but also flexibly and can therefore be adapted easily when changes are necessary. In this way integration into the application process is also possible. The identification of the contractual partner then takes place within the credit risk management system automatically, before the conclusion of the contract. To achieve this, both the master data transmitted by the factoring customer and the master data of the debtors are compared

with reference data from information agencies. New approaches also envisage the inclusion of 'video-ident' processes in the identification procedure. The determination of the financial beneficiaries also takes place automatically either on the basis of specific information agency products or using participation relationships that have been calculated using agency reports. The master data is automatically compared with blacklists and sanctions lists. If matches occur, follow-on processes such as informing the member of staff responsible for compliance and the manual rejection of the inquiry can be triggered.

A well-founded credit risk management system also includes an integrated reporting tool for the strategic evaluation of the customer portfolio. This makes possible targeted risk control, for example by highlighting risk concentrations, thus allowing them to be avoided. Recommendations for action can also be derived which contribute to risk minimisation. With the help of the reporting tool, information can be presented in an aggregated form and used as a basis for decisions at the strategic level. Consequent and continuous risk control is also facilitated by the automatic sending of critical evaluations to the risk managers.

For the factoring provider there are significant advantages in the implementation of an IT-supported solution. For example, employees are relieved from routine activities such as the manual procurement and evaluation of creditworthiness information. This provides both time and cost advantages. An expansion of business without any increase in personnel

capacity is thus possible. Fast decisions also result in increased customer loyalty and satisfaction because agreements can be made immediately. The system also offers a complete history and documentation of decisions. In this way, the regulatory requirements are met, and the comprehensibility of decisions is guaranteed.

In summary, using an IT-supported credit risk management solution in factoring provides the following advantages:

- High level of automation in decision-making and workflows; effect: relief from routine tasks
- Increased customer loyalty and satisfaction through fast decisions
- Flexible, scalable capacity for carrying out business
- Representation of the individual credit policy for standardised decisions
- Auditing security and support in fulfilling compliance requirements
- Targeted risk control through strategic evaluation of the customer portfolio
- Seamless integration into the existing IT system landscape

The following graphics show two typical variants of automated factoring application processes with the use of web portals. The process shown in figure 1 presents a solution in which a credit risk management system is added to an existing portal. In the solution in figure 2 the credit risk management system is newly developed together with the portal.

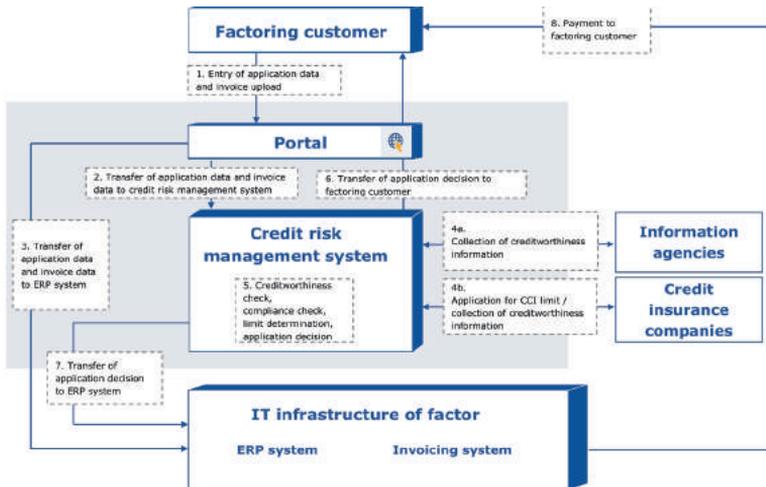


Figure 1: Automated factoring application process with integration into an existing portal

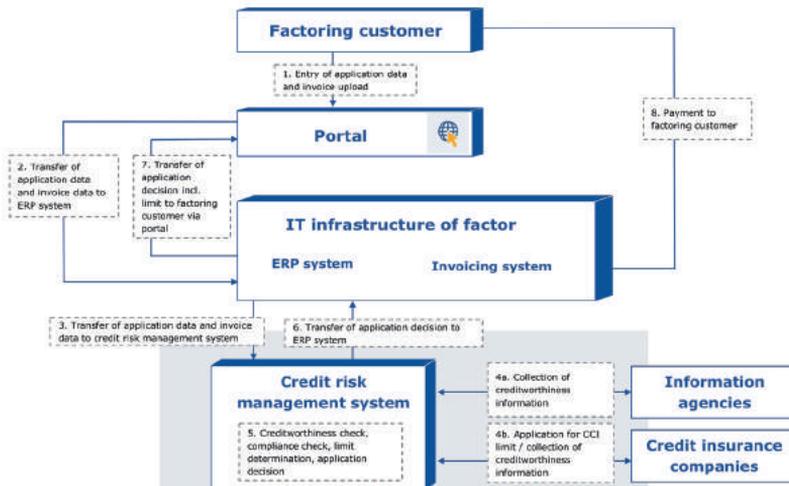


Figure 2: Automated factoring application process integrated into a newly developed portal



Aaron Hughes
Managing Director
Equiniti Riskfactor

Rethinking due diligence

Aaron Hughes, MD of Equiniti Riskfactor says it's time for a radical rethink about when and how due diligence is carried out on invoice finance customers.

