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KEY POINTS

- Trade and supply chain finance promote stability and resilience in supply chains by supporting working capital needs of buyers and suppliers. However, small and medium-sized enterprises (SMEs) continue to struggle with access to financing.
- Environmental, social, and governance (ESG) targets and sustainability goals are not reachable without the participation of all supply chain participants. Deeper understanding of supply chains through greater visibility of participants, processes, and behaviors is imperative.
- Deep-tier supply chain finance (DTSCF) presents a compelling solution to fill the financing gap for SMEs, while penetration into the deeper tiers of global supply chains can assist in meeting ESG and sustainability goals.
- This paper presents the opportunities that DTSCF and its underlying technology can offer, a sample of models that have been successfully implemented, and the challenges and solutions to its global expansion. Legal systems need to be made more accepting of DTSCF and incentives offered to speed its take-up.

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Deep-Tier Supply Chain Finance

Sunil Mascarenhas
Relationship Manager
Trade and Supply Chain Finance
Asian Development Bank (ADB)

Aparna Soni Bhalla
Relationship Manager
Trade and Supply Chain Finance
ADB

Carmen Maria Ramirez Ortiz
Relationship Manager Associate
Trade and Supply Chain Finance
ADB

Ben Sandstad
Senior Legal Counsel
ADB

Angelia Chia
Partner
Mayer Brown

INTRODUCTION

Increasing stability, resilience, and transparency in global supply chains

The coronavirus disease (COVID-19) pandemic highlighted the fragility of the globally integrated system of production and trade that underpins the world economy. The increased efficiencies of global supply chains have given consumers and companies virtually limitless choices and helped to keep prices low and inflation at bay. However, the pandemic showed that the very linkages that have provided significant benefits can also spread shocks across economies, if they are not properly structured and managed. Other issues linked to trade, such as adverse impact on the environment, unequal distribution of economic benefits, and the presence of child labor and human trafficking in supply chains, have been brought into sharp focus by the growing attention to environmental, social, and governance (ESG) concerns and sustainability issues. These realizations come at a time when supply chains urgently need to be upgraded so that their negative impact on climate and the environment can be mitigated, and that they may play a role in promoting a range of social and broader sustainability-linked goals.

To counter the potential negative effects of supply chain linkages, and to use these linkages to achieve key ESG and sustainability goals, the inner workings of these complicated systems should be made transparent and traceable end-to-end. Serious improvements will only take place when all components, players, and behaviors within a supply chain can be seen, their operations assessed, and their efforts at meaningful improvement measured and supported.

Shoring up the stability, resilience, traceability, transparency, and sustainability of supply chains critically entails improving the position of small and medium-sized enterprises (SMEs), which often operate in the lower tiers of supply chains. Despite their significant, widely recognized economic contribution, SMEs are poorly served by existing processes. Often struggling to access support mechanisms, SMEs suffer global and regional shocks more acutely than larger suppliers.

Financing is an important lever that can be used to promote stability and resilience in supply chains by supporting working capital requirements of buyers and suppliers. Access to affordable financing may also be effectively used to incentivize sustainable and ESG-aligned behaviors across global supply chains.

Unfortunately, SMEs continue to struggle, particularly with access to financing. Often deemed a higher risk by traditional lenders, SMEs are underserved by existing trade finance providers and existing products. Even if SMEs find these products and learn to navigate application processes and the development of "bankable proposals," financing options are offered at prohibitive rates determined by credit, risk, and lending practices that are not best suited to serve SME clients. Consequently, the deeper tiers of supply chains are often excluded from finance. The lack of ability to obtain finance makes lower-tier SME suppliers particularly vulnerable to shocks. This ultimately results in lower economic growth and fewer jobs, especially in developing countries—a reality that would not be as harsh if SMEs could access sufficient financing.

However, the very linkages associated to amplified recent shocks can be used to the advantage of supply chains and, by extension, to the benefit of the global economic system. Deeper-tier SME suppliers operate within the ecosystems of large anchor corporates with strong credit ratings and robust borrowing capacity. Deep-tier supply chain finance (DTSCF) is a financial solution, which leverages business relationships within the supply chain that link back to a "corporate anchor," unlocking working capital to make financing accessible for suppliers throughout the ecosystem, not just those in the first tier that have access to funding.

The innovation in DTSCF is that it extends financing beyond the top-tier, typically larger suppliers, down the chain to small suppliers in tiers 2, 3, 4, and so on. DTSCF enables large corporates to make their supply chains more secure by improving access to working capital for downstream suppliers while enhancing transparency and visibility over the entire value chain. Improved liquidity coupled with lower financing costs linked to transparency, traceability, and the consequent lower risk assessment by lenders can lower the total cost of goods. Banks initiating DTSCF programs can also access a new customer pool at lower risk by leveraging these business relationships and the anchor corporate's credit profile while working toward social and environmental goals. DTSCF evolved from a technique referred to as payables finance (also called buyer-centric supply chain finance (SCF), or reverse factoring),[1] which has demonstrated clear value in the financing of trade across supply chains. DTSCF extends those familiar tools deeper into supply chains than was commonly done in the past.

Identifying the financing gap and its causes and implications

Availability of adequate financing is essential for a prosperous global trade system. The United Nations Conference on Trade and Development (UNCTAD) reported that global trade growth remained strong in 2021, reaching a record level of $28.5 trillion, driven by the e-commerce-led recovery from the pandemic.[2]

Analysis by the Asian Development Bank (ADB) shows that the global trade financing gap—the difference between companies' demand for financing to support their import and/or export activities and the sum available from lenders—grew to $1.7 trillion in 2020 from $1.5 trillion in 2018.[3] This estimate for the global gap likely increased to at least $2 trillion in the following years due to heightened economic and financial uncertainties.[4] This is felt most acutely by SME suppliers, which represent the bulk of financing rejections. Compared to larger corporates, SMEs face considerably more challenges to accessing financing because of a lack of demonstrable creditworthiness, an inability to offer collateral, and low financial and technological literacy, among other reasons. Research shows that women-led SMEs are hit particularly hard by these funding issues. Additionally, responsibilities arising from compliance requirements, including anti-money laundering (AML) and know-your-customer (KYC) regulations, are important considerations for financiers as they introduce complex resource-intensive and expensive administrative workflows, which may dissuade regulated lenders from working with smaller companies because of the low value of the transactions; and this is exacerbated if the volumes of the transactions are very high.

Limitations of supply chain finance

As part of trade finance, SCF and its suite of techniques, including payables finance, are offered as a solution to bridge the financing gap by opening new channels for suppliers to address their problems with accessing traditional trade finance, as buyers and sellers make commercial decisions about how they contract, finance, deliver, and settle their transactions. SCF, particularly payables finance, allows the anchor corporate's (end buyer's) credit profile to unlock financing for their top-tier or strategically important suppliers. This particular technique of SCF was first provided as a product in the 1980s, but it has witnessed the most substantial development in recent years. According to the 2020 McKinsey Global Payments Report, conceptually speaking,

1 Global Supply Chain Finance Forum. 2016. *Standard Definitions for Techniques of Supply Chain Finance*. Zug, Switzerland.
2 United Nations Conference on Trade and Development. 2022. *Global Trade Update.* Geneva. February.
3 ADB. 2021. 2021 Trade Finance Gaps, Growth, and Jobs Survey. *ADB Briefs*. No. 192. Manila.
4 ADB. 2022. *Toward Inclusive Access to Trade Finance: Lessons from the Trade Finance Gaps, Growth, and Jobs Survey.* Manila.

the potential market for SCF encompasses every invoice and receipt issued by corporates—up to $17 trillion globally.[5] Global SCF volumes have grown from $330 billion in 2015 to $1.8 trillion in 2021, with 2021 seeing a 38% growth on 2020 volumes.[6] The Americas have traditionally claimed the largest share of financing volume each year; however, 2021 saw the most substantial annual growth in Asia (at 43%) and Africa (at 40%).

Despite its growth in recent years, SCF's impact on the financing gap is limited as it fails to reach significantly beyond large Tier-1 suppliers in most supply chains. Supply chains are deep, complex, global networks, often involving thousands of commercial relationships, with the Tier-1 supplier relying on SMEs in several lower tiers to deliver a finished good to the end buyer.

This is particularly true for larger and more geographically dispersed supply chains, which are said to have "long tails" (multiple layers of SME suppliers far-removed from the buyer), such as those observed in the construction, electronics, automobile, and apparel industries. These long-tail supply chains are more vulnerable to disruption since each supplier specializes in the production of a specific part, which is critical to the delivery of the finished good (e.g., tool, microprocessor, textile, insulation). This heavy specialization means that if a lower-tier supplier is unable to keep up with the demand or goes bankrupt, there are no or few other suppliers that can step in, and time and revenue are lost while looking for a new supplier that is able to manufacture the exact part or provide the requisite service needed for the supply chain. Supply chain executives are increasingly conscious of, and working to reduce, this form of "supplier concentration risk." They are also actively identifying strategically important suppliers where an alternate source must be available and primed for rapid deployment. However, these disciplines are still new, and the related risk remains systemic and significant at global level.

SCF volumes are continuing to grow as new providers enter the space (Box 1). But the low level of penetration of existing SCF models to lower tiers is a critical problem that needs to be solved, in general, as well as specifically as relates to strategically important SME suppliers—some of which will be in the "long tail" or deep tier of a given supply chain.

