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Item 8 of the provisional agenda

## **Blockchain and logistics: opportunities for the Arab region**

### **Summary**

Blockchain is quickly transforming the way data is stored and managed. It relies on a network of data blocks that is protected using cryptography. The technology itself is considered important in several sectors, including cross-border trade and the global supply chain. Blockchain can assist in the tracking of international shipments, automating the documentation process to avoid time waste and human error, and providing a secure system that ensures transaction protection across the entire logistics chain. As the technology is relatively new, its application is still in the preliminary stage and is expected to expand over the next few years.

Many Arab countries, including Egypt, Morocco, Saudi Arabia and the United Arab Emirates, have already initiated pilot projects to test the technology in several areas, such as the transfer of digital documents, digital bill of lading, and automated customs systems. Nonetheless, most efforts by Arab Governments are still in their experimental phase, with minor projects launched. The present document reviews those efforts, after providing a general introduction on blockchain and its application in the logistics sector. The Committee on Transport and Logistics is invited to take note of the developments presented in the document, and discuss ways to benefit from blockchain technology in the transport and logistics sectors.

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## Contents

|   | <i>Paragraphs</i> | <i>Page</i> |
|---|-------------------|-------------|
| Introduction .....  | 1-4               | 3           |
| <i>Chapter</i>  |                   |             |
| <b>I. Blockchain overview</b> .....                       | 5-10              | 3           |
| <b>II. Blockchain applications in logistics</b> .....     | 11-33             | 4           |
| A. Blockchain benefits in logistics .....                 | 13-14             | 4           |
| B. Supply chain transparency and efficiency.....          | 15-16             | 5           |
| C. Automated system.....                                  | 17-18             | 5           |
| D. Smart contracts.....                                   | 19-21             | 6           |
| E. Blockchain in warehousing and transport.....           | 22-23             | 7           |
| F. Blockchain bill of lading.....                         | 24-29             | 7           |
| G. Blockchain in customs .....                            | 30-33             | 8           |
| <b>III. State of play</b> .....                           | 34-69             | 8           |
| A. Examples of global initiatives in blockchain .....     | 37-41             | 10          |
| B. Overview of logistics systems in the Arab region ..... | 42-47             | 10          |
| C. Digital sustainable trade facilitation.....            | 48-50             | 12          |
| D. Blockchain in the Arab region .....                    | 51-53             | 14          |
| E. Blockchain initiatives at the national level .....     | 54-69             | 16          |
| <b>IV. Conclusion and recommendations</b> .....           | 70-73             | 18          |

## **Introduction**

1. Logistics is the chain responsible for moving products from an initial to a final destination. It includes various services, such as warehousing, transport, cargo handling, border clearance, insurance, distribution, and payment. A good logistics system ensures the smooth flow of goods and information across the various stages, easing the process while meeting customer requirements. Logistics is an important catalyst for export performance and for economic growth and competitiveness. Inefficiencies in the logistics chain can lead to an unfavourable business environment, affecting trade times and costs while slowing direct investment flows and growth.
2. Today, with the increasing competition and the growth of global value chains, strategies for a more harmonized and robust logistics system are essential. Despite recent efforts to digitize processes, many transactions are still paper-based. Data security and coordination across borders raise various concerns that impede the search for digital trade solutions. Several alternatives have been considered to tackle the obstacles that slow international trade, including the use of blockchain technology could ease transactions across the value chains.
3. Blockchain is quickly transforming the way data is stored and managed. It relies on a network of data blocks that is protected using cryptography. The technology is considered important in several sectors, including cross-border trade and the global supply chain. Blockchain can assist in tracking of international shipments, automating the documentation process to avoid time waste and human error, and providing a secure system that ensures the protection of transactions across the entire logistics chain. As the technology is relatively new, its application is still in the preliminary stage and is expected to expand over the next few years.
4. Many Arab countries, including Egypt, Morocco, Saudi Arabia and the United Arab Emirates, have already initiated pilot projects to test the technology in several areas, such as the transfer of digital documents, digital bill of lading, and automated customs systems. Nonetheless, most efforts by Arab Governments are still in their experimental phase, with minor projects launched.

