

Technological Innovation in Trade Finance and the Law: From the Bank Payment Obligation and Blockchain to the Uniform Rules on Digital Trade Transactions

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1. INTRODUCTION

This article discusses two new digital trade finance methods and a new set of international rules intended to accommodate digital trade transactions and the related finance. It seeks to illustrate shifts that have been occurring in trade finance, standardization efforts and the related law. The first instrument is the bank payment obligation (BPO) that was created by the banks and launched in 2013.¹ It is wholly a bank-to-bank instrument and relies on the SWIFT communication network. There are bespoke rules for its use — the Uniform Rules of Bank Payment Obligations² (URBPO) — and it is required that all parties use a standardized communication format according to ISO 20022 Trade Services Management (TSMT) messages.³ The second digital method of payment considered in this article is blockchain, which was created in 2008⁴ and first used in a trade-related finance transaction in 2016. Blockchain is a widely used innovation that is driven by companies and extensively used beyond banking transactions and trade finance. It relies on private communication networks developed by fintech companies and bank consortia, and there are no bespoke international rules governing it yet. The two methods have the potential to

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¹ See David J. Hennah, *The ICC Guide to the Uniform Rules for the Bank Payment Obligations*, ICC Publication No. 751E (Paris, France: ICC, 2013) [Hennah 2013].

² International Chamber of Commerce, *ICC Uniform Rules for Bank Payment Obligations Version 1.0*, Publication No. 750E (Paris, France: ICC, 2013) [URBPO].

³ URBPO, *supra* note 2, art. 2.c.i.

⁴ See Keizer Soze, *Blockchain: Novice to Expert* (London: Sabi Shepherd Ltd, 2019), chap. 1.

introduce efficiencies and operate as competitors to the letter of credit, which has long been held to be the most secure trade finance method. The BPO compares favourably with the letter of credit by reducing the period of payment to approximately four days down from fifteen days, while blockchain, compared to the letter of credit, potentially moves trade documents electronically to their destination in under four hours, down from 15 days. The success of the BPO and trade-related blockchain has inspired developments in the law that generally applies to digital trade, the most recent of which are the Uniform Rules on Digital Trade Transactions (URDTT), which are also discussed in this article. Thus, this article analyzes the BPO and blockchain against the wider background of developments in trade finance, standardization efforts and the law relating to the digitization of trade transactions.

Trade finance, which traditionally was viewed as bank intermediation in the trade transaction or the provision of financing facilities to the parties involved in the supply chain, continues to evolve. Whereas the best-known trade finance instrument is the letter of credit, there has been a gradual shift from the central role played by the banks and the documents of trade to competing methods, such as open account trading and digital instruments.⁵ The last decade and the current digital era have produced numerous and far-reaching technological innovations some of which are directly applicable to trade finance. In particular, there has been a steady move away from the paper-based system of trade and finance towards electronic commerce.⁶ In that light, the development of the BPO and blockchain illustrate the general trend of the digitization of trade finance and the dematerialization of trade documents, which trend challenges and disrupts the paper-based trade finance system. The law, which plays a facilitative role for business and usually lags commercial practices and technological innovations, has also been evolving; and two key sources of legal uncertainty were the legal status of electronic documents and the legal validity of contracts that were executed electronically. This article, while alluding to some domestic initiatives which are playing catch up with technological innovations, will focus on the international initiatives aimed at standardizing practices and modernizing the law in line with technological innovations and commercial practices in trade finance.

After placing the development of the BPO and trade-related blockchain in the wider context of developments in trade finance and the law, this article argues that the new developments are incremental rather than revolutionary and that, ultimately, the new developments are likely to be milestones on the continuum of innovation. Similarly, the standardization efforts and legal developments have

⁵ See Christopher Hare, “Something Old, Something New: Open Account, Prepayment, and Supply Chain Finance” in Christopher Hare & Dora Neo, eds., *Trade Finance: Technology, Innovation and Documentary Credits* (Oxford: Oxford University Press, 2021) 273.

⁶ See Miriam Goldby, “Digitalisation of Shipping and Insurance Documents” in Hare & Neo, *supra* note 5 at 197.

been incremental since they build on previous endeavours. Thus, while the new URDTT are ambitious in their agnostic approach since they aim to embrace all future digital transactions, they build upon and are complementary to several international developments in the law, notable among which is the recent UNCITRAL Model Law on Electronic Transferable Records. This article is divided into four parts. Following this introduction, the second and third parts present the transactional and legal aspects of the BPO and the trade-related blockchain. The fourth part presents the standardization efforts and legal responses aimed at facilitating technological innovation in trade and finance, focussing on the new URDTT, while the fifth part concludes.

2. THE BANK PAYMENT OBLIGATION AS A SIGNAL DIGITAL TRADE FINANCE INSTRUMENT

(a) A Historical Conspectus of Trade Finance

For centuries, the letter of credit, also called the documentary credit, aptly lived up to its reputation as “the life-blood of international commerce” or the “crankshaft of international trade” because it was the most secure trade finance instrument.⁷ Capable of combining both the payment and financing features in one instrument, the operations of the letter of credit rely on the strength and integrity of the banks and their dedicated communication networks to facilitate the trade or services transactions between the commercial parties. The banks act as neutral document checkers and payors, and in so doing, bridge the informational gap and possible distrust among the trading parties. They also ensure that the beneficiary of the credit obtains payment only when it has satisfied the documentary conditions agreed by the parties and communicated to their respective banks.

The letter of credit, for most of its life, has been a paper-based trade finance instrument. The transaction documents can be many and usually include the commercial invoice, the bill of lading or other transport document, insurance documents, and inspection certificates; and each has a distinctive role to play. In addition to playing the verification role that the beneficiary has satisfied the condition for payment, the set of documents serve as collateral for the bank financier and can be realized in case the bank is not reimbursed. These time-tested and popular attributes of the letter of credit have also proved to be its detractors in the digital era. Since the documentary credit requirements are document-intensive, they are considered expensive. Secondly, the manual processing and physical transmission of the documents among the parties and their banks and among the banks as a group are perceived to be slow, expensive and inefficient. Finally, the document examination process is prone to discretion and human error. Because of these known drawbacks, commercial parties,

⁷ See e.g., *Intraco Ltd v. Notis Shipping Corporation (The Bhoja Trader)*, [1981] 2 Lloyd's Rep 256 (CA).

industry associations and international organisations have for decades sought to improve the efficiency of the letter of credit and trade instruments in general. The solution lay in the digitization of trade finance which would substantially reduce the paperwork and thereby reduce the manual and error-prone processes in the trade.⁸

Technological innovation in the financial industry accelerated after the global financial crisis of 2008 because a multitude of new financial technology companies (fintech companies) offered financial services that were previously the preserve of banks, insurance companies and investment advisors. The fintech companies offer financial services more cost-effectively and efficiently, and they compete and collaborate with the banks in areas such as payment systems, storage, and movement of paper documents. Their entry into business upped the tempo of innovation in the wider financial industry, including innovations at incumbent banks. Areas that witnessed significant innovation in the quest for efficiency and cost-cutting include logistics (the system of moving documents), financing and making payments in international trade, and in particular, trade finance, which means bank intermediation in the trade transaction.

(b) Operational Aspects of the BPO

The BPO is a new digital instrument that was launched in 2013, but the first live transaction dates to 2010.⁹ It was hailed by some early commentators as “one of the most important innovations in recent years”¹⁰ and the “the biggest innovation . . . in the trade finance world since the letter of credit came into common use in the 17th century.”¹¹ It has been described as a hybrid between letters of credit and open account¹² and was created to perform similar roles to the documentary credit; that is, first, assurance of payment and secondly, financing trade transactions.¹³ The four-corner model of the BPO is similar to an

⁸ International Chamber of Commerce, “Global Trade — Securing Future Growth, Tenth Annual Edition” 2018 at 139, online (pdf): *ICC* < <https://iccwbo.org/content/uploads/sites/3/2018/05/icc-2018-global-trade-securing-future-growth.pdf> > [ICC 2018].

⁹ SWIFT & OPUS Advisory Services International Inc., “Digital Trade and Trade Financing: Embracing and Shaping the Transformation” (May 2016) (last visited 3 September 2021), online (pdf): *Global Trade Corp* < globaltradecorp.com/media/swift_trade_digitisation.pdf > .