Whenever I speak to the MDs and Risk Directors in the invoice finance industry, the one thing I pick up consistently is the challenges they all face with their audit and survey processes.

Pre-lend surveys and ongoing facility audits are a vital part of the risk management structure, but the processes and mechanisms have not kept pace with technological advances, or improvements in customer systems and credit quality.

Whether there is an in-house team, or there is some outsourcing, the process can be inefficient and expensive. Very often there is a 'one size fits all' approach, with manually created workbooks needing significant amounts of data entry from the auditor. Audits tend to have calendar-based frequencies often driven by resource capacity in the audit team, rather than taking account of the risk profile of the customer. Testing is often wide and shallow, rather than focussed and deep. Surveys are generally undertaken with very limited information available in advance and the need for a large amount of manual analysis in a very short timeframe.

As lenders become increasingly driven by internal management assurance requirements, there has been a tendency to respond to loss events with ever-more complex testing. Auditors become fearful of error and the reports become more complex and less useful. In the new business space this leads to the auditor becoming a quasi-underwriter.

But there are significant opportunities for lenders to improve efficiency, risk management controls and customer experience.

Using the latest technology daily risk analysis of all customer's invoice finance facilities results in less frequent and more focussed audits. Data extraction from the accounts system of new business prospects can allow detailed automated assessment of historic sales ledger transactions. So, at audit or survey, there is no need to rework the analysis, and testing can be limited to identified areas of risk and what can only be done on site.

Let's look at how this works for a new business opportunity. A well-established high tech manufacturing business, turning over around £10M and exporting around 30% of its market leading and innovative product is looking for invoice finance. Their customers are blue chip car manufacturers in UK, Europe, the Far East and the US. Sales are in GBP, Euro and Dollars.

They approach two lenders and both agree to carry out a due diligence survey. Speed is of the essence, so Lender 1 calls to arrange a day when an Auditor can visit. Lender 2 asks the prospect for remote access to their sales accounting system.

Within a couple of hours, Lender 2 has automatically collated, analysed and risk-assessed 12 months of sales ledger transaction across three ledgers. The top debtors have been identified and credit rated. Debt turn in each currency calculated. Credit note levels assessed and collections measured. And a sample of invoices, remittances and credit notes has been selected for further testing. Lender 2 can now make a formal offer of terms subject to final checks on site.

Lender 1 on the other hand won't be on site till the next day, and it will be 48 hours before their report even goes to their underwriters. But it doesn't get that far. The prospect cancels the survey after accepting the offer.

Once the business is won routine audits will be needed. Online, collaborative audit workbooks, pre-populated with system data and analysis, cut costs, improve effectiveness, and allow faster and better credit decisioning, with less intrusion on the customer's time.

Report completion is simpler and quicker. This, together with a reduction in audit frequencies, leads to increased capacity in the audit teams, allowing business growth at reduced cost, while maintaining the credit quality of the portfolio.



Dirk Van Strijthem
Chief Executive Officer
KBC Commercial, affiliate member of FCI

The future of factoring from a technology point of view

I was recently requested to reflect on the future of the factoring industry from a 'technology' point of view. Being part of a larger financial group, we continuously explain to our banking counterparts that the main focus of a factoring company is to manage its operational risk. With the support of various system providers we have been able to boost our volumes exponentially while safeguarding that underlying operational risk.

However, what does it take to fully automate this process, i.e. to make the factoring industry redundant.

Allow me to shamelessly copy part of Carlos Baudrand's contribution to last year RFTR's edition as it is more relevant than ever. The basic premise: by February 2018 (that is today!) 100% of the Chilean invoices will be e-invoices. In Europe, most governments are implementing a series of measures to achieve a similar goal, be it that even 2020 will be a major challenge to come to a similar result.

Carlos wrote: the impact of e-invoices on

the factoring industry will demand inevitably technological and procedural changes. Thereby it is useful to focus on the e-invoice issuing. Any company registered and authorised by the authorities can issue an invoice via certified e-invoice issuance platforms (plural!). The system keeps a digital copy of the invoice and updates its ledgers accordingly. In addition, the proof of reception and acceptance of the invoice is also electronically processed. If the seller wishes to obtain advance payment, the same portal can be used to assign the invoice to a factoring provider. The assignment is automatically registered blocking a double assignment and notified to the buyer. Hence, in a couple of clicks the invoice is issued, delivered and pre-financed.

One will agree that this picture offers some clear advantages but will certainly lead to an increased competition, and not only from the traditional factoring companies.

In order to fully capture that operational risk, blockchain driven transactions are announced as the next holy grail. Indeed, if a blockchain

approach would permit to avoid any loose ends during the invoicing-2-cash process, any party with access to funding could become active on the receivables finance scene.

Moreover we can observe that 'trade finance' is reinventing itself. Globalisation is pushing them to new market segments as the volumes of their traditional products show a steep decline. An untapped market segment are those prospects that traditionally adopted international trade solutions offered by factoring companies. As trade finance departments are mostly an integral part of the bank, we now see banks joining forces to build these solutions. The company we.trade is the perfect illustration of such an initiative whereby 8 banks will participate in a new joint-venture. This company will focus on innovative, blockchain driven solutions in order to facilitate international trade for SME's.

In these times of abundant liquidity, we are witnessing an unprecedented number of newcomers in the international trade finance domain. This can again be explained through the increased control over the underlying process allowing, for example shipping companies, to offer trade finance solutions to their clients.