Understanding the linkages between trade; supply chains; sustainability; and environmental, social, and governance issues

International trade, and the arteries of commerce that support it, contribute to some of the most urgent sustainability and ESG-related challenges faced by the global community today. At the same time, these arteries—global supply chains—provide a powerful set of channels through which to deploy solutions to those same sustainability and ESG-related issues. The physical, financial, and data layers that make up international supply chains today are both a source of rich insight and a mechanism by which to distribute solutions, processes, standards, and behaviors that can materially advance the global sustainability agenda. Whether the focus is on reducing greenhouse gas emissions in global shipping, working to eliminate human slavery and child labor in global supply chains, or advancing the financing of sustainable trade flows, the linkages between trade, finance, sustainability, and ESG are clear. The potential impact of looking at these elements together to solve a range of challenges is significant. It is increasingly clear that financing (and its underlying technologies) can and must play a central role. This effort must include the activities of nonbank lenders, financial technology (fintech) firms, and providers of alternative finance.

THE OPPORTUNITY FOR DEEP-TIER SUPPLY CHAIN FINANCE

Deep-tier supply chain finance extending beyond Tier-1 suppliers

DTSCF has the defining feature of channeling financing to deeper tiers in the supply chain, evolving on the traditional SCF (payables finance) model by leveraging the anchor's credit profile and integrating a mechanism to distribute financing to the lower tiers. This mechanism differs between DTSCF models, but a commonality is that solutions typically adopt a platform-based approach, digitally connecting all participants. This approach solves several critical issues:

(i) It gives anchor corporates an avenue to connect with and to potentially gain visibility over their suppliers down the supply chain. This is of particular importance as global buyers tend to only interact directly with their Tier-1 suppliers and thus rarely have a clear view of deeper parts of their supply chain. Lower-tier suppliers requesting financing can be referred to the platform by higher-tier suppliers, be onboarded digitally, and access financing in a relatively short period of time.

(ii) The platform produces transparency in the flow of lent capital. DTSCF platforms track the flow of capital throughout the supply chain, from request to delivery of capital to the original requester. This transparency acts as further security for the anchor corporate and the financier, and a barrier to certain types of fraud, such as duplicate invoice financing.

(iii) There is a compounding benefit in using DTSCF platforms. Using the platform generates data around the credit risk of onboarded suppliers and buyers, therefore increasing the value of the model from a risk assessment perspective.

(iv) The platform approach can greatly reduce operational costs and the risk of error.

DTSCF models have not been set up to solely benefit suppliers in the lower tiers. In fact, the anchor corporate (buyer) and financier in the model stand to reap substantial benefits by participating in or enabling this form of financing. Suppliers

[5] A. Botta et al. 2020. Supply-Chain Finance: A Case of Convergent Evolution? In McKinsey & Company. *The 2020 McKinsey Global Payments Report*. New York.

[6] BCR Publishing. 2022. *World Supply Chain Finance Report 2021.* Bromley, UK.

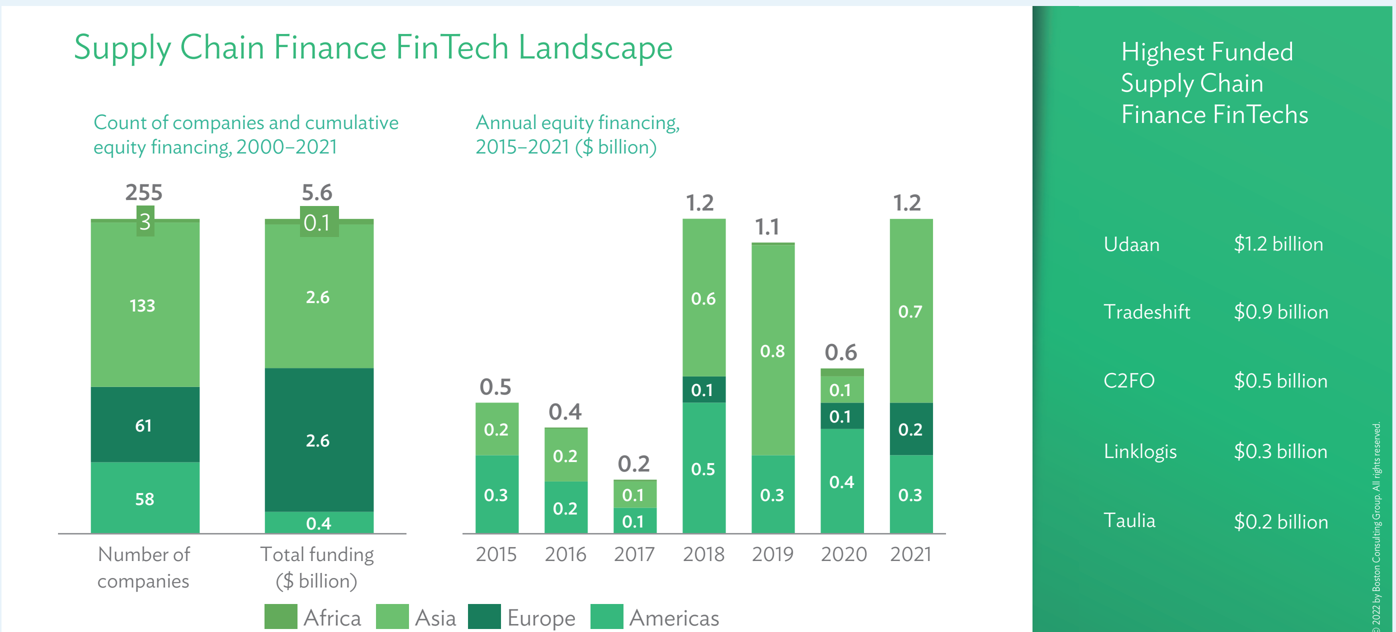
Box 1: The Role of FinTech in the Supply Chain

Banks and traditional financiers have struggled to meet the rising demand for supply chain finance (SCF), including the payables finance variation. A fundamental issue many financiers face is the lack of cost-effective infrastructure, which presents a critical barrier to carrying out SCF at scale.

The 2020 Global Survey on Trade Finance by the International Chamber of Commerce identified the lack of a dedicated SCF platform as the major challenge banks face in delivering SCF, with 39% of banks reporting this as a primary area of concern. The survey found that 64% of global banks currently offer SCF and the majority that do (65%) have developed a proprietary system to service their SCF offering.

In recent years, a cohort of financial technology (fintech) providers focusing on SCF have emerged. They utilized technology to help bridge the financing gap by creating platforms, which can effectively service suppliers and buyers on a global scale. There are currently around 255 fintechs, which have developed a dedicated SCF offering, often linking their SCF offering into a broader trade digitization platform. These companies have attracted $5.6 billion in cumulative equity financing since 2000, and they continue to grow.

However, these fintechs often lack the balance sheet to act as lenders. Instead, they typically partner with financiers, often connecting with multiple financiers, to reduce risk and dependency on a single source of funding.



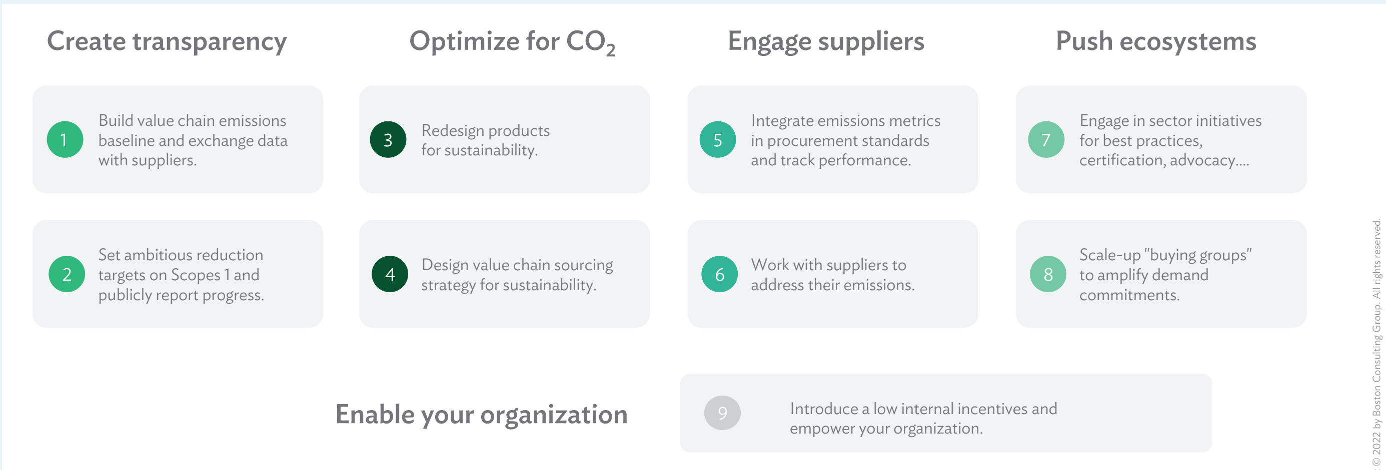
Note: Analysis excludes closed companies, Greensill Capital being a mentionable exclusion
Sources: Asian Development Bank; and BCG FinTech Control Tower

Sources: BCG FinTech Control Tower; and International Chamber of Commerce.

stabilize their cash flow through improved access to financing at a favorable rate. The anchor corporate can relieve financial pressure on suppliers and increase the visibility of their supply chain, presenting an opportunity to improve and report on business operations. The buyer can also leverage such structures and their technology platforms to enhance its own working capital position, and in doing so, assure the robustness of its supply chain and its related production and delivery capability. From the bank and/or financier perspective, there is a major opportunity to expand their client base; by becoming a strategic partner in global supply chains, they can extend their reach and revenues. Platform-based DTSCF also lowers the operational cost of financing individual early payment requests, and it reduces fraud and nonperformance risk by tracing interactions and the distribution of funds. The use of technology in global trade is growing and increasingly being supported by regulations, which help banks and/or financiers to effectively service DTSCF and digitally fulfill KYC obligations.