¹⁰ Staff Editors, “Trade Finance: The State of Play and Recent Trends” (2014) 28 *J. Tax’n & Reg. Fin. Institutions* 55 at 59.

¹¹ David Henna, “BPO: A Digital Instrument for a Digital Age” (February 2018) *Documentary Credit World* 25 [Henna 2018].

¹² ICC 2018, *supra* note 8 at 140.

¹³ See Agasha Mugasha, “The Bank Payment Obligation as a Signal Step in the Evolution of Digital Trade Finance” in Hare & Neo, *supra* note 5 at 255-272; SWIFT & OPUS Advisory Services International Inc., *supra* note 9; Geoffrey L. Wynne & Hanna Fearn, “The Bank Payment Obligation: Will it Replace the Traditional Letter of Credit — Now, or Ever?” (February 2014) *Butterworths J. Int’l Banking & Fin. L.* 102 at 102-104;

international letter of credit since it involves the two contracting parties and their two respective banks. The novelty of the BPO lies, however, in the technological sphere; specifically, it is a wholly digital instrument whose operations centre around the Transaction Matching Application (TMA), to which the involved banks send data messages for comparison with the requirements of the buyer and seller, initially, at the time of establishing or amending the BPO¹⁴, and later, when payment is required. The TMA makes an automatic comparison of the data messages and produces a ‘data match report’ when it receives matching electronic data that in turn triggers payment by the obligor bank.¹⁵ Currently, the banks utilize the TMA at SWIFT, called the Trade Services Utility (TSU), and are subject to the Rulebook in the TSU Service Description. For the communication to be seamless, the banks take instructions electronically in structured messages according to the format designed by ISO 20022 and, in turn, communicate to each other via the electronic platform, the TMA, using the same structured messages.

The mechanics of the BPO transaction resemble those of the letter of credit albeit informed by the digital requirements and facilitated by specialized rules. First, the contracting parties agree on the details of their commercial transaction, for instance, a purchase order, and specify the BPO as the method of payment. Secondly, the buyer extracts the payment data and communicates it to its bank (the obligor bank), and this stage is mirrored by one where the seller extracts the payment data and communicates it to its bank (the recipient bank). Both the buyer and seller would have in place or create with their respective banks some BPO-based terms and conditions of service that lay out details of their relationship.¹⁶ To assist new entrants and facilitate uniformity across the industry, SWIFT has produced the TSU Service Description for C2B Contractual Guidelines.¹⁷ Thirdly, when the seller has performed its contractual obligations, it extracts the relevant data and submits it to the recipient bank. Fourthly, the involved banks interchange digital information with the TMA based on the TSU Rulebook and, ultimately, the TMA/TSU

Matthew V. Raketti, “The Bank Payment Obligation: A Vehicle for the Electrification of Commercial Letters of Credit?” 2016 *Ann. Rev. Int’l Banking L. & Prac.* 101 at 101, 110; Turker Susmus & Ozgur Baslangic, “The New Payment Term BPO and Its Effects on Turkish International Business” (2015) 33 *Procedia Econ. & Fin.* 321 at 321-330; Danuta Marciniak-Neider, “New Form of International Settlements — Bank Payment Obligation” (2015) (last visited 3 September 2021), online: *University of Lodz* < czasopisma.uni.lodz.pl/fo/article/view/408 > .

¹⁴ URBPO, *supra* note 2, Arts. 9 and 11.

¹⁵ See URBPO, *supra* note 2, art. 3 the definitions of ‘Transaction Matching Application’, ‘Data Match’ and art. 10.a.i.

¹⁶ This is similar to the application and reimbursement agreement in documentary credits. See Hennah 2013, *supra* note 1 at 146.

¹⁷ SWIFT, “Trade Service Utility 2.0, Corporate-to-Bank Guidelines” (31 August 2011), online: < <https://www.swift.com> > .

determines whether the data complies with the requirements. While the TMA/TSU determines whether the digital conditions of payment have been made and communicates to the respective banks the result, however, it does not make payment in the same way as a nominated bank under a documentary credit. The payment is made by the obligor bank to the recipient bank based on their correspondent relationship.¹⁸

(c) Key Legal Features of the Bank Payment Obligation

The BPO was designed to progress the payment and security features of the letter of credit into the digital era. Thus, like the letter of credit, the BPO is an irrevocable bank undertaking that is autonomous from the underlying transaction and other related transactions. Unlike the letter of credit, however, the BPO is a digital financial instrument containing the obligation of one bank to another. The parties communicate on electronic platforms using structure messages, and payment is triggered by the electronic matching of data. These key features are contained in the main applicable rules, the ICC-sponsored URBPO. Article 3 of the URBPO provides that:

Bank payment obligation” or “BPO” means an irrevocable and independent undertaking of an Obligor Bank to pay or incur a deferred payment obligation and pay at maturity a specified amount of money to a Recipient Bank following Match or an acceptance of a Data Mismatch . . .¹⁹

Thus, according to the URBPO, the BPO is an undertaking of the obligor bank to the recipient bank. The undertaking of the obligor bank, while the BPO is in effect, is to pay or incur a deferred payment undertaking and pay it at maturity.²⁰ The BPO remains in effect until (i) it expires before submission of all the data sets required by the established baseline,²¹ (ii) the obligor bank is released from its undertaking by amending the established baseline, or (iii) the BPO is fully paid in accordance with its terms, whichever happens earliest.²²

The terms and conditions of the BPO are contained in the established baseline at the TMA, which at the same time specifies the standard by which payment will be triggered when it is demanded. According to the URBPO, a baseline incorporating the BPO and any amendment only becomes an established baseline, i.e., effective when the TMA notifies the banks that the baseline has been established after all the data requirements from the obligor and recipient banks match.²³ That happens after each bank has accepted its role via the TMA and the TMA, in turn, notifies all the banks that the roles have been accepted.²⁴

¹⁸ See Hennah 2013, *supra* note 1, chap. 3.

¹⁹ URBPO, *supra* note 2, art. 3.

²⁰ *Ibid.*

²¹ According to article 8 of the URBPO, the expiry date of the BPO must be stated in the established baseline and time is calculated according to the Universal Time Coordinated (UTC).

²² URBPO, *supra* note 2, art. 10.f.

So, the obligor bank is irrevocably bound in accordance with the BPO when the TMA sends the BPO in the established baseline to the involved banks or when the BPO is duly established after an accepted amendment.²⁵

Thus, analogous to the letter of credit, the BPO is conditional on the matching of the data sets required by an established baseline. Departing from letter of credit practice where the bank should promptly examine the tendered documents and in any case within five days,²⁶ and the beneficiary or presenter of documents is the only party notified of the bank's decision after tender of the documents,²⁷ the data match is performed by the transaction matching application (TMA) and occurs only after all the data sets have been submitted.²⁸ The TMA then makes an automatic comparison of data messages and then sends the related TSMT message of a data match or mismatch to each involved bank.²⁹

A central feature of the BPO is the autonomy of the bank undertaking from the contract on which it is based. In this regard, the URBPO Article 6a provides that:

A BPO is separate and independent from the sale or other contract on which the underlying trade transaction may be based. An Involved Bank is in no way concerned with or bound by such contract, even if any reference whatsoever to it is included in an Established Baseline. Consequently, the undertaking of an Obligor Bank is not subject to claims or defences by the buyer resulting from its relationship with an Involved Bank or the seller.³⁰

Further, the URBPO Art 6b provides that: "A Recipient Bank can in no case avail itself of the contractual relationship existing between the buyer and the Buyer's Bank or an Obligor Bank other than the Buyer's Bank."³¹

These provisions clearly track the language used in respect of letters of credit and other abstract instruments and are intended to ensure that payment is effected promptly in what is classically known as the "pay now, argue later" situation.³² The provisions are buttressed by the URBPO article 7 on data supremacy which provides that: "An Involved Bank deals with data and not with documents, or the goods, services or performance to which the data or documents may relate . . ." The

²³ *Ibid.*, art. 3, definitions of "Established baseline" and "data mismatch", "data match" and "zero mismatches".

²⁴ *Ibid.*, art. 9.

²⁵ *Ibid.*, art. 10.a.

²⁶ International Chamber of Commerce, *Uniform Customs and Practices for Documentary Credits* (Paris, France: ICC, 2007), art. 14(b) [UCP].

²⁷ *Ibid.*, arts. 15, 16.

²⁸ URBPO, *supra* note 2, art. 8.c.