So, what does this mean for the factoring industry? As far as domestic factoring is concerned I believe that the Chilean example, as described by Carlos, is an inevitable evolution. Within a short time frame government initiatives will lead to a unique e-identification and e-box, uniform e-invoicing standards and it is very likely that they will set-up platforms

in order to ensure their own goals (most often tax driven motives). This means that there is a clear risk that you will lose the control over the client relationship. Within such framework, we all become 'suppliers' of funding solutions to a platform owned or governed by the authorities. The question arises then why a bank would still need the expertise of their factoring division if the transaction is fully secured and can simply be forfeited?

In a second phase one can imagine that this evolution will also affect cross-border factoring as it is a matter of time before these government platforms will be connected. During the intermediary phase I expect that we will see an increased competition from repackaged trade finance solutions, allowing them to approach lower market segments.

If you cannot beat them, join them. FCI's credo, 'building bridges to explore new opportunities in open account trade finance' is more valid than ever. We will most presumably not be able to control the future platforms or set the pace of the e-invoicing adoption. However, we have a tremendous expertise and should now focus our efforts on bringing that expertise to those platforms or connecting these platforms to less developed markets while safeguarding a flawless end-to-end process. Building bridges with future platforms, be it a government initiative or a private blockchain process, could become the next key differentiator.

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AMSTERDAM



Oliver Belin
CMO
TradeIX

Benefits of blockchain in trade finance

Blockchain technology is continuing to dominate headlines across the globe. An almost never-ending list of projects and pilots have been vying for our attention as the digital transformation gathers pace. But, many are now beginning to ponder what benefits and opportunities these technological advancements will bring to the world of trade finance.

Technology-based solutions work best when they resolve real problems, remove friction and pain points. In a digital age where swipe-to-buy and 1-Click checkouts are the new currency, there is a genuine desire for a change that will make it easier for everyone to do business.

The growth and sustenance of the global US\$8 trillion open account trade finance market are heavily reliant on the easy availability and robustness of financing mechanisms. Considering that trade finance is widely viewed as the fuel for global commerce, it's easy to see why blockchain is dominating conversations in the trade finance world.

There is an inconvenient truth that trade finance is currently full of inefficiencies, and that the industry is extremely vulnerable to fraud. Paper processes from our analogue past desperately need to be upgraded or replaced with digitised operations and blockchain will play a big part in this transformation.

Typically, payments are seen as low hanging fruit, but financial supply chains could also be given a 21st-century upgrade too. The complexity and scale of existing solutions in trade finance have famously held back progress, but all that could soon change.

Blockchain can reduce processing time, eliminate the use of paper and save money whilst ensuring transparency, security, and trust. Removing bad actors and forcing everyone to play fair in a new transparent way of doing business will virtually eliminate the risk of manipulation by participants in the chain.

The arrival of an end-to-end trade finance network for banks and their corporate clients is facilitating trade finance directly between

parties and increasing efficiency in the market. By making it easier to exchange trade related data and delivering financing to the entire ecosystem, this trade finance network has the potential to prove itself as a game changer rather than just another initiative.

Over a dozen of the world's foremost financial institutions active in trade finance including BNP Paribas, Commerzbank, ING and Royal Bank of Scotland are already stepping up their attempts to shift trade finance onto blockchain technology.

These moves highlight how many bankers see trade finance as an area with the most significant potential to benefit from blockchain technology. A highly inefficient, fragmented and some would say broken infrastructure and customer delivery experience is ripe for disruption.

A better connected, highly automated and far more open infrastructure that will enable more efficient trade finance solutions for customers is the new goal for businesses. This can be achieved through the creation of trusted and permissioned interactions between corporations, B2B networks, service providers and other financial institutions.

The introduction of 'smart contracts' also allows businesses to automatically trigger commercial actions based on defined criteria. Once again, this will further boost efficiency by streamlining processes, removing time and the cost of transacting.

An indelible audit trail also provides improved traceability. The new verification levels

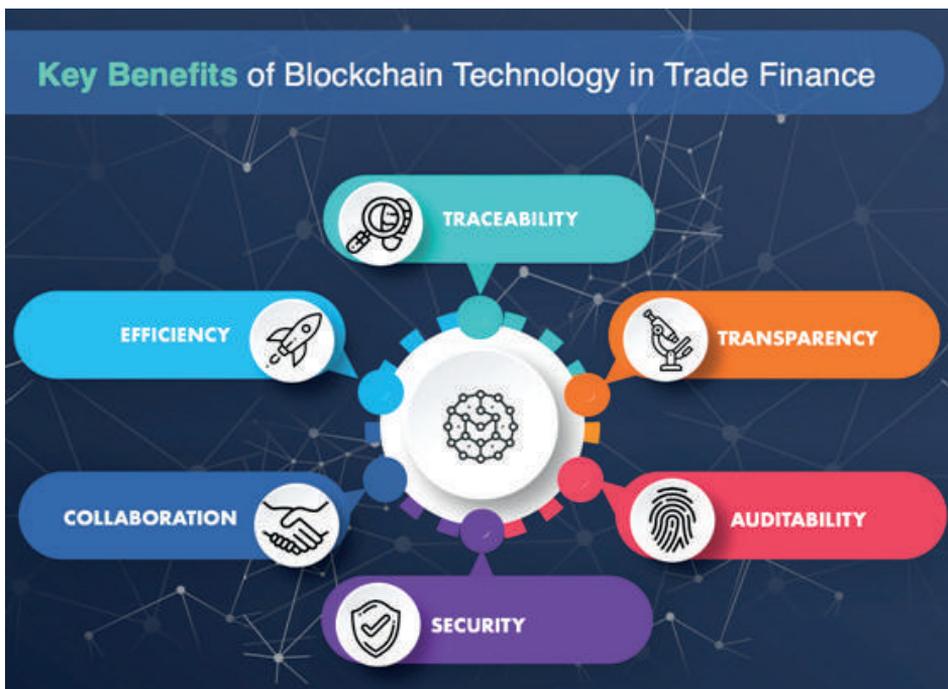
automatically check assets for authenticity. As a result, businesses can reduce both fraud and compliance costs by ensuring that each transaction is recorded sequentially and indefinitely.