There is a substantial opportunity for all participants to contribute and track success in managing their sustainability and ESG commitments and responsibilities throughout the supply chain. The anchor corporate has the potential to map their supply chain and measure performance across ESG factors. The bank and/or financier can incentivize ESG and sustainability-aligned sourcing or commercial behaviors by a buyer client, as well as effectively track and improve ESG performance of its own financed operations while extending financing to an underserved segment. The suppliers can measure the sustainability of their operations while being incentivized—for example, by more favorable finance rates in support of ESG-aligned behaviors—to improve across a range of ESG factors. Suppliers can assure ongoing

Box 2: Solving the Climate Crisis through Supply Chain Decarbonization



Sources: World Economic Forum and Boston Consulting Group. 2021. *Net-Zero Challenge: The Supply Chain Opportunity*. Geneva; and Boston Consulting Group. 2020. Interviews with 40 climate leading CEOs and their teams and experts (Q3 and Q4).

Global supply chains account for as much as 80% of the world's total carbon emissions, and scope 3 emissions represent 75%–95% of emissions for end products in major value chains such as food, auto, construction, and electronics.[a] According to the Boston Consulting Group (BCG), eight supply chains account for more than 50% of global emissions, of which a significant emissions share is indirectly controlled by only a few companies.[b]

Decarbonizing supply chains is a complex problem to solve and requires innovative solutions and collaboration across many parties. Nine key steps have been outlined by the World Economic Forum and BCG, and reaching an anchor buyers' suppliers is a crucial component. Corporates need to have a clear view of their emissions. But it is difficult to measure and monitor their entire supply chain.

This becomes increasingly complex when the corporate has a wide range of products and they do not have clear visibility of all their suppliers. Establishing a comprehensive emissions baseline begins with the collection of carbon dioxide emissions data on products, components, and commodities from suppliers. This needs to reach the deepest tiers of the supply chain for a comprehensive baseline.

It is important that baseline emissions are defined by combining direct supplier data with emissions-factor databases to get an accurate picture that is not biased by self-disclosure or models in emission databases. Once the emissions baseline is established, emissions targets and abatement measures can be implemented by the anchor corporate, who can then support their suppliers in reducing emissions and in regularly monitoring progress to ensure emissions are abated.

[a] According to the Environmental Protection Agency, scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain.
[b] Food, construction, fashion, fast-moving consumer goods, electronics, automotive, professional services, and freight account for more than half of all global greenhouse gas emissions.

Sources: Authors; and World Economic Forum and Boston Consulting Group. 2021. *Net-Zero Challenge: The Supply Chain Opportunity.* Geneva.

access to supply chains and buyer clients by demonstrating their own ESG and sustainability-aligned behaviors. This is increasingly important as more and more buyers find themselves held to account by consumers, investors, and regulators, for the behaviors of their entire supply chain on ESG and sustainability matters.

Deep-tier supply chain finance as an environmental, social, and governance enabler

By decarbonizing and implementing measures to arrive at net-zero supply chains, businesses can amplify their climate impact, reducing the negative elements and enhancing the positives. This will help reduce emissions across sectors globally, and accelerate policies related to climate change in geographic areas where this topic is yet to be prioritized. A critical problem to solve is effectively measuring and monitoring supply chain emissions (Box 2). SCF platforms are uniquely positioned to play an important role here as they evolve to collect and analyze more than purely financial data.

This is particularly relevant to DTSCF programs that access deeper tiers of the supply chain. Beyond the practical aspect of being able to reach more suppliers to collect data and build a complete picture of the supply chain, buyers can incorporate incentive mechanisms in their DTSCF program. For instance, suppliers with high ESG ratings and those that are meeting abatement targets can be allowed to access financing at a preferential rate. In return, this enables the anchor buyer to actively work toward meeting emission targets.

There is a considerable opportunity in this space, but this is not to say DTSCF platforms should develop proprietary emissions tracking and in-house reduction capabilities. Many emissions tracking platforms already exist, and there is a strong potential for partnership and collaboration (Box 3).

It is essential that abating supply chain emissions is prioritized, and decarbonization is a critical focus of the ESG opportunity in supply chains. But ESG ratings encompass a broader range of measures. ESG ratings assess the sustainability of a business across energy use, waste and pollution, employee working conditions, shareholder rights, and use of sustainable production and procurement techniques, such as the use of organic materials. Broader buyer and supplier ESG ratings present opportunities to improve the sustainability of business practices beyond decarbonization. Furthermore, the draft European Supply Chain Act requires European Union (EU) companies to audit their suppliers along the entire global supply chain to ensure compliance with applicable human rights standards and environmental protection. Once adopted, it will be mandatory for EU companies (applicable to companies within certain threshold as proposed in the draft law) to identify their entire value chain and monitor applicable ESG compliances. In such cases, DTSCF becomes a very suitable tool to trace and monitor the adoption of ESG compliances as well as incentivize through financing solutions.

Deep-tier supply chain finance challenges and success within jurisdictions

DTSCF was first used in the People's Republic of China (PRC) around 2016 when the peer-to-peer lending crisis sparked a strong regulatory push for "inclusive finance." One of the longest established DTSCF programs in the PRC is the JDH platform, operated by JDH Information Tech (Zhuhai) Co. Ltd. The JDH platform was launched in 2015 and is based on the transfer of JinBills or "golden bills." Their model is reportedly penetrating as deep as level 9 suppliers, with more than 12,000 companies registered by the end of 2018—more than 9,000 of them are SMEs. The JDH platform facilitates an average of CNY520,000 (around $77,600) in early payment, with the smallest amount financed being CNY100 (around $14.9).[7] A major milestone in the adoption of the model was the legal recognition of the JinBill, with a PRC court ruling that accepting a JinBill is a form of debt discharge. In May 2021, the JDH platform surpassed CNY500 billion (around $74.6 billion) in trading volume and celebrated 6 years of successful operation. Banks have also initiated their own DTSCF programs within the PRC, in most cases, engaging fintechs as technology partners. In 2019, DBS launched a blockchain-based DTSCF program for SMEs in the PRC, known as Rong-E Lian. Developed in partnership with a blockchain-based logistics platform operating in the PRC, Rong-E Lian was implemented to offer DTSCF to more than 1,000 suppliers in the logistic platforms supply chain. The platform was connected to the digital onboarding service of DBS through an application programming interface (API) so that suppliers can automatically verify credentials via the platform, reducing onboarding time by 75% and increasing supplier acquisition sixfold.

Box 3: Environmental, Social, and Governance Potential in Supply Chain Finance and Deep-Tier Supply Chain Finance—Active Partnerships

Taulia's sustainable supplier finance platform. In May 2022, Taulia partnered with EcoVadis, a business sustainability ratings provider. EcoVadis provides environmental, social, and governance (ESG) ratings to suppliers onboarded to Taulia's sustainable supplier finance platform. Ratings from EcoVadis are used to create a tiered financing structure where suppliers can access preferential financing rates based on their ESG rating. EcoVadis' rating methodology is based on seven management indicators across 21 sustainable criteria, categorized into four themes: environment, labor and human risks, ethics, and sustainable procurement. Their rating system follows international sustainability standards such as the Ten Principles of the United Nations (UN) Global Compact, the International Labour Organization Conventions, and the UN Guiding Principles on Business and Human Rights.

RABC Group's green financing offering. RABC Group has partnered with Global Initiatives to perform sustainability assessments of suppliers onboarded to the deep-tier supply chain finance banco platform. The sustainability scores are calculated using data collected from the small and medium-sized enterprises and are aligned with the Singapore Sustainability Index and global standards such as the UN Sustainable Development Goals and Global Reporting Initiative. The sustainability assessments are used by the anchor corporate (buyer) to determine the appropriate green financing amount or rate to be offered to the supplier.

Sources: Taulia; and RABC Group.

Standard Chartered has also investigated the potential of DTSCF within the PRC, in partnership with Linklogis. In August 2019, they completed their first DTSCF transaction for suppliers of Digital Guangdong, a PRC-based digital operations platform for the government. In January 2020, Standard Chartered made a strategic investment into Linklogis to support their DTSCF proposition.

Following this initial success, Standard Chartered and Linklogis jointly established Olea in August 2021, a digital blockchain-enabled trade finance origination and distribution platform headquartered in Singapore. Olea connects investors and suppliers across the globe, offering suppliers working capital based on anchor–supplier relationships and allowing investors to access trade finance as a new asset class. Olea recently expanded their offering across borders, completing their first digital cross-border receivables finance transaction in June 2022 for SUMEC, a state-owned enterprise and key member of China National Machinery Industry Corporation. In May 2022, Olea also partnered with Vayana Network to offer cross-border trade finance solutions in India.

Large corporates are also initiating their own DTSCF solutions in jurisdictions other than the PRC, such as the Republic of Korea. These DTSCF models have proven successful within these

[7] H. Song, J. Cai, and S. Xu. 2019. The Supply Chain Finance Essential Knowledge Series 6. *Supply Chain Finance in China: Data and Cases to Understand this Market.* Beijing: Renmin University.