²⁹ *Ibid.*, art. 3.

³⁰ *Ibid.*, art. 6.a.

³¹ *Ibid.*, art. 6.b.

³² See e.g., Gerald McMeel, "Pay Now, Argue Later" (1999) L.M.C.L.Q. 5 at 6.

policy behind analogous provisions in documentary credits seeks to ensure that the payment obligation in the instrument is secure and cannot be easily challenged.³³ Thus, the payor bank should be singularly focused on paying the beneficiary if the conditions of the payment are met and should not consider the surrounding contracts or circumstances.³⁴ Furthermore, the bank should not be required to know the requirements of different underlying transactions in order to make payment; rather, it should limit itself to its obligations under the relevant instrument.³⁵

The other key provisions of the URBPO are similar to those found in documentary credits but adapted to suit the digital context with an emphasis on limiting liability for the non-availability or improper functioning of the electronic communications systems.³⁶ Thus, the URBPO contains the standard disclaimer clause that the involved bank will not be liable or responsible for the source, accuracy, genuineness, falsification or legal effect of any data received from the seller or buyer; any data relating to the goods; and the good faith, acts or omissions, solvency performance or standing of any service provider referred to in any data.³⁷ Further, in a deliberate expansion of the usual scope of the force majeure clause, that is acts beyond the bank's control, an involved bank assumes no liability or responsibility for its inability to access a TMA, or a failure of equipment, software or communications network, or other causes beyond its control.³⁸ Finally, an involved bank assumes no liability or responsibility for the unavailability of the transaction matching application.³⁹ By way of limiting the application of the force majeure event, the obligor bank is required to meet its payment obligation on the resumption of business and the recipient bank is entitled to payment if the BPO expired during the force majeure event and all the data sets required by the established baseline had been submitted before the force majeure event.⁴⁰

(d) Observations on the BPO

The BPO is efficient as a digital trade finance instrument because it effects payment settlement faster than, and yet equally securely to, the letter of credit. It has succeeded more than previous attempts at the digitalization of trade finance⁴¹ and operates best in the niche market where the traders have prioritized

³³ Agasha Mugasha, *The Law of Letters of Credit and Bank Guarantees* (Sydney: Federation Press, 2003) at 24-25.

³⁴ *Ibid.* at 136.

³⁵ According to *J.H. Rayner & Co. Ltd. v. Hambro's Bank Ltd*, [1943] K.B. 37.

³⁶ See generally, Hennah 2013, *supra* note 1 at 96-99.

³⁷ URBPO, *supra* note 2, art. 12.

³⁸ *Ibid.*, art. 13.

³⁹ *Ibid.*, art. 14.

⁴⁰ *Ibid.*, art. 13(b).

⁴¹ E.g., BOLERO

the electronic presentation of data. It also has potential for wider application for traders using the open account method who need assurance of payment.⁴² The applicable legal principles contained in the URBPO are technically astute and familiar since they closely follow letter of credit principles and adapt them to the digital age.

The BPO, however, obtained limited geographical coverage and only captured a modest share of the market for several reasons.⁴³ First, its original scope as a bank-to-bank instrument was narrow and that meant that it could not be initiated by corporate customers.⁴⁴ Secondly, as a bank-to-bank instrument, it excluded other financial institutions who engaged in the business of trade finance. Thirdly, inertia favoured the familiar and profitable incumbent — the letter of credit — rather than the disrupter BPO.⁴⁵ Fourthly, there was a notable reluctance in the commercial and financial industries to accept data-based transactions partly because they did not offer the same security as the documents they sought to replace, particularly the bill of lading, and partly because of some legal uncertainties surrounding electronic documents.⁴⁶ Lastly, technology, the force behind the BPO, spurred competing facilities, such as blockchain, which is discussed in the next section.

While the BPO may have a long shelf life as a trade finance instrument, its wider impact may lie in inspiring other digital instruments. Furthermore, aspects of the URBPO may be adapted or hived off for other applications in future.⁴⁷ In that regard, the BPO and the URBPO symbolize the future direction of trade and finance and illustrate that data-based transactions and rules are more than a fad because they have merit.⁴⁸

⁴² Mugasha, *supra* note 13.

⁴³ ICC Global Trade, *supra* note 8 at 140.

⁴⁴ Shiyong Wang, “BPO: Still a Long Way to Go” Documentary World (February 2018) at 22.

⁴⁵ *Ibid.* at 23.

⁴⁶ See *ibid.* at 22, 24. Other reasons were the unclear positioning between letters of credit and open account transactions and the value addition of the BPO, concerns about fraud in a fully digital setting, and unclear capital and regulatory treatment: see Alisa DiCaprio & Alexander Malaket, “Digital Island in Trade Finance: Can a Decentralized System Solve the Network Problem?” (5 July 2018) at 8, online: *R3* <r3.com/reports/digital-islands-in-trade-finance-can-a-decentralized-system-solve-the-network-problem/> .

⁴⁷ Hennah 2018, *supra* note 11 at 25. SWIFT terminated the TSU in December 2020 due to low usage of the facility and thus sounded a death knell for the BPO. The market players have since canvassed locating an alternative data matching facility coupled with the revision of the applicable rules (the URBPO), and relying on blockchain and the newer URDTT (discussed later) to progress digital trade finance.

⁴⁸ Wang, *supra* note 44 at 23-24.

3. THE USE OF BLOCKCHAIN IN TRADE FINANCE

The second technological innovation, blockchain, is a computer-based information system that has wider application than trade finance to which it has been adapted. Blockchain facilitates the secure creation, storage, transmission and sharing of data. A blockchain has been described as “a type of database that takes a number of records and puts them in a block (rather like collating them onto a single sheet of paper). Each block is then ‘chained’ to the next block, using a cryptographic signature. This allows blockchains to be used like a ledger, which can be shared and corroborated by anyone with the appropriate permissions.”⁴⁹ “A blockchain provides a digitally signed time series of data or records, put together as blocks with the linkage also digitally signed, thereby making it hard to tamper with.”⁵⁰

Blockchain is an example of distributed ledger technology (DLT), which is “a set of technological solutions that enables a single, sequenced, standardized and cryptographically-secured record of activity to be safely distributed to, and acted upon by, a network of varied participants.”⁵¹ Distributed ledgers are spread across multiple sites, countries or institutions, and are typically public. Records are stored one after the other in a continuous ledger, rather than sorted into blocks, but they can only be added when the participants reach a quorum.⁵² Further automation of the DLT and blockchain is achieved using smart contracts, which are an ancillary aspect of blockchain.

Smart contracts are computer codes, essentially software programs, that can be automatically executed by the computing system and without human

⁴⁹ UK Government Office for Science, “Distributed Ledger Technology: beyond block chain” (2016) at 19, online (pdf): < gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributedledger-technology.pdf > cited by Benjamin Geva, “Banking in the Digital Age — Who is Afraid of Payment Intermediation” EBI Working Paper Series 2018 — No. 23 at 31.

⁵⁰ IOSCO, “IOSCO Research Report on Financial Technologies (Fintech)” (February 2017) at 48, online (pdf): *IOSCO* < <https://www.iosco.org/library/pubdocs/pdf/IOS-COPD554.pdf> > .

⁵¹ FCA, “Discussion Paper on distributed ledger technology DP 17/3” (April 2017), at para. 2.1, online (pdf): *FCA* < fca.org.uk/publication/discussion/dp17-03.pdf > . Law Commission paper: Broadly speaking, DLT comprises a digital database (a “ledger”) which is shared (that is, “distributed”) among a network of computers. The ledger contains a record of data, such as a history of transactions involving an electronic promissory note, and each participating computer (known as a “node”) holds a copy of the ledger. When data is added to the ledger — say to record that an electronic document has been transferred from person A to person B — every node’s copy is updated, at 18-19. See also Alisa Dicaprio & Benjamin Jessel, “Can Blockchain Make Trade Finance More Inclusive?” (2018) 47 *J. Fin. Transformation* 35 at 36, note 2.

⁵² UK Government Office for Science, *supra* note 49. See also The European Securities Markets Authority (ESMA) which notes that the key characteristics of DLT are that the records of electronic transactions are maintained by a shared network of participants thereby forming a distributed validation system and that it makes extensive use of cryptography.

intervention when the conditions are satisfied.⁵³ In the sale of goods or services setting, the smart contract would be set up between the issuing bank and the exporter and blockchain would be set up to evaluate compliance on a pass/fail basis. The smart blockchain contract would contain conditional codes about the trade terms and conditions such as the description and amount of goods shipped, shipping time, place and method of shipment, delivery, and the independent or interconnected functions by third-party service providers.⁵⁴ Payment would be automatically triggered when the exporter complies with the pre-set code.