From a security perspective, blockchain allows simple, secured share trade-related data between different financial institutions. Each transaction is verified within the network using independently verified complex cryptography.

By adding some much-needed commercial transparency to the mix, old problems such as delays and sharing data between parties are replaced with unprecedented levels of trust. Words such as authenticity, transparency, and simplicity are rapidly becoming new language in the trade finance market.

By applying blockchain technology to trade finance, new emergent players such as TradelX, a technology infrastructure company, are able to reduce the complexity and increase efficiency as shown with their first blockchain-enabled end-to-end invoice finance transaction for a global logistics company together with AIG and Standard Chartered on their platform.

The creation of trusted and permissioned interactions between corporations, B2B networks, service providers and financial institutions are revolutionising the finance industry. Ultimately, these new highly efficient models are better connected, highly automated and the more open infrastructure enables more efficient trade finance solutions.





Renaud Abonnel
International Factoring Development Manager
Société Générale

Choosing the right receivables finance technology

Choosing an IT solution can either provide you with a competitive edge or, on the contrary, drag your business down. The difference between ending up in one scenario or the other (there are infinite scenarios on the line drawn between these two points) lies in the choices that will be made along the way.

Summarised below are some rules of thumb derived from various experiences, painful or not (although painful experiences are infinitely more educative), in recent years covering different geographies and businesses within the receivables/payables financing environment. Although I don't think that technology choices are very different from a receivables or payables finance point of view than from any industry specific ERP, I'll share as many possible experiences specific to our industry.

Globally, we can identify four main dimensions that must be taken into consideration in choosing the right tool:

- Firstly, what's the strategic vision, meaning what are the goals the company wants to achieve?

- Secondly, what are the requirements necessary to reach those goals?
- Thirdly, how do we select the right solution based on our requirements?
- Lastly and not least, how do we integrate people into this?

Define your strategy

The strategic vision is usually established by senior management and therefore, it is of utmost importance to have the direct involvement of senior managers when choosing the right solution. It will save time in the decision-making process during the lifetime of the project as well as imposing the necessary dynamic at periodic governance meetings.

To be able to define a development strategy, the company must know its market very well: the historical background; the current state; expected evolution; market practices; and client demands. It must understand its role in the market today and its expected position in the future. Then, the market must be qualified as either: mature (moderate growth, extensive

product offering, many actors well established); new (everything to be created, basic products, few actors, high growth potential); or in transition (some players, standard products, high demand, existing structures). And the level of the company's maturity in the market must also be established.

The financial aspects will also need to be elaborated during the strategy definition through a business case taking into consideration assumptions and expected profitability and the adequate/acceptable investment level?

These steps will determine the scope of the project - geographic, functional, etc - and the roadmap in terms of what will happen and timescale. For instance, if as part of our global strategy we need to establish a factoring operation in a new country, the process is always the same:

- Thoroughly review the market with a detailed feasibility study covering basic aspects such as: legal environment (is assignment of receivables allowed?); do assignments need to be registered to be enforceable etc?); fiscal (what is the fiscal treatment of factoring operations?); business (what type of industries operate in the country; number of target companies and their annual turnover; competition?), credit insurance availability, etc.
- A business case detailing the products to be launched, the expected volumes, the different type of revenues (interest, commission) and costs (general expenditures, cost of risk etc) to arrive at a bottom line figure indicating the potential profitability. A business case is very

useful to estimate whether a project will be viable or not, but it's also important to update it as you move forward and that you change your business structure if necessary. It's only a tool and should be used as such.

- Based on the above, a clear decision can be made whether to go ahead or not.
- During the entire process, we involve mostly local resources and actors to ensure full adequacy with the domestic market specifics.