### **I. Blockchain overview**

5. Supply chains need to be more transparent, efficient and consistent. Electronic data interchange (EDI) was developed as an alternative to paper-based communication. It is a computer-to-computer information exchange system that allows the transfer of documents digitally between business partners. This transition from paper to digital provided business owners with faster processing speeds, reduced human errors, and improved relationships between partners.
6. However, with technological advancements and increasing business demands, more efficient and effective solutions are required.<sup>1</sup> EDI has a basic system for trading information using a standard protocol. In other words, it can be easily used by parties who exchange regularly or have a long-term relationship. Nevertheless, if many parties are added to the supply chain, the situation may become confusing and interrupted. Here is where blockchain can step in. Blockchain provides a more inclusive approach to businesses in information processing. Blockchain can store EDI transactions in its ledgers as one or multiple blocks, along with exchanging data through its consensual processes.
7. Blockchain is a shared database that ensures a secure environment for recording data that cannot be modified or tampered with. When a transaction is made, it is broadcast and validated to a peer-to-peer network consisting of nodes. It is then verified and combined with other transactions to create a block of data, which is later added to an existing blockchain. In other words, every transaction made by an individual is recorded and stored on the blockchain system, thus avoiding missing documents or inaccurate information. Immutability is another important feature of blockchain. Once a transaction is approved and stored, it can never be modified or cancelled, which gives blockchain a high degree of reliability and security.

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<sup>1</sup> Jatinder Grewal, Blockchain and EDI: Do they complement or compete with each other?, 2020.

8. Using blockchain in today's supply chain management can eliminate weaknesses and disruptions in current systems. All data are processed and communicated through a unified coherent system, in contrast to EDI where data are exchanged by various systems.

9. Blockchain is a promising innovation for some business sectors. Blockchain's decentralized characteristics allow a huge number of partners to participate in secure information trades, monetary exchanges and other multi-party business processes, without relying on unified clearinghouse authorities.

10. However, similar to all technological innovation drives, blockchain is not just about software. It is also about equipment. To properly guide the blockchain drives, appropriate infrastructure must be put in place to help implement pilot projects then scale them up if they are viable.

## **II. Blockchain applications in logistics**

11. A competent logistics system involves a collaborative effort to optimize the flow of information, transactions and goods. However, a gap persists in today's traditional system, resulting in low transparency, unstandardized processes, and misuse of data. Manual operations are also still a large part of logistics, such as paper-based documentation in customs processes.

12. Complications in the traditional system make it difficult to track goods and shipment status as they progress along the supply chain. Blockchain can help overcome these challenges, providing transparency and security for all parties involved. Furthermore, blockchain is a low-cost alternative owing to its efficient automated structure, lowering the chance of human error and redundancies.

### **A. Blockchain benefits in logistics**

13. Several challenges exist along the supply chain, impacting logistics functions. Difficulties often emerge when there is a lack of transparency, speed and traceability. Blockchain technology can solve some of these challenges by providing a set of records that can be tracked and evaluated at all levels of the supply chain by all parties. Its main objective is to create an automated process, reducing paperwork and supporting traceability.

14. The following are key features of blockchain that can benefit logistics:

(a) Transparency:

- All data by all parties is integrated into one source.
- History of clients or suppliers is recorded, making it easier to assess their credit history.
- Accurate information on the status of events is provided for better traceability.

(b) Security:

- Secure platform for information exchange.
- Inability to tamper with information since all information is securely recorded in the chain.

(c) Facilitating processes:

- Using smart contracts to increase the level of automation and combine processes, such as payments, settlement of tariffs and cargo checks.
- Removing intermediaries at several stages of the chain, by creating a trustworthy environment.

(d) Efficient process:

- Reduced costs by avoiding errors and redundancies.
- Faster automated process, with less room for human error.