Blockchain is a potential solution to some of the drawbacks of documentary credits⁵⁵ or the paper-based system in general because it gets rid of the time-consuming paperwork and bureaucracy. The blockchain / DLT would automate the letter of credit transaction, from opening the letter of credit to completion by payment, and obviate the necessity for presenting or examining paper documents. The following steps could potentially be completed by the subscribing parties to a private blockchain:

- A. The importer /applicant uploads on the DLT the application for the letter of credit and includes the desired terms and conditions of the letter of credit;
- B. The issuing bank accepts or rejects the application or makes the necessary changes to the applicant's desired terms and conditions. If there aren't any other involved banks, the letter of credit would be ready for issuance to the exporter / beneficiary at this stage;
- C. Any other involved banks, for instance the advising bank or confirming bank add their roles or undertakings and signal acceptance of their involvement;
- D. Any amendments to the letter of credit could be effected by a 'multi-signatory mechanism' among the involved banks, with viewing permissions for the applicant and the beneficiary;
- E. After the beneficiary/exporter has dispatched the cargo, it uploads the invoice and photo images of other required trade documents;

⁵³ See UK. Government Office for Science, *supra* note 49. Smart contracts were first used by Nick Szabo in 1996 (Al-Maren, page 6055) and the most well-known smart contract is a purchase via a vending machine.

⁵⁴ See Emad Mohammad Al-Amaren, "The Blockchain Revolution: A Game-Changing in Letter of Credit (L/C)?" (2020) 29 Int'l J. Advanced Sci. & Tech. 6052 at 6056.

⁵⁵ See Koji Takahashi, "Blockchain Technology for Letters of Credit and Escrow Arrangements" (2018) 135 Banking L. J. 89 at 94; Shuchih Ernest Chang et. al., "Blockchain-Enabled Trade Finance Innovation: A Potential Paradigm Shift on Using Letter of Credit" (2020) 12 Sustainability 188; Ye Guo & Chen Liang, "Blockchain Application and Outlook in the Banking Industry" (2016) 2:24 Fin. Innovation 1.

- F. Government units and private service providers (customs, port authorities, rail firms and others) would have representative nodes that give them access to the private blockchain network and they would sign or signify approval via the blockchain;
- G. The electronic documents would be examined by the confirming bank or nominated bank, noting any discrepancies for the attention of the beneficiary on the blockchain; alternatively, the electronic documents would be examined by the issuing bank if there are no intermediary banks.
- H. The smart contract, which is a computer code deployed on the blockchain, would determine whether the conditions for payment have been met and if so, would trigger payment to the beneficiary. Such conditions could be, for instance, a logged arrival of the goods at the destination port.⁵⁶

Early in its application to trade finance, blockchain was used in two highly publicized trade finance transactions.⁵⁷ The first, on 6 September 2016, involved an Irish company, Ornuu, and the Seychelles Trading Company and guaranteed the purchase of \$100,000 cheese and butter from the former company. The transaction involved Barclays and was accomplished on the fintech Wave platform. The financing transaction is reputed to have taken four hours as contrasted to ten days if it had been by letter of credit. A later 2018 blockchain letter of credit involved HSBC and Dutch bank, ING, and enabled a US company, Cargill, to trace food transactions from Argentina to Malaysia. Using the Corda blockchain platform, the aim was to simplify the manual processing of the paperwork in letters of credit. A more recent 2020 transaction announced by Standard Chartered involved two banks issuing and confirming a letter of credit using a blockchain platform focussed on digitizing trade finance in what resembled the four-corner model letter of credit. In the same transaction, the Asian Development Bank issuing a guarantee and the processing time is estimated to have reduced from five days to under seven hours.⁵⁸

While there are different configurations of blockchain, the type most suited to trade finance has three key characteristics that translate into several advantages.⁵⁹ First, blockchain is digital: it is a paperless transaction that

⁵⁶ InfoSystems, “The Seven Steps to a blockchain-based Letter of Credit (LC) Transaction” (11 May 2017), online: *Infosystems* <infosystems.mu/the-seven-steps-to-a-blockchain-based-letter-of-credit-lc-transaction>; Al-Amaren, *supra* note 54 at 6054.

⁵⁷ For a narrative of case six case studies with different emphasis, see Chang et. al., *supra* note 55.

⁵⁸ See Maria Nikolova, “Standard Chartered Completes First Cross-bank Letter of Credit Blockchain Transaction Between Vietnam and Thailand” (11 September 2020), online: *Financefeeds* <financefeeds.com/standard-chartered-completes-first-cross-bank-letter-credit-blockchain-transaction-vietnam-thailand/>.

further develops the concept of the dematerialization of trade documents. This results in efficiency because there is real-time processing of documents. In turn, the faster transmission of electronic documents reduces cost, errors in documentation and the risk of documentary fraud. Secondly, blockchain is secure by technological design. It creates a complete and immutable record of all the transactions over time which reduces the prospect of fraud.⁶⁰ Thirdly, blockchain-based technology connects all members of the supply chain to a decentralized network, allowing them the direct exchange of electronic documents. Only signed-up parties, including carriers and banks, can see the chain information, and each party can see all the information in the chain. That translates into transparency and consensus because there is shared and agreed data in the chain. Lastly, blockchain removes unnecessary intermediaries since it is decentralized, and this results in cost savings since it reduces third-party authorizations.

(a) The Prospect of the Blockchain Replacing the Letter of Credit

Blockchain has succeeded in trade finance and other spheres; however, it is still considered work in progress since it is not as widely applied as the paper-based instruments it seeks to replace. More generally, it is difficult to digitize trade finance due to some self-evident points. First, the multiple providers for the blockchain technology create digital islands⁶¹ that fall short of the seamless web that would be suited to serve trade finance. Presently, the use of blockchain requires that the importer's bank and exporter's bank participate in the same distributed ledger system. Secondly, there is no central authority to handle complaints, reimbursements and remedies. Thirdly, there are some key risks with cryptography (for example, private keys can be lost, and the system can be hacked). Lastly, the legality of smart contracts, which is the last stage on the blockchain, is still in doubt.

These obstacles can be reduced, and there is concerted effort to ensure that blockchain achieves critical mass for wide application. Technologically, it is important that the importer and exporter can use "smart contracts" that trigger payment when certain data about contract performance is entered on the system (e.g. invoice generated or delivery is recorded). Operationally, the widespread use

⁵⁹ See, e.g., Manuela Geranio, "Fintech in the Exchange Industry: Potential for Disruption?" (2017) 11 *Masaryk U.J.L. & Tech.* 245 at 250-252. The benefits of blockchain in trade finance have been summarized as: (i) transparency ("transaction records are immutably replicated and kept by participating nodes), (ii) information transmission, (iii) traceability — through cryptography, the digitized documents maintain integrity and prevent counterfeiting), (iv) disintermediation — blockchain saves time and money in processing cash settlements; (v) cost — blockchain ensures significant cost reductions; and (vi) incorporation of internet of things: see Chang et. al., *supra* note 55.

⁶⁰ Nathan Fulmer, "Exploring the Legal Issues of Blockchain Applications" (2018) 52 *Akron L. Rev.* 161 at 170; Geranio, *supra* note 59 at 247.

⁶¹ See generally, DiCaprio & Malaket, *supra* note 46.

of blockchain in trade finance requires that the importers, exporters, banks, and providers of trade documents have harmonized standards for internal control processes and standardized descriptions of transaction data elements. Further, they should have obtained digital signatures for use on the blockchain platforms and integrated platform transaction software with bank computer systems. Lastly, blockchain requires governments' and regulators' support.

4. ADDITIONAL LEGAL RESPONSES TO TECHNOLOGICAL INNOVATION IN TRADE FINANCE

As observed above, the ICC-published URBPO supports the BPO as a digital instrument that was created to intermediate in the space predominantly occupied by open account trading in the supply chain. The limited scope of the BPO as an inter-bank instrument to the exclusion of corporate users and non-bank financial institutions was, however, a serious drawback. The drafters of the URBPO had always intended to expand the scope of the rules at a later stage to include, for instance, the underlying trade transaction. The lack of widespread adoption of the BPO instrument across the globe and the emergence of competing technology, however, augured against further effort on the BPO as a lone instrument and against the further development of the URBPO.