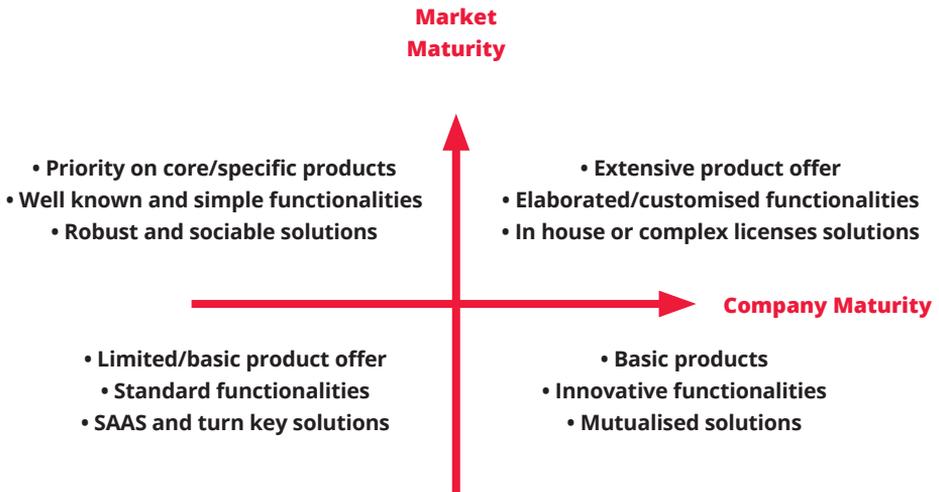
List your requirements

Based on your strategy, draw an exhaustive list of the products and services (factoring, reverse factoring, international factoring, invoice discounting, etc) you wish to implement and define the volumes you will have to process in the short-term to achieve your strategy. The next step is to translate all this information into technical and functional requirements.

Don't hesitate to involve all potential end users and to receive their feedback and expectations. It could avoid a situation where an obvious feature is missing because a full consultation process was not followed with interested parties.

These requirements must be in line and adapted to cater for the development of the business in the medium term. The diagram opposite provides a holistic view of the main principles that can apply.

From the table you'll be able to determine what kind of solution you should look at depending on your company's maturity and your market's attributes: customisable solution or standard



tool? Keep in mind that a highly customisable solution can be costlier if not well managed, especially going forward (maintenance, updates, patches...).

Beyond business functionalities, you should also make the provision for the technical features related to interface protocols with your other tools and databases and their respective security standards. You should also consider digital features and new use cases like mobile access, e-signatures, e-invoicing, blockchain, and be prepared for future developments.

In terms of infrastructure, do you have the necessary resources to host your systems on your own or could they be hosted elsewhere? This decision can have an impact on the scalability of your solution and resource management.

Some years back, while our strategy was to implement factoring solutions in certain emerging markets, we conducted a regional analysis of our needs in order to find the right solution (these were countries located in the same region with similar or close characteristics in terms of currency, language, business regulatory framework, client needs).

Based on the above diagram we considered our situation to be in the bottom right segment i.e. a mature factor wanting to start operations in emerging markets.

We identified the barest minimum set of products to address our target client's common needs. These were recourse, non-recourse and reverse factoring. We already had a technical solution able to manage these products, but way too costly to be installed in each country on a standalone basis. So, we took the decision to

build from scratch a mutualised infrastructure that would host a solution and be accessed remotely. The installation costs were reduced drastically, with 70% of the solution usable by all country locations. As such we could propose a web-based factoring services accessible to clients of all the countries concerned for no extra cost.

Find the right solution in the jungle of vendors

Looking for the right solution can sometimes mean looking far and wide. Indeed, even the most advanced solution can lack some products or functionalities as you need different tools to achieve your specific commercial objectives.

Make your own decision grid. The point here is to make a list of requirements to simplify the decision-making process. List them all down and give them a weighting according to your priorities or focus. Assess all the solution providers based on the list and weight and just sum up the figures: 'and the winner is...'

Before going forward with a vendor, when possible, ask for at least three references from sizeable actors already using their solution. You can also contact your peers or industry experts for their opinions. It's always better to choose a provider who's involved in the industry and knows the specifics of your range of products. If a provider initially suggests their solution can handle everything, be cautious.

You could judge the seriousness of a vendor by the quality of their documentation: list of detailed specifications, exhaustive explanations of each functions, user guides, training materials, online tutorials...

Although English is the common language for business, don't automatically assume the vendor's capacity to interact in a foreign language (should it be necessary) on very specific topics. It can sometimes be more adequate to refer to a local (versus international) vendor or intermediary than to lose time in trying to understand each other.

Don't create the condition of your dependence toward the vendor; be autonomous, as much as possible (see human resources implications); or price in advance your dependence, especially for vendor intervention (parameterisation...) and incorporate it in your business case.

Ensure the solution sought for is compatible with your existing technical infrastructure (if applicable) and that it can, should it be necessary, be mutualized or scale up according to your needs. Extensively test every aspect of the solution.

Once you have listed all your requirements, here is one example of how you can start building your decision grid. I suggest you start by defining and weighting the categories, and then inside your categories list and weight each requirement:

- Functionalities (30%): product range, adaptability and flexibility of parameterisation, user friendliness, scalability, upgradability...
- Technical requirements (20%): security, interfaces, protocols, hardware ...
- Costs (20%): license (one off) and maintenance (yearly basis), developments costs, infrastructure investments, project team...

- Vendor (20%): quality of references, comprehensiveness of documentation, language spoken, financial strength, agenda flexibility, team expertise...
- Other (10%): any other indicator you want to assess

After it's done, just allocate a mark (5, 10, 20, etc.) to all criteria, apply the weighting coefficient, and you have your result.

Human resources implications

Choosing a solution can be a massive investment so it is critical to staff the project team with key resources. On the other hand, it is not easy to dedicate for long periods of time the brilliant minds that would usually run or develop your existing business. But the result should be the only concern here to avoid spending huge amounts of money and not having a satisfactory result in the end.