### B. Supply chain transparency and efficiency

15. The number of merchant ships involved in global trade is increasing every year. Cargos usually go through several customs authorities, people and organizations, with over 100 different interactions among them. Blockchain is a reliable choice that can reduce the cost and time of trade documentation and interactions for shipments.

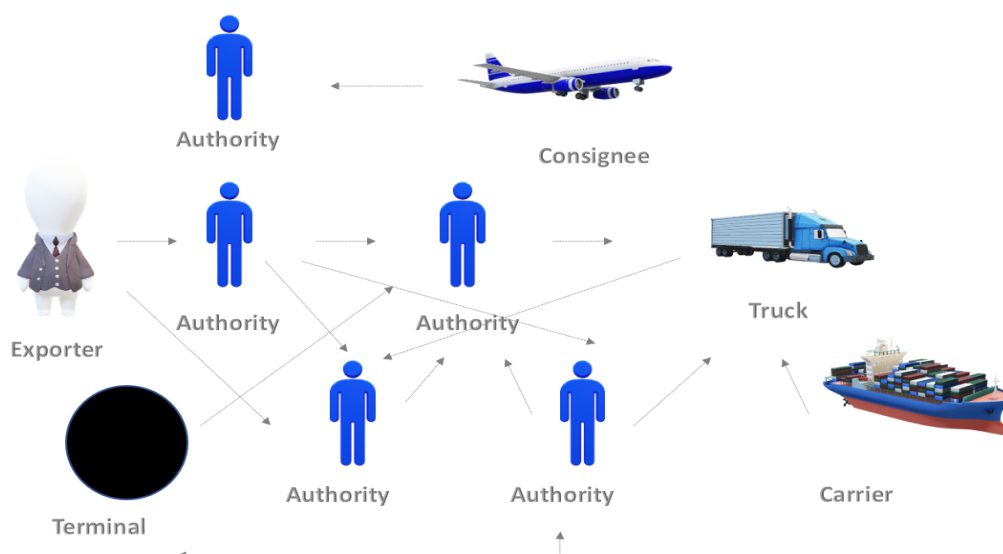
16. An example of a blockchain shipping system is TradeLens by Maersk and IBM, dedicated to empowering trade by establishing a shared view of transactions while ensuring confidentiality. Several parties, such as shippers, freight forwarders and customs authorities, can interact more efficiently through access to real-time shipping documents and data. In addition, TradeLens offers digital collaboration between several entities involved in international trade by using smart contracts. Government agencies, traders, brokers and customs agencies can work together in cross-organizational business processes, with a secure and validated audit trail.

### C. Automated system

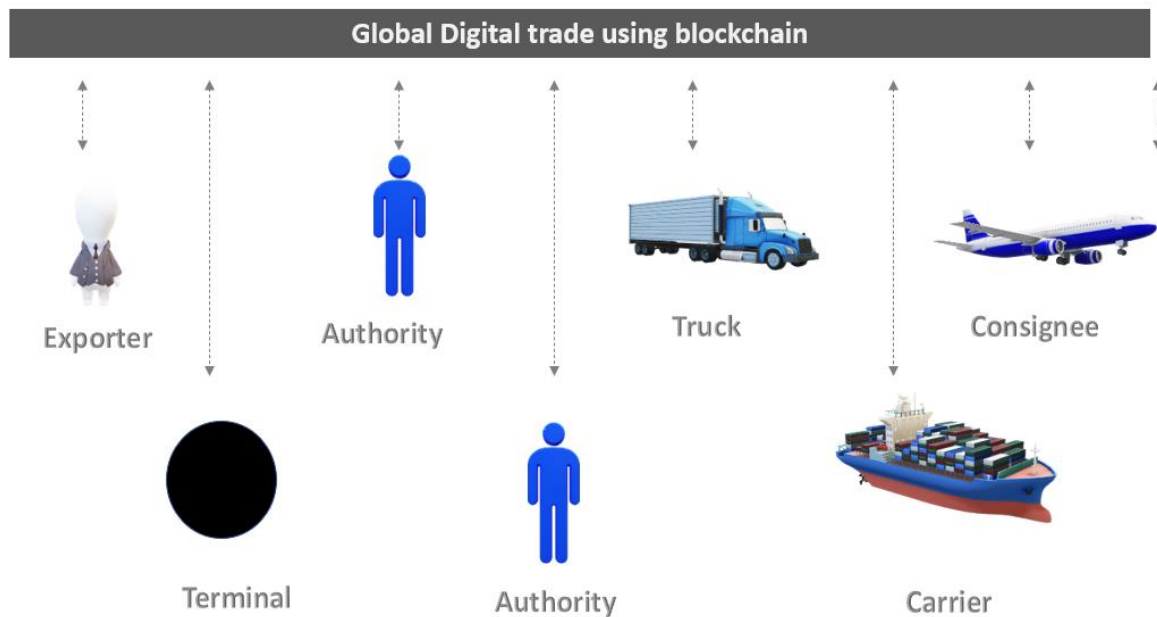
17. Today's freight applications involve several errors, redundancies and inaccurate data, leading to disruptions and inefficiencies in the supply chain. As illustrated in figure 1, a traditional system involves each entity reporting and sharing information separately, resulting in errors, with the process taking considerable time going back and forth.