"Samsung has established a fund to enable Tier-1 suppliers to finance Tier-2 suppliers in the Republic of Korea. Foxconn Technology Group established a similar fund to supply working capital to small upstream suppliers. Blockchain enables visibility into the financial status of deep-tier suppliers, enabling manufacturers to reduce supply chain risk via capital investment." – Global Finance

jurisdictions, but their ability to effectively serve cross-border supply chains is key to their long-term success. Cross-border application of DTSCF is beginning to emerge—a recent example is an initiative between Citi and Stenn. In March 2022, Citigroup partnered with Stenn, a global fintech focused on SME financing in global trade, to include deep-tier supply chain financing as part of its global trade payables finance product suite. Leveraging Stenn's experience in onboarding and financing suppliers in 74 countries, the partnership aims to offer DTSCF across global supply chains. The next section will investigate the cross-border application of DTSCF.

Deep-tier supply chain finance across borders

The success of established models in the PRC illustrates the potential for DTSCF. However, to effectively service SME suppliers and address the trade finance gap, DTSCF models must be able to scale globally. Scaling challenges include differences in regulations, trade structures, and digital penetration across jurisdictions. Even so, in recent years, some fintechs have expanded DTSCF across borders. The following section will investigate the models of banco by RABC Group, Skuchain, and KashBanc by KashLab. These models have been selected to enable a comparison of different approaches to implementing DTSCF across borders.

A common feature of all these models is that they adopt a platform-based approach, digitally connecting all parties to ensure DTSCF is both scalable and accessible. However, the way these fintechs implement their solution is quite different. The models vary in four ways: (i) the technology model pivots on whether blockchain is critical, (ii) the legal models differ on whether the financing method must be governed beyond contract law, (iii) the financial mechanism diverges on whether digital payment obligations need to be split and transferred, and (iv) the engagement model switches between white-labeling platforms for banks and/or financiers and operating a stand-alone platform. The table below highlights those differences, and the following section will break down these models in detail.

Differences in FinTechs' Approach to Global Expansion of Deep-Tier Supply Chain Finance Platforms

Models	Banco	Skuchain	KashBanc
Foundation of Financing	An Irrevocable Payment Undertaking (IPU)[a] is **split and transferred** between suppliers via the platform.	A Distributed Ledger Payment Commitment (DLPC)[a] is established between the buyer and tier-1 supplier, which is **not transferred or split**.	A Digital Promissory Note (DPN)[a] is **split and transferred** between suppliers via the platform.
Technology	**Blockchain based** – This views blockchains ability to improve transparency and traceability as critical to the platform.	**Blockchain based** – This views blockchain's ability to improve transparency and traceability as critical to the platform.	**Not blockchain based**[b] – This views contrasting regulations/standards and supplier reluctance prohibitive to adoption.
Bank/Financier Engagement	Financier runs **white-labeled platform** in the People's Republic of China (PRC). Outside the PRC, banco operates a **standalone platform** with financier partners.	Offered as a **standalone platform** with financier partners.	Financier runs a **white-labeled platform**, with each platform having one financier.
Legal	**Contract law** – The financing method is governed by the terms and conditions of the IPU, which is signed by the financier, the anchor buyer, and the tier-1 supplier.	**Requires uptake of the Model Law on Electronic Transferable Records** for DLPC to be recognized as a standalone legally binding negotiable instrument across jurisdictions.	**Contract law** – The financing method is governed by the terms and conditions of an agreement signed by the financier with the buyer and tier-1 separately.

[a] The IPU, DLPC, and DPN are legally binding digital obligations of payment to the holder, which can be converted to cash via the platform.
[b] KashBanc is investigating using blockchain in the next generation of their platform.
Sources: Asian Development Bank; BCG FinTech Control Tower; banco platform by RABC Group; Skuchain; and KashBanc by KashLab.

Model 1: banco platform by RABC Group
RABC Group, founded in 2018 and headquartered in Singapore with subsidiaries in the PRC, Japan, and Indonesia, presents its DTSCF product as a sustainable finance solution, enabling banks and/or financiers to extend financing to SME suppliers and incentivize SMEs to improve the sustainability of operations (Annex, Model 1).

Focusing on property management, technology, food, automotive, health care, and logistics industries, the banco platform is currently live in Singapore; the PRC; Hong Kong, China; and Indonesia, with plans to expand in Viet Nam, Thailand, Cambodia, and India in the near future.

Model 2: Skuchain
Founded in 2014 and headquartered in Silicon Valley, Skuchain has developed a currency agnostic blockchain-based platform for global trade. Skuchain's DTSCF module (Annex, Model 2) is built on the use of distributed ledger payment commitments (DLPCs), a digital asset in the form of a legally binding payment commitment. In contrast to RABC Group's model, the DLPC is not transferred to deeper-tier suppliers. It is used in a bilateral trade relationship between the anchor and the Tier-1 supplier, and the DLPC can be sold to the bank and/or financier by the Tier-1 supplier.

The DLPC is portable in nature and not restricted to Skuchain's platform. In 2019, the Banker's Association for Finance and Trade (BAFT) worked with Skuchain and several other technology companies to design and structure the DLPC, and released business and technical best practices to promote its use.[8]

For a global and scalable application of the DLPC model, the DLPC must be recognized as a stand-alone negotiable instrument that is legally binding in the applicable jurisdictions. A key legal framework that must be adopted is the Model Law on Electronic Transferable Records (MLETR), established by the United Nations Commission on International Trade Law. [9] The MLETR offers a legal framework under which jurisdictions may deem electronically transferable instruments as equivalent to paper negotiable instruments and, therefore, equally valid.

Subject to specific due diligence, the intention is that the law of any country that has implemented the MLETR should be able to serve as the governing law for the issuance and enforcement of a DLPC. In the United States, the state of Delaware also has a framework in place that treats DLPC as a negotiable promissory note. However, certain countries have limited or unclear recognition of choice of foreign law, such as Delaware law in this situation.

Model 3: KashBanc platform by KashLab
KashLab, founded in 2017 and headquartered in Singapore, offers a white-labeled DTSCF platform for banks and/or financiers, with each financier operating their own platform (Annex, Model 3). The KashBanc platform has been implemented in Bangladesh and Myanmar and is looking to expand into India, South Africa, and Cambodia. A key differentiator in the KashBanc model is that there is no maturity date of a digital promissory note (DPN) that has been transferred from the Tier-1 supplier to the Tier-2 supplier. The DPN held by Tier-2 suppliers (and onward) remains evergreen and can be redeemed or transferred at any time. The longer the DPN is in circulation, the better it is for the banks as they are sitting on a float. Another key differentiator is that suppliers can have relationships with multiple buyers and vice versa. The DPN is intended to be an instrument independent of the supply chain so it can be transferred to suppliers irrespective of their anchor buyer. In some instances, a Tier-1 supplier becomes a Tier-2 supplier, and some entities act as both buyers and suppliers. The flexibility of the system promotes a network effect—as an ecosystem of users grow, the DPN becomes an increasingly valuable means to satisfy the obligation to pay for goods and services without a transfer of cash.

Several other DTSCF fintech solutions exist, with some of the more established DTSCF fintechs exploring cross-border expansion. The DTSCF fintech ecosystem is evolving quickly, and new entrants are establishing their model in markets beyond the PRC.

Inhibitors to the adoption of deep-tier supply chain finance

There are key considerations from each stakeholder that currently inhibit the adoption of DTSCF and apply across the models above. Figure 1 outlines the primary concerns of each participant, which must be addressed to facilitate the widespread adoption of DTSCF.

It is these moving parts that make scaling DTSCF a difficult challenge to solve. Each can be addressed by different parties. But an effective solution requires a clear understanding of DTSCF benefits and collaboration among governments, central banks, banks, anchor corporates, and fintechs.

Certain aspects are already being addressed within jurisdictions, which have proven to increase uptake of DTSCF. For instance, the PRC's push for inclusive finance incentivized banks and anchors to initiate DTSCF programs. Similar but appropriately tailored incentives need to be established across jurisdictions, given the significant variance in political, regulatory, and legal authorities at play, and the significant differences in commercial environments.

fintechs are also tailoring their models to address some of the pain points from suppliers. Skuchain, for example, integrates

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8 DLPC Working Group of the Innovation Council. 2020. *BAFT DLPC Business Best Practices*. Washington, DC; and DLPC Working Group of the Innovation Council. 2020. *BAFT DLPC Technical Best Practices*. Washington, DC.

9 Currently, the MLETR has been formally adopted by Abu Dhabi Global Market, Bahrain, Belize, Kiribati, Papua New Guinea, Paraguay, and Singapore. In 2021, the G7+ agreed on a framework for promoting the adoption of the MLETR. [United Nations Commission on International Trade Law (UNCITRAL). 2018. *UNCITRAL Model Law on Electronic Transferable Records*. Vienna.]

Figure 1: Inhibitors to Deep-Tier Supply Chain Finance Adoption—Top Considerations from Each Stakeholder

There are legal considerations relevant to all parties.

Ambiguity of legal structure – lack of clarity around regulations and legal precedent of DTSCF models, use of blockchain, use of electronic trade documents, and level of KYC/AML needed across jurisdictions

DTSCF FinTechs

Lack of market awareness – results in supplier reluctance/ inability to move away from long-standing financier relationships

Difficulty engaging buyers – buyers lack dedicated financing arms to initiate DTSCF

Integration challenges – time to integrate and lack of standardization with bank technology

Banks and Financiers

Unclear revenue incentive – uncertainty around sustainability and scalability of DTSCF models. Government-mandated ESG incentives are needed to promote DTSCF.