So, build THE team, made of key, expert resources from IT to business. This team must have extensive training on the new solution, take ownership of all functionalities and to ultimately train the end users.

Out of this team, nominate a champion who will familiarise himself with every aspect of the solution and share their newly acquired expertise with internal teams. They need to be able to speak about the solution in the context of your company and market better than any vendor, increasing the end users' acceptance of the tool.

This team must have a 'ready to change' attitude. Situations change, so people's minds should be flexible enough to appreciate new

technologies and functionality to the benefit of the business.

Indeed, new tools and solutions necessitate after implementation, changes to the organization because of automation, new features, mutualised services or resources. A review of your internal setup is necessary to benefit from all the advantages of the change.

In my experience, the projects that deviate most from the initial agenda are those that are weak in human resource management. This could be lack of availability, the right skills (technical or soft) or insufficient management involvement. And the consequences of this could be detrimental in many aspects: loss of time and money, frustration and discouragement among teams, negative view of your project internally and in a worst case scenario, jeopardising the successful commercial launch of products. Fundamentally, if you don't have the perfect team, don't start the project at all.

I'm sure I'm missing many other tips as a variety of scenarios could be experienced with such projects. Just keep in mind that it's highly 'human dependent', and as such you should ensure you have a dedicated project team, open to staff concerns, and having the final goal in mind to aim for - more business!



Enrique Jimenez
Senior Director of Supply Chain Finance
Demica

The story of SCF!

In this article Enrique Jimenez takes a lighter look at the development of supply chain finance in respect of receivables finance (RF) in general (tip: reverse the names in italics!)

Some years ago I co-wrote an article for BCR while I was working for one of the largest banks in Spain, as the Product Head for Supply Chain Finance (SCF). In that article we were comparing SCF with a schoolboy who had just finished high school and was preparing to start college, still nervous and excited to learn what the future may bring.

So, let's look at what happened after high school for SCF. With great qualifications and a bright future ahead of him he decided to go to college in *Tekram*, one of the three islands in his country. His college specialized in understanding what customers need and how to deliver products to them that leveraged new and improved technology. The island was close to *Knab*, where with his older brother RF lived in a big house with thousands of employees working in offices and cubicles. Some people called what he did factoring and most agreed that this was one of the oldest and most reliable forms of trade finance.

SCF found friends easily. He had plenty of money to spend and found powerful backing from those who saw very limited risk of non-payment given how well he managed the repayments to suppliers who he treated as valuable business partners. RF by contrast was supported by many people who owed him small amounts of money. He was good at managing them but had become renowned for spending significant time on collections, negotiating very hard and often had to deal with people who did always pay on time. Not surprisingly sibling rivalry grew between the two of them and RF made sure that he was not welcome in the island of *Knab* following his graduation. He was worried that SCF's popularity would be confusing to his people and that customers might opt to go with his new ideas and simpler ways of doing business.

SCF was not concerned. He knew in which direction he wanted to travel and sought out a new future in the island of *Hcetrnij* with fewer rules, more flexibility, comfortable sofas, free lunches and lots of cool technology people. He saw that the rules and regulations on the island of *Knab* had become complicated and

increasingly burdensome since someone evil called GFC had arrived in 2008 and caused chaos for all that lived there.

Recruiting from *Knab* and also *Tekram*, SCF built a dynamic team able to offer not only regular supply chain finance but other payables solutions such as dynamic discounting, gross-up SCF and e-invoice finance. These were very attractive to clients who sometimes felt that *Knab* had forgotten about them. Deep inside though, he knew that those offerings should be able to be combined with more the more traditional RF products in one place and more importantly within just one legal framework. Family was important to SCF so he reached out to RF to ask him to build a new business where *Knab* and *Hcetniif* could coexist and thrive.

RF could see the future but was finding it hard to make the journey. He already had some basic supply chain finance products although only offered them to extra special customers who didn't always need them. What would happen when they unleashed all of the *Hcetniif* ideas on their technology and compliance departments? Could the two co-exist? Would it prove too difficult? How would all the thousands of employees react to all of this shining new technology and would it work to combine forces with other funders who could provide finance alongside *Knab* for the benefit of their customers?

SCF reassured his brother. No complex integrations to worry your technology teams – it will all be managed in something called the cloud. There will be no more fighting over customer control as financial services enters

the sharing economy. Multi funder models and technology would enable financing relationships to be shared even with the distant islands of *Ecnarusni* and *Etavirp Tbed*. Suppliers and buyers will be on-boarded with online tools and applications. Even compliance teams will be happy as we generate clean auditable data for them to review. Perhaps most importantly for RF it became clear that relationships with *Knab* were going to continue to be central in the lives of their client. All the people in *Tekram* believed that co-operation between the brothers would be in everyone's best interest.

Just as life was settling down between the two brothers and as they started to build out their vision for the future they received a call from their young cousin *Nicahckcolb* who told them to think again. The future did not belong to either of them. Whole systems of record keeping that have sustained trade for centuries would be upended and replaced by distributed ledgers making fraud impossible. The cost of trading would be reduced significantly making the islands of *Knab* and *Hcetniif* richer and more productive. *Nicahckcolb* had hired *ibank*, a powerful wizard to make all of this happen. He wanted to give them a chance to invest early and together own the future.