18. Blockchain offers an automated system that enables real-time shipment data and the issuance of smart contracts, thus increasing efficiency along the entire chain. Information shared on the blockchain platform enables each entity (customs, authorities, forwarders, exporters) to access data smoothly and transparently, reducing the chance of inaccurate and delayed documents.

**Figure 1. Traditional logistics system**



Source: Prepared by ESCWA.

**Figure 2. Modern logistics system using blockchain**

Source: Prepared by ESCWA.

#### D. Smart contracts

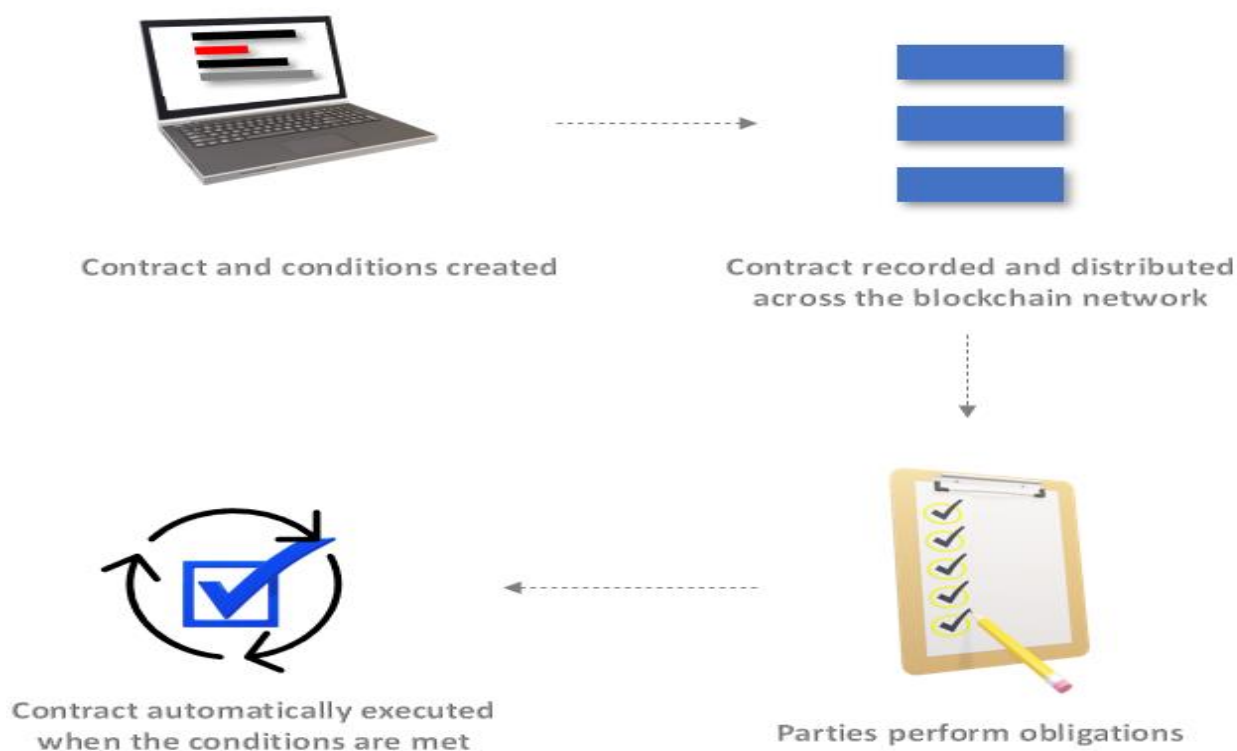
19. Smart contracts are contracts that are automatically executed by computer programmes when certain terms and conditions are met, with no human intervention. The use of smart contracts does not require brokerages, lawyers or any third party to complete tasks. A binding agreement is set out by the logistics company and retailers, which can immediately be terminated if all agreed-upon stipulations are not met. The contracts ensure transparency and increase profits by decreasing delivery times and costly errors.