Integration challenges – time to vet, approve, and integrate with FinTech technology can be prohibitively long

Anchor Corporate (Buyer)

Resource constraints – limited resource available to onboard and maintain DTSCF program despite willingness to help deep-tiers with financing

Lack government incentives – improving supply chain stability may not be enough of an incentive. Government-mandated ESG incentives are needed to promote DTSCF.

Suppliers

Disclosure of sensitive information – reluctant to offer commercial information and reveal supply chain; lack clarity on how data will be used and stored

Resource constraints – lack resource to maintain platform

Technology adoption – many SME suppliers operate in developing markets with limited or no access to computers and smartphones

AML = anti-money laundering; DTSCF = deep-tier supply chain finance; ESG = environmental, social, and governance; FinTech = financial technology; KYC = know-your-customer; SMEs = small and medium-sized enterprises.
Sources: Asian Development Bank; BCG FinTech Control Tower; and stakeholder interviews.

zero-knowledge proof cryptography in their solution. This allows specific pieces of information to be verified without requiring all related background information to be viewed. Suppliers encrypt and upload documents, selecting the fields that can be viewed. Another example is KashBanc, which is leveraging Agent Banking models to onboard suppliers in regions where digital penetration is prohibitively low.[10]

The challenge that poses the largest barrier to adoption across the board is an agreement on the legal precedent of DTSCF models. Currently, the understanding of how these models are scaled and enforced across borders is not unified. It is important to fully substantiate the legal precedent of DTSCF models and promote DTSCF models that can effectively cross borders.

Legal perspective on the global scalability of deep-tier supply chain finance models

There is a range of considerations for successfully implementing DTSCF and expanding its market.[11]

Financing the Tier-1 supplier

While existing nondeep-tier structures have long addressed how to finance the Tier-1 supplier (such as through the purchase of a confirmed receivable at a discount prior to its due date), a preliminary consideration for DTSCF is how to structure the financing to the Tier-1 supplier (the Financing Method), and correspondingly the nature of the payment obligation of the buyer so that the benefit may be passed to the lower tiers.

A direct, valid, and enforceable payment obligation of the buyer that a financier may use to purchase from, or finance against for the benefit of, the supplier is the starting point. However, to ensure the Financing Method can be effectively applied for the benefit of lower tiers (see section on division and transfer of the financing below), the nature of the payment obligation should permit effective division and transfer. While this may be achieved with traditional instruments (such as a contractual debt, an irrevocable payment undertaking, or a bill of exchange/draft), some of which can be assigned or transferred in part, a payment obligation that has a digital component may be used, which in turn typically requires the requisite legislation and support in the applicable jurisdiction.

Division and transfer of the financing

The related consideration is how to take the form of payment obligation of the buyer—and, therefore, financing to the Tier-1 supplier (i.e., the Financing Method)—and divide and transfer it down to lower tiers. The mechanism used to divide and

10 Agent Banking is a form of branchless banking where the customer interacts with the bank through authorized agents.
11 The contents are intended to provide a general guide to the subject matter only and should not be treated as a substitute for specific advice concerning individual situations.

transfer the Financing Method (the Tiering Method) may also have specific legislation governing it, which can be used to benefit DTSCF.

There are various approaches to division and transfer of financing, such as (i) contractual Tiering Methods, where the lower-tier suppliers enter into a contract with the financier or the Tier-1 supplier enters into a contract with the Tier-2 supplier; or (ii) payment instruction Tiering Methods, with payment instructions used to transfer payments down the supply chain. These options, to a greater or lesser extent, mitigate the KYC requirements imposed on financiers, depending on the level of interaction between the financier and the payees (assuming that the financier is obliged to comply with these regulations). There is also interplay with the approach to the Financing Method, with consideration such as whether each transfer down the tier relates to an individual payment instrument or a transfer of part of a shared instrument. Blockchain may also be used to solve issues associated with transfer and tracking of ownership.

Payments across the tiers

In light of the Financing Method and the Tiering Method, practical considerations arise as to how to ensure all tiers get paid—and, specifically, how and when does financing get paid to all relevant tiers (the Payment Method). While structures in the market allow lower-tier suppliers to receive early payment once the buyer's obligation under the Financing Method is effective and enforceable, insolvency and other considerations come into play where the financier (as well as the buyer) is unable to provide the necessary financing (or payment).

In other contexts, platforms have become insolvent. For successful DTSCF, the authors suggest conducting an analysis of the position of suppliers (and the buyer and financier, as may be applicable) on insolvency of the financier, the buyer, and the platform itself.

Binding the parties

Practical considerations arise on how to bind all parties with related legal considerations for ensuring enforceable obligations and dispute resolution mechanisms.

DTSCF requires an effective and enforceable mechanism for contractual and/or common terms to be agreed to by the parties and the various tiers of suppliers, and how legal certainty is achieved at the point the buyer's payment obligation is created, the financing is committed to, and the Tiering Method is applied. This again differs across structures, but is fundamentally based on enforcement of contractual agreements. There is typically no single master agreement acting as the rule book for all parties within a specific structure, although a certain level of common terminology is typical.

Jurisdictional considerations

The nature of supply chains is inherently international. For DTSCF structures to achieve optimal scale, they need to allow the financier, the platform, the buyer, and the tiers of suppliers to be in different jurisdictions.

While many DTSCF structures purport to be jurisdiction-agnostic (and not dependent on any electronic transaction act or specific legislation over and above that used by the applicable banking industry), the reality is they are limited depending upon the Financing Method used.

Structures based on contractual Financing Methods address the usual considerations of enforceability of awards and judgments. To encourage wider applicability, consideration should be given to a choice of law and mode of dispute resolution that has a very wide global reach—for example, dispute resolution via arbitration, enforced under the United Nations Commission on International Trade Law (UNCITRAL) Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York Convention). Structures using negotiable instruments in Financing Methods are less constrained in jurisdictions that have implemented the MLETR or an equivalent thereof. The issues pertaining to the conflicts of laws may be addressed in the legislation of the relevant jurisdictions or the Convention for the Settlement of Certain Conflicts of Laws, in connection with the Bills of Exchange and the Promissory Notes.

Other considerations

While most structures focus on ultimate buyer payment risk, there are a variety of other risks that can affect supply chains. In addition to the insolvency of the parties, structures should address common situations and risks arising in SCF when something goes wrong.

For example, how are sanctions, fraud, commercial, and/or performance risks being addressed in the structure? Are parties' liabilities limited in the structure? Diligence and clear disclosure will be key to the parties understanding the risks involved in any DTSCF structure.

Additionally, the practicalities of how disputes between the parties are handled should be considered. For example, will there be a single governing law and dispute resolution mechanism and forum for all parties?

Expanding the market

The DTSCF industry is nascent but brings clear benefits. Effectively expanding the DTSCF market will require two broad efforts: multilateral support, and legislative expansion and/or clarification.

Multilateral development banks (MDBs), such as ADB, have a key role in supporting such structures through risk sharing and/or funding the financier (typically through unfunded or funded risk participations) and, therefore, sharing buyer risk to support the financing to suppliers. MDBs' SCF programs will need to extend support to DTSCF.

To date, DTSCF does not exhibit a single legal structure, framework, or approach, either within or across jurisdictions. The solution may lie in contract law, which is broadly similar globally. The success of the Uniform Customs and Practice for Documentary Credits, including dealing with different parties with different roles, may provide the key to unlocking the conundrum. From a legislative perspective, UNCITRAL's most successful effort was the New York Convention. The New York Convention has been adopted by 170 countries; although, legislative adoption is a much slower process compared to the contractual approach. The adoption of the MLETR and other similar legislation is fundamental to digital solutions for DTSCF; however, uptake continues to be slow. Any such efforts would offer clarity on how conflicts of laws will be addressed, and thus decrease uncertainty in cross-jurisdictional transactions.

CONCLUSION

For trade to continue delivering economic growth, create jobs, and support a sustainable global recovery, urgent action is needed to address the SME financing shortfall. This is compounded with the pressing need to upgrade supply chains to facilitate stability, transparency, and traceability, while helping subdue climate change and promote a range of critical ESG and sustainability-related goals.