SCF and RF smiled at their younger cousin and wished him the very best of luck.



Igor Zaks
President
Tenzor



Alexei Lapouchnian
Researcher/lecturer
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Supply chain finance and artificial intelligence - a game changing relationship?

Most of the bank-driven supply chain finance (SCF) has been buyer-centric financing based on the buyer's confirmation that an invoice is approved to pay. The structure itself was used for a long time under other names, particularly in Spain and Latin America, but moved to the mainstream with the advance of technology, allowing uploading of data straight from the buyer's ERP systems.

The core advantage of supply chain finance is the ability to separate credit risk - something that banks are quite familiar with - from performance/contractual risk - something many traditional banks have very limited understanding of. The exercise was mainly focused on existing customers and standard bank credit approval process (that was heavily driven by 'public' data, i.e., buyer financials or securities information through Merton model variations). Platforms servicing such activity were focused on simply loading buyer ERP data, matching it with the seller information, and facilitating ancillary compliance for customer onboarding. Some newer platforms combined this

with e-invoicing that supports a more efficient process but does not alter the fundamental premises. While 'traditional' focused supply chain clearly remains most efficient process-wise, a large number of financial institutions (FIs) competing for a relatively small number of blue chip customers on highly standardised products led to margin collapse, triggering the search for new products where good margins can still be achieved while addressing real customer needs.

To be able to do so, financiers need to differentiate in the way they can assume risk - either credit risk (i.e., being able to finance transactions with buyers that others cannot), or performance risks: inventory, purchase order (PO) financing, etc.

Some players have been historically positioning themselves in such a business through deep industry expertise areas, but both products have not gone mainstream so far.

Technology can play a critical role in both areas through better data capturing (deep supply chain integration, supplier networks,

blockchain-based applications) and analyses of such data to make decisions, where artificial intelligence (AI), such as deep learning (DL), can make a significant difference.

The first question to address is the credit risk. With the current level of supply chain integration, there is a massive flow of financial and non-financial, structured and unstructured data in the supply chains. This includes payment performance (how invoices are paid), order pipeline, product information, often end user data, etc. A good credit manager in a company intuitively takes a lot of this into account when making decisions, banks and insurers typically do not. The result is massive gap between the risk appetite and, often, losses - many corporates have both higher risk appetite and lower losses than such financial institutions. While anecdotal communication happens, there is no regularised procedure to process such data and share outcomes with financial institutions. There is also the aspect that not everybody in the chain is willing to share all the information (that can be extremely sensitive from commercial standpoint) with the other parties - but would be willing to share processed outcomes (a bit like rating agencies getting information under a non-disclosure agreement (NDA) from the companies they rate that is reflected in rating but not published). And the degree of standardisation of such information varies leaving no room for the use of the simple statistics-based tools (like Z score or Merton Model). Here is where AI can make a massive difference.

The other area is performance risk-related products, such as inventory financing, purchase

order financing, multi-tier products, etc. What we have seen recently is a significant improvement in the way a lot of this information is recorded - in supply chain management systems, logistics tracking, supplier networks, and lately blockchain applications, allowing various forms of tracking and recording on distributed ledgers. This creates very large volumes of (structured and unstructured) data that are becoming a deadweight as there are no decision-making tools to utilise them. There are some 'window dressing' type products, where the financier is supposed to take some risk to comply with accounting rules, but there are no 'real' risk transfers, and only a handful of products where risks are analysed and priced.

Let us now briefly discuss why artificial intelligence can help with the above tasks. While computers far surpass humans in their ability to handle structured and formal tasks, they traditionally did much worse when it came to those tasks that required a lot of knowledge about the world - everyday knowledge, such as recognising someone's face or voice, or subject-specific knowledge, such as recognising a risky deal. This knowledge is required to behave intelligently but is notoriously subjective and hard to state precisely. Getting that knowledge inside a software system is thus an important challenge for AI. Attempts have been made to hard-code the knowledge about the world into formal representations (knowledge bases) usable by computers, but due to the sheer size and complexity of this knowledge, the approach has so far failed.

An alternative solution is to endow systems with the ability to identify and extract patterns from

data to acquire their own knowledge about the world, which is known as machine learning (ML), a subset of AI. There exist several broad variations of ML approaches. Among them are supervised and unsupervised learning. In supervised learning, computers are learning from previous (human) experience. The training data consists of a set of input objects with the corresponding desired output values (labels) also provided. For instance, a training set can consist of a number of relevant parameters about a client coupled with the risk assessment for that client manually performed by a human subject matter expert. A supervised learning algorithm (e.g., classification) helps infer the function that maps inputs into outputs by learning from the provided labeled examples – i.e., from the expert. Using a trained model, the system will be able to produce labels (e.g., 'high', 'medium' or 'low' risk value estimates) for the new inputs. With unsupervised learning, the output (label) is not provided, and the system learns on its own by trying to find the relationships among different inputs. Clustering (i.e., grouping objects by their similarity) is one of the most prevalent algorithms of this kind. Unsupervised learning doesn't require any preconceived notions about the data and thus is much more flexible than statistical approaches. ML technology is currently deployed in many domains, including security, healthcare, etc. In many such domains (e.g., in medical imaging), its performance is already proving to be on par with or even better than that of human subject matter experts.