In addition to the URBPO, the legal responses that facilitate the presentation of electronic documents in trade finance have been multi-faceted, comprising of soft law made by the International Chamber of Commerce and supranational bodies, and hard law and policy comprising of the legislative actions of national governments. We confine ourselves to the supranational effort because it is more easily discernible and reflects the common positions in the nascent national laws.

(a) Rules Sponsored by the International Chamber of Commerce (ICC)

(i) *Digitising popular paper-based instruments — eUCP version 2.0 and eURC version 1.0*

The ICC has actively supported technological innovations in trade finance. It adopted the eUCP⁶² so that the documentary credit instrument can adapt to a future of electronic documents. It also adopted the eURC to accommodate the evolving digital trade environment relating to documentary collections.⁶³ Both sets of eRules focussed on the presentation of electronic records (i.e., scanned copies), alone or in combination with paper documents.⁶⁴ Both instruments were

⁶² International Chamber of Commerce, "Uniform Customs and Practice for Documentary Credits for Electronic Presentation (eUCP) Version 2.0" (2019), online (pdf): *ICC* <<https://cdn.iccwbo.org/content/uploads/sites/3/2019/06/icc-uniform-customs-practice-credits-v2-0.pdf>> [eUCP 2019].

⁶³ International Chamber of Commerce, "ICC Rules for Collections, Supplement for Electronic Presentation (eURC) Version 1.0" (2019), online (pdf): <<https://cms.iccwbo.org/content/uploads/sites/3/2020/09/icc-eurc-1-0.pdf>> [eURC 2019].

not widely adopted and paper documents remain more popular, however, in no small measure due to the uncertainty among industry practitioners on the legal effect of electronic documents and whether they would be treated as the functional equivalent of their paper counterparts. The biggest hurdle for both the eUCP, eURC and, later, blockchain was the lack of legal recognition for the electronic bill of lading to which commercial parties attach great value since the paper bill of lading is a document of title.⁶⁵

(ii) *The URDTT — the agnostic rules for digital trade transactions*

By the time the BPO was launched, it was clear that there would be newer digital instruments and applications and that non-bank financial institutions beyond banks were also active in trade finance and the digital economy. Thus, the ICC set out to develop new rules that would be agnostic regarding technology; that is, they would be compatible with the BPO and accommodate other digital instruments. The resultant effort, the URDTT, seeks to establish a “high-level framework outlining obligations, rules and standards for the digitization of trade finance.” The rules seek to set minimum standards for the digital connectivity of service providers and, in addition, examine “the legal and practical issues related to the validity and value of data and documents in digitized form.”⁶⁶ The URDTT were adopted by the International Chamber of Commerce in 2021⁶⁷ and are operational.

The URDTT are intended exclusively for a fully digital trade environment; which means that the trade transaction from buyer to seller and any financing should be processed electronically from end to end.⁶⁸ In that regard, they are similar to the URBPO, which are also intended for a fully digital environment, and they are different from the eUCP, which is intended for a mixed ecosystem of paper and digital environments. In contrast to the URBPO, which are about bank intermediation in the supply chain, however, the URDTT are about the underlying trade transaction between the seller and the buyer. So, the URDTT envisage that the underlying transaction between buyer and seller is processed and evidenced electronically and all the relevant information is exchanged or transmitted electronically. Thus, according to article 1(a), the URDTT provide a framework that applies to any party to digital trade transaction, and article 1(b) defines a trade transaction: “A Digital Trade Transaction is a process whereby

⁶⁴ See ICC Finance For Development Banking Commission, Supplement to the “Commentary on eUCP Version 2.0 and eURC Version 1.0 (eRules)” (2019), online: *ICC* <<https://iccwbo.org/publication/supplement-to-the-commentary-on-eucp-version-2-0-and-eurc-version-1-0-erules/>> .

⁶⁵ See e.g. Takahashi, *supra* note 55.

⁶⁶ Tradefinance.Training, “ICC Digitalisation Working Group Update” (20 January 2021), online: *Tradefinance.Training* <<https://www.tradefinance.training/blog/articles/icc-digitalisation-working-group-update/>> .

⁶⁷ International Chamber of Commerce, *URDTT Version 1.0* [URDTT].

⁶⁸ According to Preliminary Considerations in the draft URDTT, *ibid.*

Electronic Records are used to evidence the underlying sale and purchase of goods or services, and the incurring of a Payment Obligation, as agreed between the Principal Parties.”

Being digitized rather than manual, the process anticipates an “electronic signature”⁶⁹ and operates only on an “electronic record,” which is defined in article 2 as “data created, generated, sent, communicated, received or stored by electronic means, including, where appropriate, all information logically associated with or otherwise linked together so as to become part of the record, whether generated contemporaneously or not.” Such electronic record should be capable of being authenticated as to the identity of a submitter, source of the data, and whether it has remained complete and unaltered; and capable of being examined for compliance with the terms and conditions of the digital trade transaction.⁷⁰ It is critical that the electronic record is not corrupted, which means any distortion or loss of data that makes it unreadable by the addressee in whole or in part.⁷¹ If an electronic record appears to have been affected by data corruption, the addressee may request the submitter to resubmit it, and in that case, the submitter has two business days to resubmit. If the addressee does not inform the submitter within two business days that the electronic record was affected by data corruption, the electronic record will be deemed as being in compliance with the terms and conditions of the digital data transaction.⁷²

Secondly, the URDTT are neutral to technology and messaging standards, thus having the potential to accommodate present instruments and those that may develop in the future. In that regard, the operations of the digital trade transaction are based on a data processing system which is broadly defined in article 2 as: “Data Processing System means a computerised or an electronic or any other automated means used to process and manipulate data, initiate an action or respond to data messages in whole or in part.” Therefore, the URDTT envisage more extended coverage than the URBPO which are predicated on the swift-based TMA/TSU,⁷³ and certainly more expansive than the UCP, which relies on the banking network.

Thirdly, the URDTT extend into the corporate space and provide for the relations between the buyer and seller of goods and services as well as the involvement of non-bank providers of financial services.⁷⁴ The rules cover three different spheres; first, the electronic contract of sale between seller and buyer,

⁶⁹ According to URDTT, *ibid.*, art. 2, “Definitions”, “Electronic Signature” means a data process attached to or logically associated with an Electronic Record and executed or adopted by a Person in order to identify that Person and to indicate that Person’s authentication of the Electronic Record.

⁷⁰ *Ibid.*, art. 2, “Definitions”.

⁷¹ *Ibid.*, art. 2 Definition of “Data Corruption”.

⁷² *Ibid.*, art. 9.

⁷³ Technically, the URBPO do not limit themselves to the TMA at SWIFT; indeed, the rules are broad and envisage other TMAs. In practice, though, it is the only one that has been created for the purpose.

which is the digital trade transaction.⁷⁵ Secondly, they cover the payment segment of the trade transaction; that is the buyer's obligation to pay for the goods or services.⁷⁶ The details of a payment obligation are expressed in article 12 as requiring the submission of electronic records.⁷⁷ Such a "Payment Obligation" is irrevocable and constitutes a definite undertaking of the buyer to pay the seller when the seller complies with the terms and condition of the digital trade transaction.⁷⁸ A payment obligation that is conditional is automatically amended to become unconditional and independent when one or more electronic records are submitted evidencing compliance with the terms and conditions of the digital data transaction.⁷⁹ Thirdly, the URDTT cover the provision of an undertaking by a non-bank financial institution or other person in support of the trade transaction, called a Financial Service Provider (this is explained in detail below).

The bulk of the URDTT are concerned with the presentation of the electronic evidence of the trade transaction between the buyer and seller of goods and services, the standards to be applied in case of a data mismatch, and how to proceed if the electronic records are corrupted. The respective roles of the seller and buyer basically require them to comply with the terms and conditions of the digital trade transaction. Thus, the role of the seller includes delivering the goods or performing the services in accordance with the digital trade transaction, providing information that enables the delivery of the goods, and providing other required information, including electronic records of certificates of inspection and insurance.⁸⁰ The role of the buyer includes, on the other hand, receiving goods or services that comply with the digital trade transaction, and incurring an unconditional payment obligation and effecting payment when the terms and conditions of the digital trade transactions are satisfied.⁸¹

The URDTT tackle the contentious topic of the non-compliant electronic record — similar to non-compliant documents tendered under letters of credit — and the rules are congruent even if adapted to the digital context of the newer instrument. If the electronic record does not comply with the terms and conditions of the digital trade transaction, the addressee of the electronic record must inform the submitter of the record in a single notice of each reason of non-compliance. Such notice must be given within two business days following the date of receipt of the electronic record.⁸² In the event of a non-compliant

⁷⁴ URDTT, *supra* note 67, "Preliminary Considerations." Again, that scope is wider than that covered by the URBPO.