20. Processes such as payments, transfers and settlements can be automated. Smart contracts can perform the next set of defined activities in the contract, such as automatic payments, once the goods have arrived. Challenges of smart contracts include the following:

- Handling more complex documents.
- Several parties interacting.
- Accountability and liability.

21. Benefits of smart contracts include the following:

- Connecting various parties of the supply chain, and allowing them to directly exchange documents.
- Providing electronic bill of lading instead of paper bills.
- Eliminating disputes and forgeries by managing ownership of the documents on the chain.
- Automatically executing money orders by signals released from the flow of goods.
- Connecting banks, lenders and suppliers, thus reducing fraud and extra costs.

**Figure 3. Smart contract trajectory**

Source: Prepared by ESCWA.

### **E. Blockchain in warehousing and transport**

22. Warehousing is one of the first steps in logistics. It is the location where goods are placed before being transported across the supply chain. Efficiency in logistics is achieved by not only focusing on one aspect of the chain, but through seamless collaboration between every entity, including warehousing. Blockchain can link relevant stakeholders on the same platform, guaranteeing secure data and easy communication.

23. Smart contracts are also important aspects that can be used in the warehousing process, with terms of agreements between two parties written into lines of code, useful for automating and verifying payments. One example of utilizing smart contracts in warehousing would be the release of payments to the relevant parties once the delivery of pallets, confirmation, time of delivery, and conditions are transmitted and verified on the blockchain.

### **F. Blockchain bill of lading**

24. A bill of lading is a document that expresses the right to claim delivery for the shipped goods. A weakness of paper bills of lading is that they tend to slow processes. With increased vessel speeds nowadays, some vessels tend to be faster than paper bills of lading, which are required to release the shipment. Blockchain bills of lading resolve this issue, expedite the process, and reduce cost.

25. Blockchain bills of lading are a special type of electronic bill that ensure a non-changeable audit trail and transparency of business events, and create a bond based on confidentiality and trust among partners. Blockchain bills of lading are designed to automate processes and make reliable projections on a large scale.

26. In contrast, electronic bills of lading were developed in the 1990s by traditional information technology (IT) systems, where ownership could not be audited and traced. They were originally too complex to use, and were not seen as an added value. Blockchain was able to change that perspective.

27. Benefits of blockchain bills of lading include the following:

- Immutable transaction records providing a high level of security.
- Validations to avoid delivery mistakes.
- Fast transfer around the world, preventing damages and slow processes.
- Cost saving.
- Prevention of theft and tampering with information.
- Secure end-to-end documentation process.

28. Mediterranean Shipping Company is officially introducing an electronic bill of lading for its customers globally. It will allow shippers and other stakeholders to receive and transmit the bill of lading document electronically, with no disruptions to day-to-day business activities.