ML is not a new field and its origins can be traced back to 1950s. Only relatively recently, however, it has experienced a resurgence, driven

by a few factors that finally made its adoption a viable and cost-effective option to handle increasingly complex business tasks. The first factor is the abundance of business data due to the proliferation and interconnectedness of ERP, SCM, CRM, and other enterprise systems within and across organisations and the continuing digitisation of document workflows. This is also helped by the cheap data storage and the availability and affordability of communication technologies. This data about anything and everything relevant – e.g., past business events, transactions, decisions and, most importantly, their outcomes – can serve as the training data for ML and DL algorithms. However, the availability of data does not automatically make it usable. Large volumes of data require a lot of processing capacity and sophisticated software to make sense of it with minimal human involvement. Traditionally, companies had to invest in creating and maintaining their own data centres to process that data or be locked into mostly inflexible contracts with data centre providers. In both cases, organisations were forced to overprovision hardware and software to handle maximum anticipated loads, which rarely occurred in practice. Cloud computing, another factor in the resurgence of AI/ML, eliminated that inflexibility and allowed tapping into the elastic cloud-based processing capacity on demand and paying only for the actual usage of storage and processing services. That being said, for those organisations that cannot or prefer not to use the public cloud (e.g., due to security concerns), new ML-specific hardware as well as the novel ways this equipment can be deployed, managed, and financed are becoming available for on-premise use.

Thus, the availability of business data and flexible and affordable on-demand processing eliminated or at least greatly reduced the barriers to adopting AI/ML solutions by enterprises and fuelled the creation of increasingly high-quality ML and other programming libraries that support the development of fully customised AI-based solutions from the ground up. To further simplify the adoption of AI/ML solutions, companies like IBM, Microsoft, and Google are developing pre-built (and sometimes pre-trained), customisable, cloud-based ML services that focus on common domain-independent functionality like natural language (i.e., text) and voice processing, sentiment/emotion analysis, image/video processing, chatbots, and recommendation and decision-making engines. These services can be further trained with domain - and company-specific data and used as the building blocks for creating AI systems. This lets each organisation focus its efforts on developing the remaining domain-specific and competitive advantage-building AI components that are fully tailored to its needs within some particular business domain, such as SCF. Overall, these solutions promise to help eliminate conscious and unconscious biases and to ultimately help shift from human-scale to machine-scale business decision-making.

The above developments in both data availability and AI-based technology are likely to have a massive impact, especially in 'closed' supply chain ecosystems. Several recent attempts to apply AI to credit and other supply chain risks were focused predominantly on transaction-based businesses (such as sales to SMEs, single invoice cover, or funding). They used little proprietary

information and their core improvements were achieved through better analyses of public and quasi-public data. Applying AI tools to significant information flows (financial and non-financial, structured and unstructured) within deeply integrated supply chains (like distributors or contract manufacturers) is likely to trigger a fundamental rethinking of risk, as opposed to tactical improvements based on quasi-public information.

Similarly, combining AI tools with significant private information is likely to re-frame the whole issue of performance risk. This is currently dealt with by a small number of financiers through either converting performance risk to credit risk (i.e., relying on somebody's contractual obligation while structuring the transaction that looks like it is based on performance risk) or deploying simple statistical models that allow stress testing on asset values. AI tools would allow models to account for the deep interrelationships between various risks and parts of the ecosystem, thereby facilitating the financing of such deals.

Such technologies are likely to change the cottage industry of both credit and performance risk finance currently based purely on individual domain experience. They are likely to open both types of financing to a wide range of financial institutions and capital markets through deployment of modern analytical tools and deep information flows.



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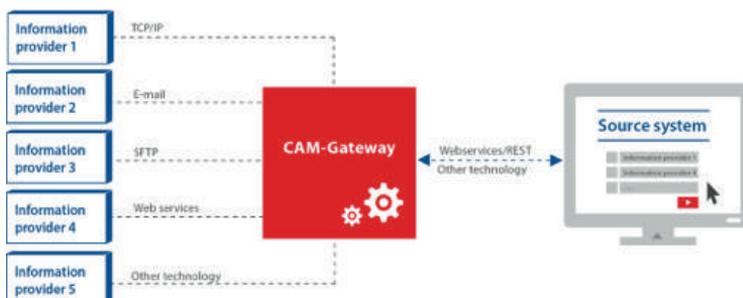
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CAM can also be used as a gateway solution. The CAM Gateway serves as an interface manager between your source system and the systems of information suppliers (e.g. commercial credit insurance companies and information agencies) and thus provides a unified interface for all the integrated external service providers. With this approach only a single interface to the Gateway needs to be implemented, via which all of the desired data sources can be accessed. The CAM Gateway is thereby subordinate to your source system and therefore does not require the inclusion of a user interface. Communication between the individual systems is controlled automatically using the recorded sets of rules. You continue to work using your familiar system.



EQUINITI

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EQ Riskfactor is used by 90% of the UK receivables industry

Equiniti Riskfactor is the leading provider of risk management and fraud analytics software for the global commercial finance industry. 90% of the UK receivables finance industry choose our core software, EQ Riskfactor to protect them from fraudulent activity.

EQ Riskfactor is a modular system, each module provides lenders with additional in-depth information on the risk within their portfolio.

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"This system is the only one of its kind on the market. I use EQ Riskfactor every day, it is our main point of reference for information on the profile of our clients."

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