⁷⁵ *Ibid.*, art. 4.

⁷⁶ See *ibid.*, art. 12.

⁷⁷ *Ibid.*, art. 12b.

⁷⁸ See definition of "Payment Obligation" in URDTT, *ibid.*, art. 2.

⁷⁹ *Ibid.*, art. 12.d.ii.

⁸⁰ *Ibid.*, art. 4.a.

⁸¹ *Ibid.*, art. 4.b.

electronic record being submitted, the digital trade transaction cannot be completed until either (a) the submitter submits a compliant electronic record before the expiry date; (b) the terms of the digital trade transaction are amended resulting in the electronic record being compliant; or all the parties accept the non-compliant document or agree that the requirement for such electronic record may be removed from the terms and conditions of the digital trade transaction.⁸³ Further, if the addressee of the non-compliant record does not inform the submitter within two business days, the electronic record will be deemed as compliant.⁸⁴

The URDTT also accommodate the provision of trade finance by non-bank financial institutions or persons. Such trade finance is provided by a “Financial Services Provider” or “FSP,” which is defined as a financial institution or person other than the seller or buyer⁸⁵ and which may provide either of four services; namely, finance, risk mitigation, effect payment to the beneficiary, or add a payment undertaking and effect payment to the beneficiary when the terms and conditions of the payment undertaking are satisfied.⁸⁶ The rules create a new term, the “FSP Payment Undertaking” in which the financial institution, upon request and agreement, undertakes to make payment to the beneficiary that has acquired the rights of a payment obligation.⁸⁷ The roles of the financial services providers are thus identical to those of a bank that issues a letter of credit or BPO, both of which provide risk mitigation, finance and payment settlement. In tandem with the principles that govern the role of the banks in letters of credit and BPOs, a financial services provider⁸⁸ only deals with an electronic record submitted under a digital trade transaction and does not deal with the goods and services.⁸⁹ Further, the payment undertaking given by the financial services provider is autonomous from digital trade transaction which is the subject of the electronic record that is submitted to the financial services provider deals.⁹⁰ The duties and protections of the financial services provider wholly depend on the electronic records submitted to it or transmitted to it.⁹¹

⁸² *Ibid.*, art. 8.a. This is similar to the procedure under letters of credit where the second and subsequent tenders of documents are allowed before the expiry date. The computation of days is standardized to 23.59.59 Universal Time Co-ordinated (UTC).

⁸³ *Ibid.*, art. 8.b. This is analogous to the concept of waiver in letters of credit.

⁸⁴ *Ibid.*, art. 8.c. This is analogous to the preclusion rule in letters of credit.

⁸⁵ *Ibid.*, art. 2 “Definition” of “Financial Services Provider.”

⁸⁶ *Ibid.*, art. 5.a.

⁸⁷ See *Ibid.*, art. 13 & “Definitions”.

⁸⁸ Defined in *ibid.*, art. 2.

⁸⁹ *Ibid.*, art. 5.b. This is the equivalent to the autonomy principle under documentary credits.

⁹⁰ *Ibid.*, art. 5.b.

⁹¹ *Ibid.*, art. 5.c.

In addition, the financial services provider does not assume any liability or responsibility for the form, content or legal effect of the electronic record submitted to it or for the acts or omissions of other persons involved in the digital trade transaction;⁹² however, it will be liable and responsible for the form and content of any electronic record that it receives and subsequently submits.⁹³ In comparative terms, the FSP Payment undertaking is similar to the bank's obligation in the BPO or the letter of credit. While the mechanics of an FSP Payment Undertaking⁹⁴ are closer to the BPO and differ slightly from those encountered in the letter of credit, however, there is a clear similarity among the three instruments since in all three, a financial institution provides an autonomous undertaking to support a trade transaction.

Finally, they are intended to be compatible with the UNCITRAL Model Laws on electronic commerce, electronic signatures, and transferable electronic records.⁹⁵ Overall, the tone of the URDTT is of a wholly digital environment capable of accommodating different instruments.

(b) Digitizing Trade Infrastructure by the World Trade Organization

The World Trade Organization (WTO), in January 2019, launched the negotiations on trade-related aspects of e-commerce, initially also known as the agreement on digital trade facilitation, with the aim of establishing a new set of global digital trade rules to facilitate growth in e-commerce. Commensurate with the public-law mandate of the WTO, the negotiations / agreement cover wide territory about the infrastructure for trade generally and seek to ensure that trade flows freely and predictably. The initial aim of the negotiations was to seek “a common set of standards for the handling of electronic documents, payments and finance, data management and commitment to developing modern digital infrastructure.”⁹⁶ Currently involving 86 members of the WTO covering over 90% of global trade, the negotiations are focusing on the six themes of enabling e-commerce — among other things, this provides for customs duties on electronic transactions and for paperless export-import procedures; openness and e-commerce — this focuses on market access and non-discrimination; trust and e-commerce — this is mainly about online consumer protection and covers sub-topics such as business trust, consumer trust and protection, and intellectual property; market access; telecommunications; and cross-cutting issues — these

⁹² *Ibid.*, art. 5.c.i.

⁹³ *Ibid.*, art. 5.c.ii.

⁹⁴ *Ibid.*, art. 13.

⁹⁵ *Ibid.*, “Preliminary Considerations.” The UNCITRAL Model Laws are considered below.

⁹⁶ See Chris Southworth, “Call to Action; Let’s Make Digital Trade Work for Everyone” (last visited 3 September 2021), online: *ICCWBO* <iccwbo.uk/blogs/press-releases/call-to-action-let-s-make-digital-trade-work-for-everyone> .

focus on flexibly transferring and storing data, and the subtopics include transparency, infrastructure gaps and cooperation.⁹⁷

The discussions at the WTO cover the establishment of legal frameworks to facilitate electronic transactions, including topics such as electronic contracts, electronic invoicing, e-authentication and e-signatures. These topics significantly impinge on trade finance and illustrate that digitalization is happening across the wider economic spectrum of activities and that the legal infrastructure is moving in tandem.

(c) Instruments made by the United Nations Commission for International Trade Law

(i) The three earlier UNCITRAL instruments

The UNCITRAL has for decades developed harmonization instruments and model laws to facilitate electronic commerce and trade. The first pertinent instrument was the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Commerce (1996).⁹⁸ This sought to assist countries to enact laws that facilitated electronic commerce by removing obstacles in statutory provisions that could not be varied contractually to use paperless trade. Essentially, it provided for “functional equivalence” or equal treatment for paper-based and electronic communication by extending the definitions in national legislation of “writing”, “signature”, and “originals” to the electronic versions.⁹⁹ It also provided that “information is not to be denied legal effect merely because it is in electronic form or signed electronically.”¹⁰⁰ The UNCITRAL Model Law on Electronic Signatures (2001) built on the earlier Model Law on Electronic Commerce by facilitating the use of electronic signatures “by establishing criteria of technical reliability between handwritten and electronic signature.”¹⁰¹ The United Nations Convention on the Use of Electronic Communications in International Contracts,¹⁰² also known as the ‘Electronic Communications Convention’ principally targeted removing obstacles from some widely used international conventions; namely, the Convention on the Recognition and Enforcement of Foreign Arbitral Awards

⁹⁷ See IISD, “E-commerce Negotiations Among WTO Member Group Make Progress on Spam”, (last visited 3 September 2021), online: *IISD* <sdg.iisd.org/news/wto-e-commerce-negotiations-make-progress-on-spam/> .

⁹⁸ UNCITRAL, *Model Law on Electronic Commerce* (Vienna, Austria: 12 June 1996, amended 1998) [MLEC].

⁹⁹ *Ibid.*, arts. 6-8.

¹⁰⁰ *Ibid.*, art. 5.