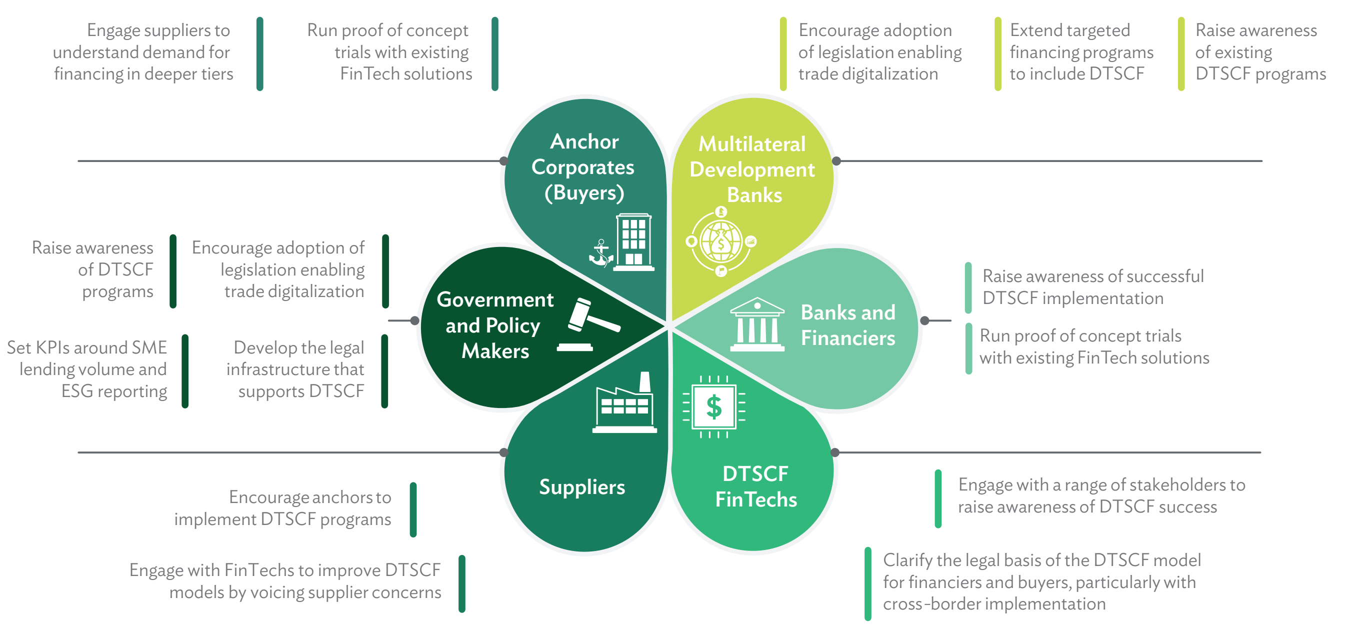
DTSCF, its underlying platform-based and data-rich technology, as well as evolving industry practice, present a compelling solution to a growing list of commercial, policy, and regulatory requirements for modern supply chains. It has the potential to significantly reduce the financing gap by solving long-term problems with financing SMEs while combating fundamental supply chain issues, including those linked to ESG and sustainability, by penetrating deep tiers of global supply chains. The potential DTSCF presents across these fronts, and examples of successful implementation should encourage the industry to come together to accelerate adoption (Figure 2).

However, a lack of awareness, familiarity, and clarity around DTSCF models presents several issues that need to be addressed for DTSCF models to scale. Additionally, legal and financial crimes compliance considerations including AML/KYC across jurisdictions must be taken into account for these solutions to be adopted at scale.

Develop and standardize relevant legal frameworks
Legal considerations center around the differences in legislation and regulations across jurisdictions. These considerations apply to the structure of the payment obligation, how financing is divided and transferred, and the dispute resolution mechanism.

It is important to encourage and accelerate the uptake of frameworks, such as the MLETR, to unify legal frameworks across jurisdictions. Moreover, frameworks such as the MLETR apply beyond payment obligations and uptake benefits trade digitalization generally. It is also crucial that the tiering method is transparent and auditable so ownership of payment obligations and the flow of funds can be monitored. Not all models require a split and transfer of the payment obligation, with financing transferred via a contractual tiering method (e.g., Skuchain). In this case, the role of each party involved in the tiering method must be clear and legally binding.

Figure 2: Accelerating the Adoption of Deep-Tier Supply Chain Finance—Action Points for Each Stakeholder



DTSCF = deep-tier supply chain finance; ESG = environmental, social, and governance; FinTech = financial technology; KPI = key performance indicator; SMEs = small and medium-sized enterprises.
Sources: Asian Development Bank; and BCG FinTech Control Tower.

Dispute resolution mechanisms must also be built in to ensure the security of DTSCF models. An effective and enforceable mechanism for contractual and/or common terms should be agreed to by the parties and various tiers of suppliers. Specific court verdicts would go a long way to establish court precedent around rights of the holder of digital payment obligations (e.g., the PRC court ruling that acceptance of a JinBill from the JDH Platform is a form of debt discharge).

There is also the consideration of KYC across jurisdictions. Unregulated DTSCF platforms take different approaches to the level of KYC required across jurisdictions, with some DTSCF models designed to bypass the need of performing deep KYC. Clarity is needed around the level of KYC required across jurisdictions and how DTSCF platforms address this—though, it must be recognized in practice that jurisdictions will wish to retain the right to determine local compliance requirements, and global alignment on anything more than a basic standard is unlikely in the foreseeable future.

Improve market awareness
A crucial issue to overcome is the general lack of market awareness. DTSCF is still nascent outside of the PRC, making it difficult for fintech solutions to gain traction. Business owners need clear understanding of the nature of DTSCF products and how to access them. Banks need to be made aware of DTSCF successes and how to initiate their own programs.

Improving market awareness is particularly important to SME suppliers. Poor experience in access to financing has resulted in low levels of engagement. Lengthy credit decision-making period, high rejection rates, and difficulties in meeting documentary requirements result in SMEs' reluctance to engage with financing. In many cases, these barriers mean SMEs that need consistent access to financing establish long-term relationships with financiers, rarely exploring other options.

To improve market education, successful DTSCF implementation should be showcased and celebrated by industry leaders while encouraging and supporting new entrants. This will stimulate more fintech participants to enter the market, thereby promoting innovation and competition, increasing confidence in DTSCF models, and resulting in the emergence of more sophisticated business models.

Establish incentive mechanisms
From a bank's perspective, confidence in DTSCF models needs to be displayed to lower barriers to entry. In parallel with market education, MDBs could explore risk-sharing programs with banks to encourage adoption. Payment obligations used in DTSCF models (e.g., Irrevocable Payment Undertaking, Distributed Ledger Payment Commitment, Digital Promissory Note, and DigiPo) could also be publicly recognized as enforceable obligations of payment to the holder across jurisdictions.

Further incentive mechanisms could be established to encourage adoption. Key performance indicators around SME lending volumes and ESG reporting across supply chains can provide clear incentives for banks and corporates to initiate DTSCF programs. Financial incentives such as lower capital charges can also be used to encourage ESG-linked financing solutions, should regulatory authorities be receptive to such changes.

Open up access to financing more generally
DTSCF alone will not close the trade financing gap. Beyond DTSCF, it is important to address the critical barriers SMEs face in accessing financing. The industry should encourage the use of alternative SME credit scoring methods, lower the burden of documentation uploads for suppliers, and give suppliers a probability of approval based on simple metrics. Meanwhile, MDBs should extend financing programs to support portfolio-based credit rating.

There is scope for new and innovative financing solutions that can effectively address the SME trade financing shortfall. DTSCF is a promising example of how new solutions can fulfil unmet demand and quickly find success. However, there are still barriers to address for DTSCF to scale globally, and there is a need for further SME financing solutions. An area of notable opportunity is in preshipment financing, where a solution is needed to help lower tiers access financing before goods are shipped and accepted, enabling suppliers to accept larger order volumes and access short-term financing to cover the increased cost of production.

The benefits of broader trade digitization, including digitization of finance through solutions like platform-based DTSCF are clear. Regulations are increasingly encouraging and supporting the applications of technology to trade, and the digital transformation of trade will continue to accelerate. fintechs, banks, and financiers need to work together to implement innovative technology-based financing solutions, which address the secular challenges SMEs continue to face when accessing financing.

Integrate environmental, social, and governance as well as sustainability goals into deep-tier supply chain financing
ESG and sustainability priorities in general cannot be underestimated, in that they involve an existential and urgent threat to the global community. Trade contributes to some of the critical parts of the sustainability and ESG challenges we all face, and it has a commensurate obligation to become part of the solution. It is imperative that stakeholders in the trade and trade financing communities commit to advancing sustainable, ESG-aligned trade through green, sustainable, transparent supply chains that exhibit full traceability to enable sustainable trade. DTSCF and its underlying platform technologies can and must play an important role in ensuring that financing drives sustainable, ESG-aligned trade.

Call to action

Despite its clear benefits, DTSCF remains relatively nascent in its development and use, with limited adoption outside a handful of jurisdictions. There is an urgent need to shore up the stability, resilience, transparency, and sustainability of supply chains. The negative effects of supply chain linkages could be countered by using these same linkages (facilitating new data flows) to achieve key ESG and sustainability-related goals. Paying attention to key players of the economy, particularly the SMEs, is critical to development and job creation. SMEs, therefore, should have access to finance, particularly those in the lower tiers of the supply chains. The workings of these supply chains must become increasingly transparent and visible for interventions to be effective. DTSCF presents an opportunity to harness the industry's knowledge, awareness, and capacity to address such needs and achieve significant development.

Solutions to some of the world's most pressing problems, such as climate change, need to be implemented through supply chains, with the additional transparency and data generated by DTSCF and its enabling technology a potential step forward in that process.

It is hoped that more industry players, including anchor corporates (buyers), suppliers, financiers, DTSCF fintechs, multilateral development institutions, governments, and policy makers will join efforts to accelerate the adoption of DTSCF. Together, they can effectively address the key inhibitors to broader DTSCF adoption; unlock financing for SMEs throughout any global supply chain; and contribute to stable, resilient, transparent, sustainable, and inclusive supply chains, advancing the ambitious, critically urgent ESG and sustainability agenda globally.

The Asian Development Bank's Contribution

The Trade and Supply Chain Finance Program (TSCFP) of the Asian Development Bank (ADB) aims to close market gaps in trade finance and support economic growth, jobs, and development that come from trade, while making global trade and supply chains green, resilient, inclusive, transparent, and socially responsible.

The TSCFP is committed to work with partner banks and industry bodies to develop innovative financial solutions, such as deep-tier supply chain finance (DTSCF), which have the potential to unlock working capital, permit financing accessibility for every supplier in the ecosystem, and facilitate efforts in improving the transparency, visibility, and security of the entire value chain.

Below are some examples of the TSCFP's current support in relation to DTSCF and in implementing necessary changes in supply chains to facilitate a greener and more socially responsible future:

- Working with partner financial institutions and industry stakeholders to support deployment of DTSCF pilot projects; demonstrate "proof of concept," viability, potential to provide access to working capital for small and medium-sized enterprises (SMEs) deep in the value chain; and facilitate more transparent supply chains, including as it concerns environmental sustainability and labor standards throughout the supply chain.
- Encouraging the adoption of legislation enabling trade digitalization. ADB is engaged in a series of advocacy efforts for the adoption of the United Nations Commission on International Trade Law's Model Law on Electronic Transferable Records through the provision of knowledge products and grant-based support to ADB's developing member countries to encourage alignment of local laws with the Model Law.
- Promoting the digitalization of trade and supply chain finance as a founder of the Digital Standards Initiative (along with the Singapore Government and the International Chamber of Commerce) and its work to create digital standards and protocols to drive interoperability between fintech platforms and between component parts of the trade ecosystem: exporters, shippers, ports, customs, warehouses, banks, insurance, and importers.
- Producing the Trade Finance Gaps, Growth, and Jobs Survey, which analyzes the amount and reasons for gaps between demand and available finance and suggests ways to narrow that gap.
- Driving knowledge initiatives and pilot programs to streamline the reporting of anti-money laundering and combating the financing of terrorism, which can impede banks from supporting SMEs in supply chains. At the same time, ensuring that the reporting done by banks captures criminal activities within the financial system.
- Undertaking an ongoing gender initiative to promote gender equity both within banks and for clients seeking to have access to bank facilities.

For more information, please contact Sunil W. Mascarenhas (swmascarenhas@adb.org), Aparna Soni Bhalla (abhalla.consultant@adb.org), and/or Carmen Maria Ramirez Ortiz (cramirezortiz.consultant@adb.org).

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ADB's Trade and Supply Chain Finance Program initiated the writing of this brief, with Aparna Soni Bhalla, Carmen Maria Ramirez Ortiz, and Sunil W. Mascarenhas leading the initiative. Legal input was received from Angelia Chia, partner, Mayer Brown; and Ben Sandstad, senior legal counsel, ADB.

In collaboration with ADB, Ian Loh, Thomas Lloyd, and Guglielmo De Stefano from the BCG FinTech Control Tower collated input from industry stakeholders and led the research, analysis, and report-writing efforts.

A range of deep-tier supply chain finance (DTSCF) stakeholders were interviewed on the current market conditions, key considerations, and opportunities for DTSCF. FinTechs, which are active in DTSCF (e.g., ESGTech, KashLab, Linklogis, Olea, RABC Group, Skuchain, and Veefin Technologies) were interviewed along with DBS Bank, HSBC, and Standard Chartered.

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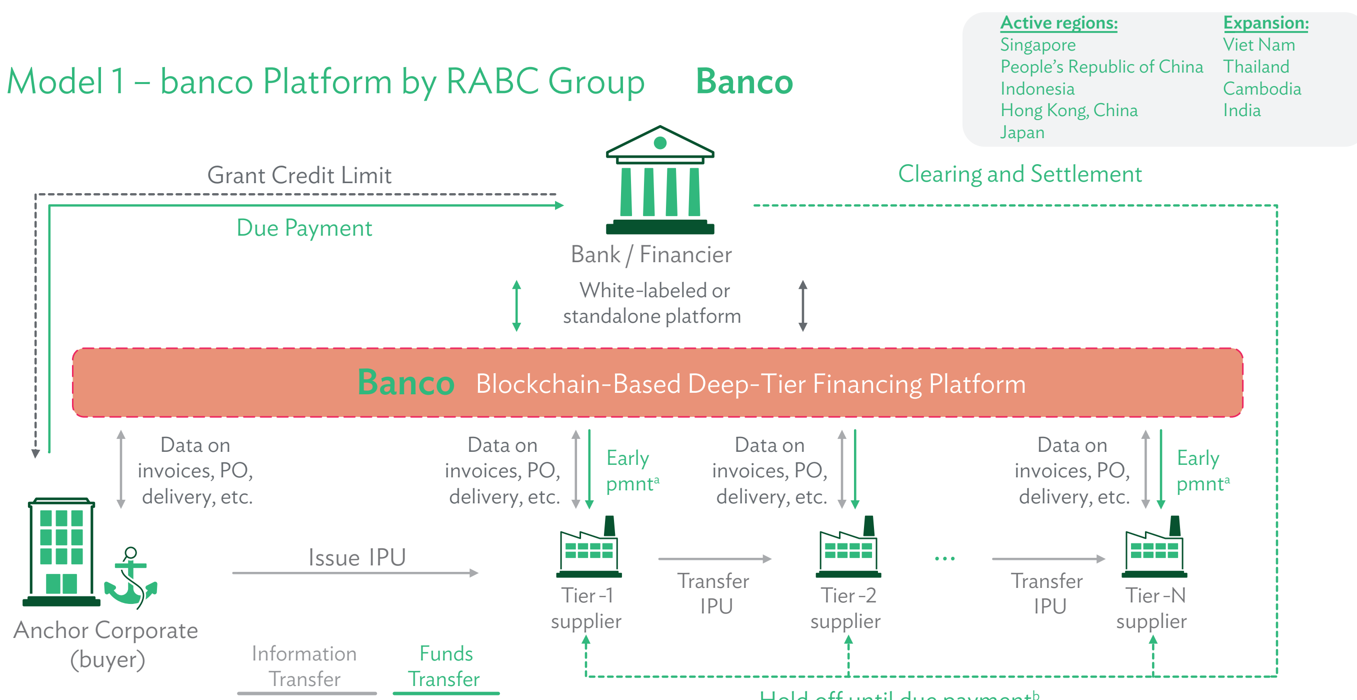
Data from the United Nations Conference on Trade and Development, BCG, ADB, BCR Publishing, BCG FinTech Control Tower, International Chamber of Commerce, World Economic Forum, World Bank, Organisation for Economic Co-operation and Development, and the Supply Chain Finance Essential Knowledge Series 6 were used to support arguments throughout the report.

DEEP-TIER SUPPLY CHAIN FINANCE MODELS: SOLUTION PROVIDER PERSPECTIVES



IPU = Irrevocable Payment Undertaking, pmnt = payment, PO = purchase order.
[a] Early payment = invoice amount – (fee charged by financier + fee charged by banco)
[b] Bank/Financier pays outstanding IPU amount at invoice due date when an early payment is not requested.
Sources: Asian Development Bank; BCG FinTech Control Tower; and banco platform by RABC Group.

The banco deep-tier supply chain finance (DTSCF) product is a blockchain-based platform connecting a financier, anchor corporate (buyer), and all tiers of suppliers in the value chain. The financier grants the anchor a credit limit based on the anchor's credit profile, enabling financing to be extended to their suppliers at a preferential rate. The deep-tier financing method is built on the split and transfer of the account receivables rights, which are aggregated and represented by an Irrevocable Payment Undertaking (IPU), signed off by the anchor. The account receivables rights on the banco platform are in the form of digital payment obligation receipts for the account receivables right holders (suppliers).

When goods (or services) are delivered by the Tier-1 supplier and approved by the anchor, the anchor confirms the account payables by signing off an IPU, committing to pay the full amount to the financier on a specified payment due date. The terms of the IPU are approved by the financier. The anchor can then issue this IPU to their Tier-1 supplier as a contractual obligation of payment. Upon receiving the IPU, holding the digital payment obligation receipt, the Tier-1 supplier has three options:

(i) Split and transfer the digital payment obligation receipt in full or as partial amount of the IPU to a deeper-tier supplier as a form of payment to offset its own account payables to the sub-supplier,

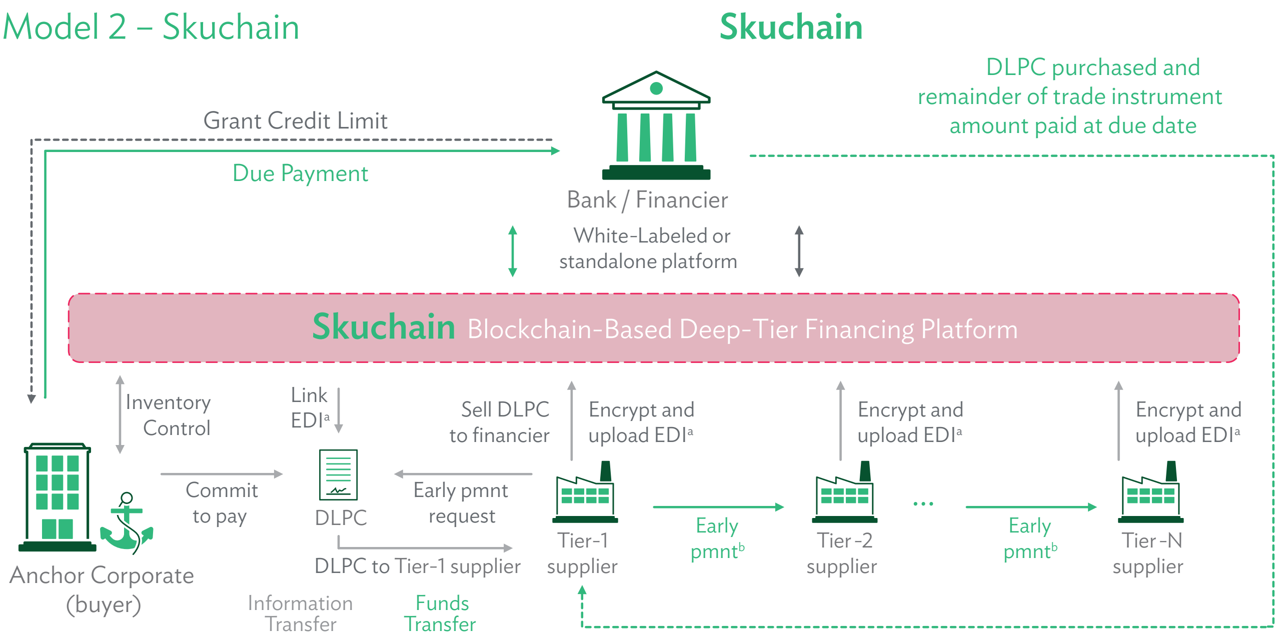
(ii) Request early payment based on the digital payment obligation receipt via the platform by entering into a receivables purchase agreement (RPA) with the financier, and

(iii) Hold the digital payment obligation receipt until the payment due date of the IPU.