¹⁰¹ United Nations, “The UNCITRAL Model Law on Electronic Signatures” (last visited 10 July 2021), online: *United Nations* <uncitral.un.org/en/texts/ecommerce/modellaw/electronic_signatures> .

¹⁰² *United Nations Convention on the Use of Electronic Communications in International Contracts*, 23 November 2005, UNTS 2898 (entered into force 1 March 2013).

(the “New York Convention”) and the United Nations Convention on Contracts for the International Sale of Goods (CISG). It “aims at facilitating the use of electronic communications in international trade by assuring that contracts concluded and other communications exchanged electronically are as valid and enforceable as their traditional paper-based equivalents.”¹⁰³ The Convention builds upon the earlier UNCITRAL instruments and consolidates the three fundamental principles of electronic commerce; namely, non-discrimination, technological neutrality, and functional equivalence.¹⁰⁴ Together, these earlier UNCITRAL instruments illustrate the steady shift of the global community towards electronic documents in commerce.

Scanning the work of the ICC and the UNCITRAL, there is a discernible trend since certain issues relating to digitization pre-occupied certain periods. Initially, the activity centred around enabling the presentation of electronic documents under letters of credit. Then it was the turn to focus on the legal equivalence of electronic documents to their paper-based counterparts.¹⁰⁵ Both initiatives envisaged a mixed ecosystem of paper and digital instruments. The solutions to the above issues still left the key matter of transmitting electronic documents from one person to another in a manner that was recognized by domestic law. While private contracts and the ICC documents could provide for the matter, those contractual provisions fell short of the required certainty locally and globally. Clarifying those issues was left to the UNCITRAL Model Law on Electronic Transferable Records.

(ii) *The UNCITRAL Model Law on Electronic Transferable Records*

The UNCITRAL Model Law on Electronic Transferable Records (MLETR)¹⁰⁶ is a recent important global legislative initiative for the facilitation of digital trade. It establishes a legal framework for the use of electronic transferable records and establishes their functional equivalence to paper-based records. An electronic record is one that is exclusively digital, thus marking a decisive shift from paper to paperless trade in vital sectors such as transport, logistics, and trade finance. It is defined as “information generated,

¹⁰³ United Nations, “United Nations Convention on the Use of Electronic Communications in International Contracts” (last visited 10 June 2021), online: *United Nations* <uncitral.un.org/en/texts/ecommerce/conventions/electronic_communications> .

¹⁰⁴ *Ibid.*

¹⁰⁵ Global law firm Clyde & Co., in conjunction with the International Chamber of Commerce’s (ICC) Banking Commission, today launches a report on the legal status of electronic bills of lading, (17 October 2018), online: *Clyde & Co.* <clydeco.com/en/about/news/2018/10/clyde-co-launches-report-on-the-legal-status-of-el>; Clyde & Co., “The Legal Status of Electronic Bills of Lading: A Report of the ICC Banking Commission” (2018), online: *Clyde & Co.* <clydeco.com/getattachment/0d8d3fee-5acc-4c82-9f64-8f03961f4c5a/The_Legal_Status_of_E-bills_of_Lading_-_ICC_and_Clyde_Co-1.pdf?lang=en-GB> .

¹⁰⁶ UNCITRAL, *Model Law on Electronic Transferable Records* (Vienna, Austria: 2017) [MLETR].

communicated, received or stored by electronic means . . .” A transferable record, on the other hand, is one that entitles a person to payment of money or delivery of goods. It is defined as “a document or instrument issued on paper that entitles the holder to claim the performance of the obligation indicated in the document or instrument and to transfer the right to performance of the obligation indicated in the document or instrument through the transfer of that document or instrument.”¹⁰⁷ While the exact definition of a transferable record is left to national law, transferable records typically include bills of lading, warehouse receipts, consignment notes, bills of exchange, promissory notes and cheques.¹⁰⁸ Thus, the purpose of the law is to enable the electronic transmission of documents like bills of lading and the transfer of the rights and benefits contained on those documents thereby improving on the speed and security of transmission.

The MLETR builds on the three principles that underpin all UNCITRAL texts on electronic commerce;¹⁰⁹ namely, non-discrimination against the use of electronic means, functional equivalence and technology neutrality. Technological neutrality and non-discrimination against the use of electronic means are provided for by providing that an electronic transferable record shall not be denied legal effect, validity or enforceability solely on the ground that it is in electronic form.¹¹⁰ The functional equivalence of electronic records with paper-based records requires that writing and signatures should be treated equally by applicable law whether in paper-based or electronic form.¹¹¹ The MLETR deals with the “writing” requirement by providing that whenever the law requires that a document will be in writing, an electronic record will meet that requirement if the information in that record is accessible so as to be usable for subsequent reference.¹¹² The paper-based requirement of a “signature” is addressed by providing that an electronic transferable record meets that requirement if a reliable method is used to identify that person and indicate that person’s intent in respect to the information in the electronic document.¹¹³

¹⁰⁷ *Ibid.*, art. 2.

¹⁰⁸ Alan Davidson, “Implementation and Implications of the UNCITRAL Model Law on Electronic Transferable Records in Trade Finance” in Hare & Neo, *supra* note 5 at 221; “Bahrain Enacts the UNCITRAL Model Law on Electronic Transferable Records, UNIS/L/269” (5 December 2018), online: *University of Vienna* <unis.unvienna.org/unis/en/pressrels/2018/unisl269.html> [Bahrain Enacts UNCITRAL Model Law].

¹⁰⁹ The UNCITRAL Model Law on Electronic Commerce (ML-EC) (last visited 4 August 2021), online (pdf): *Uncitral* <uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-04970_ebook.pdf>; and the United Nations Convention on the Use of Electronic Communications in International Contracts (the Electronic Communications Convention) (last visited 4 August 2021), online (pdf): *Uncitral* <uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/06-57452_ebook.pdf>.

¹¹⁰ MLETR, *supra* note 106, art. 7.

¹¹¹ Davidson, *supra* note 108 at 223.

¹¹² MLETR, *supra* note 106, art. 8.

The central provision of the MLETR is article 10, which provides that an electronic transferable record is functionally equivalent to a transferable document or instrument where two conditions are met. First, the electronic record should contain the information that would be required in the paper-based transferable document or instrument. Secondly, a reliable method should be used to identify that electronic record as the electronic transferable record, to render that electronic record capable of being subject to control from its creation until it ceases to have any effect or validity, and to retain the integrity of that electronic record.¹¹⁴ Since the use of transferable records, for instance, the bill of lading, is based on control of the record, that element is addressed in the MLETR by providing that an electronic transferable record meets the legal requirement for possession of a transferable record if a reliable method is used to establish exclusive control of the electronic transferable record by a person and to identify that person as the person in control.¹¹⁵ Further, the electronic transferable record meets the requirement for transfer of possession of a transferable record through the transfer of control of the electronic record.¹¹⁶

The MLETR is a legislative text that supports the use of blockchain in trade finance and digital trade generally. It facilitates the use of electronic bills of lading by addressing the critical element of possession of transferable records, legislating that a person can possess and control an electronic record. Further, an electronic or dematerialized record does not have to be in a separate information system; rather, the same system can manage multiple documents or all documents relating to the same business transaction. This accommodates smart contracts and the merger of logistics and supply chain and commercial and regulatory documents in a single transferable record.¹¹⁷ Further, the MLETR promotes the cross-border recognition of electronic records.¹¹⁸ Its significance in the advancement of technological innovations lies beyond the handful of states that have adopted it.¹¹⁹ Its key legislative significance lies in the international endorsements both by the ICC Banking Commission and the G7 Digital and Technological Ministerial Declaration to develop “a framework for the use of electronic transferable records that is compatible with the principles of the MLETR.”¹²⁰ This avenue will likely cause the principles and provisions of the MLETR to permeate in many jurisdictions.

¹¹³ *Ibid.*, art. 9.

¹¹⁴ *Ibid.*, art. 10(1).

¹¹⁵ *Ibid.*, art. 11(1).

¹¹⁶ *Ibid.*, art. 11(2).

¹¹⁷ Bahrain Enacts UNCITRAL Model Law, *supra* note 108.

¹¹⁸ MLETR, *supra* note 106, art. 19.

¹¹⁹ Bahrain, Singapore, UAE (and prospectively Paraguay and Czechia).

¹²⁰ The ICC Digital Standards Initiative “offers guidance on the implementation of the MLETR” — Wikipedia on Implementation.