When the digital payment obligation receipt is transferred to Tier-N suppliers, they are offered with the same three options; as such, financing penetrates deep into the anchor's supply chain. On the IPU payment due date, the outstanding digital payment obligation receipt amounts are paid by the financier to the digital payment obligation receipt holder(s), and the anchor pays the full amount of the IPU to the financier. The transfer of a digital payment obligation receipt is generally a bilateral agreement between the two suppliers, with no need for a third party to be involved in most of the markets. An important highlight is that the IPU is not a promissory note nor a security; hence, it cannot be used as form of payment outside the anchor's supply chain. The digital payment obligation receipt can only be transferred on the banco platform between onboarded suppliers. All participants are onboarded and authenticated digitally through the banco platform. Full know-your-customer (KYC) due diligence is only performed on the anchor corporation, with simplified anti-money laundering and KYC necessary for suppliers, similar to the KYC level in a remittance transaction. The application of blockchain ensures that each transfer is transparently and immutably logged on a distributed ledger. As a result, ownership data of the digital payment obligation receipts and records of transactions can be validated at any point in time.

Sources: Authors; and banco platform by RABC Group.

Model 2 – Skuchain



DLPC = distributed ledger payment commitment, EDI = electronic data interchange, pmnt = payment.
[a] EDI document is a parent trade instrument, such as a purchase order, advanced shipping notice, or invoice.
[b] Early payment = amount requested – (fee charged by financier + fee charged by suppliers who process the early payment)
Sources: Asian Development Bank; BCG FinTech Control Tower; and Skuchain.

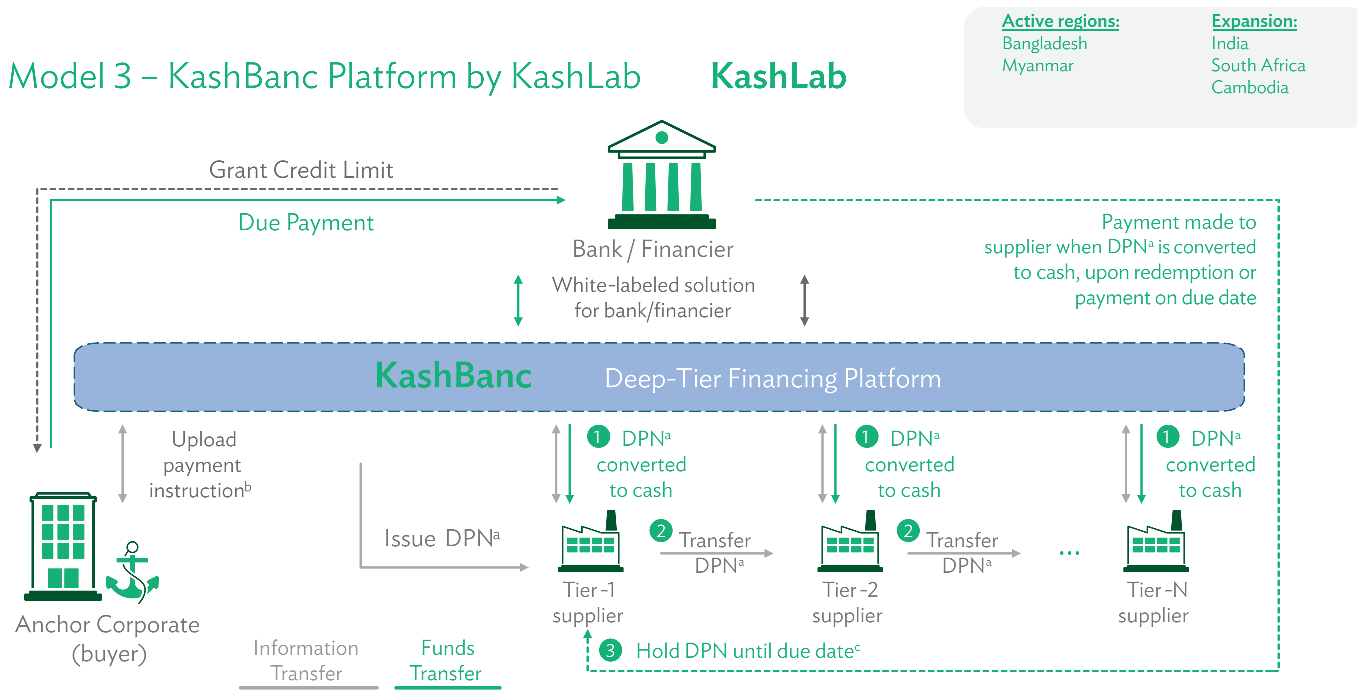
The deep-tier supply chain finance (DTSCF) flow starts with an early payment request against a parent trade instrument such as a purchase order, invoice, letter of credit, or advanced shipping notice. The early payment request can come from any tier of supplier. The supplier uploads an encrypted trade instrument to the validate trade chain that they collaborate with their counterparty and Skuchain, defining the amount needed as early payment and the fields it wants visible to the anchor and Tier-1 supplier.

The Tier-1 supplier then requests a distributed ledger payment commitment (DLPC) to be issued by the anchor for the specified early payment amount against the parent trade instrument. Once the anchor agrees to pay the full amount of the DLPC on a specified date, the DLPC becomes a stand-alone legal instrument. The Tier-1 supplier sells the DLPC to the bank and/or financier. The DLPC is always an agreement between the anchor and the Tier-1 supplier and sold to the bank and/or financier by the Tier-1 supplier, regardless of which supplier requested early payment.

The Tier-1 supplier then sends the early payment down the chain to the original requester, leveraging existing commercial relationships. Each tier that processes and transfers the early payment can take a small fee for doing so. It is not critical that processing fees are built into the model, as they can negatively impact lower tiers, but they can act as an incentive mechanism for the higher tiers to facilitate early payment requests from lower tiers. At due date, the buyer pays the full DLPC amount to the financier to close the loop. The blockchain infrastructure ensures each interaction is transparently and immutably logged.

Structuring the DLPC as an agreement between the anchor and their Tier-1 supplier that is not transferred to lower-tier suppliers realizes two key benefits. First, the anchor commits to pay the full DLPC amount on a specific date so the bank and/or financier takes the credit risk of the anchor to distribute financing through the supply chain. Second, the bank must only perform full know-your-customer duties on the Tier-1 supplier and full credit assessment on the anchor.

Sources: Authors; and Skuchain.



DPN = digital promissory note.
[a] DPN is equal to the value of uploaded payment instruction.
[b] Payment instruction for the invoice to be paid on due date.
[c] Tier-1 supplier chooses path 1 or 2 or 3; and Tier-2 suppliers choose path 1 or 2.
Sources: Asian Development Bank; BCG FinTech Control Tower; and KashBanc by KashLab.

Financing is based on digital promissory note (DPN), which are managed on the KashBanc platform. At the point of onboarding, the anchor and each supplier open a DPN wallet, which represents the amount they can request as early payment from the financier.

The financier issues a DPN to the Tier-1 supplier via the platform upon receipt of the payment instruction from the buyer. The Tier-1 then has three options:

(i) Transfer the DPN to a deeper tier supplier as a form of payment,
(ii) Request early payment against the DPN via the platform (minus fee from the financier), and
(iii) Hold the DPN until payment due date.

The Tier-1 supplier may transfer all or part of their DPN balance to one or more of its downstream suppliers (Tier-2). When there is a transfer, it is reflected as a debit entry in the Tier-1 suppliers DPN wallet and a credit entry in the Tier-2 suppliers DPN wallet. Likewise, a Tier-2 supplier may transfer the DPN balance to a Tier-3 supplier, and so on. Where early payment is requested by a supplier against a DPN, the financier makes the payment to the requester. At maturity of the Tier-1 supplier's invoice, the financier pays the Tier-1 supplier for any balance that remains in its favor.

The financier has recourse to the buyer based on an agreement signed between the financier and the buyer. The buyer is a debtor and both parties are bound under contract law.

The financing method is governed by the terms and conditions of an agreement signed by the financier with the buyer and supplier separately, binding the parties under contract law. All participants are onboarded digitally via the KashBanc platform. Know-your-customer and credit assessment for the anchor corporate are undertaken by the bank and/or the financier, ultimately determined by the jurisdiction where the platform operates.

Sources: Authors; and KashBanc by KashLab.

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
Tel +63 2 8632 4444
Fax +63 2 8636 2444