5. OBSERVATIONS AND CONCLUSION

The prevalence of automation and digital services in the wider society has led to calls for similar applications in trade finance, and for decades, industry practitioners and legislators have sought to facilitate the automation of trade finance. Since the 1990s, at least, there have been calls to replace paper-based instruments with electronic documents in international trade since the developments in trade finance methods mirror the general developments in the wider trade, finance and society generally. Thus, the digitization of trade finance has occurred simultaneously with the digitization of trade more generally and in the wider economy even though, in the early stages, uptake of paperless trade has been more limited than anticipated.

The issues about the digitization of trade finance are not simply about disrupters, i.e., the fintech companies, and the incumbents, i.e., the banks; first, because there are significant collaborations among these providers of technology, and, secondly, there was always the constant evolution of the established instruments to maintain their relevance and applicability (e.g., the eUCP). There is, thus, significant momentum towards the digitization of trade finance. The changes have been incremental and have significantly affected perceptions, even though not necessarily translating equally to the practice of trade finance.

The digitalization of trade finance has been challenging, however, for numerous reasons. First, the technology initially was not mature to transfer electronic records safely and securely; secondly, there was a slow adoption of the available technology in many countries among the wide spectrum of the required users, such as producers, traders, buyers, carriers, insurers, surveyors and banks; and thirdly, there was uncertainty over the legal status of electronic documents, particularly the electronic bill of lading. Industry practitioners have at times found that the law does not recognize electronic documents as substitutes for their paper counterparts and that some jurisdictions required a “wet signature” and did not recognize the digital equivalent.¹²¹ Lately, in relation to blockchain, there was uncertainty about the legal status of smart contracts, and a further issue was the absence of a trusted authority in blockchain for the resolution of disputes.

Most of the global trade finance revolves around the bill of lading which is a document of title, and its control entitles the person in control to specific rights, including the delivery of the goods. The bill of lading is at the heart of trade finance since it functions as collateral to the banks. A major issue has been and still is the legal recognition of the electronic bill of lading, which is not supported by any specific law in the major trading nations except in the United States.¹²² Specifically, it has not been certain if the rights in the paper-based bill of lading are replicated in the electronic version, and similarly, if the rights subsist if the electronic bill is recorded on paper. Recent national and global initiatives have

¹²¹ Clyde & Co., *supra* note 105 at 5.

¹²² *Ibid.* at 7.

focused on this issue of facilitating the use of electronic bills of lading, and the global initiatives were seen in this article in the form of the MLETR and URDTT.

Both the BPO and trade-related blockchain have nudged digitization forward. As noted above, both applications are the most recent manifestations of technological innovations in trade finance. Their efficiencies and advantages illustrate progress over previous initiatives to improve the paper-based documentary credit and trade finance more generally, which had more limited success.¹²³ One prior initiative was the move from a paper-based documentary credit system to a mixed ecosystem of paper and electronic formats. That found expression in the eUCP,¹²⁴ the “Supplement for Electronic Presentation . . .” which sought to accommodate the presentation of scanned documents in documentary credits. The aim of those rules was to accommodate the presentation of electronic records alone or in combination with paper documents. A parallel development was the electronic uniform rules for collections (eURC), as seen above. Undoubtedly, then, the trajectory in recent decades has pointed to the digitalization of commercial and trade transactions with the attendant international support by the standardization of the practices and the harmonization of applicable rules.

The launch of the BPO unlocked the potential for digital bank intermediation in trade finance and pointed to the niche market for such an instrument. Neither the BPO instrument nor the SWIFT communication network on which the BPO is based could, however, transmit the electronic bill of lading which was required to make trade finance fully electronic. Similarly, blockchain made a signal contribution by operationalizing the advantages of distributed ledger technology. The application of blockchain to trade finance was a successful innovation for creating, moving and storing electronic information safely and securely on a network of connected parties. Despite the technological success, however, there remained the issue of the legal status of the electronic bill of lading which contains rights that are, according to conventional law, controlled and transferred with the transfer and control of the paper document.

Many of the required legal responses to the creation of BPOs and trade-related blockchain are challenging because it is difficult to devote resources to legal responses when technological innovation is churning out competing instruments or applications. The resource constraint is more pronounced since some methods, for example, blockchain, present complex issues of legal certainty (for example on the location of the debt) and enforcement action¹²⁵ because they

¹²³ Early initiatives can be traced back to Electronic Data Interchange in 1990. Some, like BOLERO for the electronization of bills of lading, did not get sufficient traction, while others, like Docudex, were more successful.

¹²⁴ eUCP 2019, *supra* note 62.

¹²⁵ See, e.g., Financial Markets Law Committee, “Distributed Ledger Technology and Governing Law: Issues of Legal Uncertainty” (March 2018), online (pdf): *FMLC* <fmlc.org/wp-content/uploads/2018/05/dlt_paper.pdf>; Jeroen Naves, “Legal As-

are potentially multi-jurisdictional. The issues are novel and different from those encountered in paper-based instruments and require a detailed and nuanced conflict of laws approach. Still, one can identify several supranational initiatives aimed at providing a robust legal basis for technological innovation in trade finance.

As seen above, the developments in technological applications in trade finance are reflected in supranational standards and rules.¹²⁶ The URBPO are exclusively about digital bank intermediation in the trade transaction. The MLETR fills the gaps in the trade finance and the trade-related blockchain by establishing the functional equivalence of the electronic bill of lading to the paper-based bill of lading, enabling the interoperability of ‘club’ blockchain platforms, and enabling different types of documents in the same blockchain set up. On the other hand, the URDTT, which are predominantly on the underlying transaction, make an important contribution by laying down the operational rules for the digital trade transaction that apply regardless of the technology or the type of underlying transaction and the involvement of non-bank financial providers. As the most recent legal instrument to adapt to and facilitate technological innovation, the URDTT are a sequel to the URBPO that were narrow in scope for limiting themselves to the bank-to-bank space and not covering the trading parties, and not tackling the standard for determining a data match or mismatch and the consequences. Finally, both the MLETF and the URDTT seek to fill the gaps in the practice and legal regime governing the blockchain.

Clearly, there is a general shift away from paper-based systems to a mixed ecosystem of paper and electronic documents and towards electronic records alone. The major trading nations have generally provided the enabling environment for digitization, and substantial progress has been made. They have led at the international standard-setting and legislative bodies, where the ICC has led on the standardization of practices while the UNCITRAL has led on the harmonization of legislation. The examples of the standardization and harmonization measures canvassed in this article include the URBPO, which are the specific rules on the BPO, and the URDTT for application across a wider spectrum of digital instruments. This article also briefly noted the WTO rules that support the infrastructure for digitalization across trade activities generally and various model laws and conventions, especially the MLETR, championed by UNCITRAL.

pects of Blockchain” 2019 12:3-4 *Innovations: Technology, Governance, Globalization* 88-93, online: *MIT Press Direct* <direct.mit.edu/itgg/article/12/3-4/88/9850/Legal-Aspects-of-Blockchain> .

¹²⁶ Mature systems of law do generally facilitate the digitization of trade through domestic law and policy or are moving in that direction. For example, UK Law Commission sent out a discussion paper that will form the basis of potentially major reforms following a sustained period of incrementalistic changes. See Clyde & Co, *supra* note 105.

The uptake of both the BPO and blockchain-related trade finance has been more significantly subdued than their promoters had wished.¹²⁷ Whatever the future holds for them, however, there is no doubt that they played a key part in the digitization of trade finance. Digitization is here to stay, and it could be that the incumbent banks will be the leaders again, whether slowly or with haste. In the meantime, though, the banks have updated their legacy systems and will continue to do so.

The incremental nature of technological developments has led to a patchwork of standardization and harmonization measures relating to trade finance. This article covered in varying details the eUCP, eURC, URBPO, MLETR, URDTT, the UNCITRAL Convention on electronic commerce, and others. The overlap among these instruments is minimal because there is a deliberate purpose to each one of them. There are over-arching and consistent principles concerning these instruments in their inexorable march towards the digitization of trade and finance. What might look like a hodgepodge of rules, therefore, makes for a complete framework for the future of digital trade finance.

¹²⁷ See, e.g. Mugasha, *supra* note 13; and Jane K. Winn, “Will Blockchain Transform Trade Finance?” in Hare & Neo, *supra* note 5, 230-252; ICC 2018, *supra* note 8 at 138.