29. The related platform is called WAVE BL, which is a blockchain system that uses distributed ledger technology (DLT), allowing all parties involved in the activity to issue, transfer and manage documents. The platform is free to use for all parties, with no investments in any IT infrastructure, and payments only made when issuing original documents.

### **G. Blockchain in customs**

30. Blockchain technology has the potential to change the landscape in international trade. Customs checks are a complex process in international trade, involving huge volumes of paperwork and bureaucratic interventions, which blockchain can facilitate by digitizing financial instruments, trade and shipping documents.

31. Information such as clearance forms, purchase orders and insurance can be part of the blockchain, accessible to suppliers, transporters, stakeholders, authorities and all related parties. Customs can also access accurate information on the cargo or shipment (price, quantity, name, insurance), while keeping track of the status and delivery of goods. Such a system would provide a more efficient customs procedure in day-to-day operations.

32. With an integrated customs blockchain system, authorities can extract information directly from their source, ensuring accurate and reliable data. Manual verification will be reduced, and the data required for validation would lead to much faster processing times.

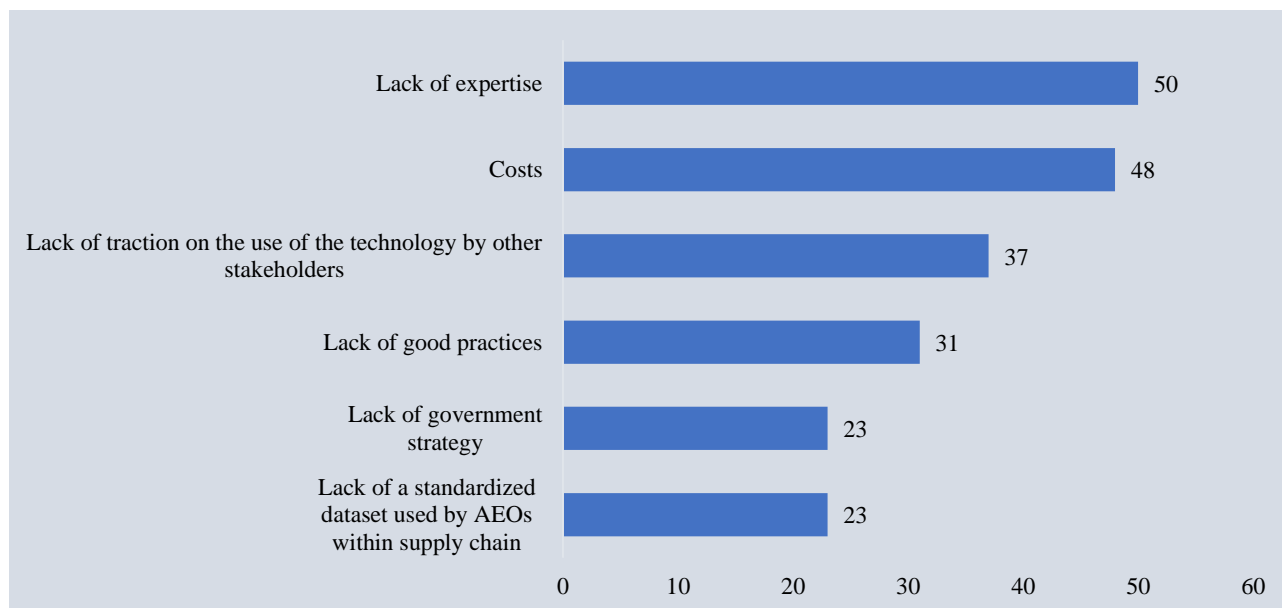
33. Even though blockchain technology could be a solution to the complexities of the logistics system, most developed countries do not have access to a fully automated blockchain system, with the majority still relying on traditional and complex process. Several constraints remain at the governmental, organizational, and personal levels, which are impeding this transformation.

## **III. State of play**

34. A survey conducted by the World Trade Organization (WTO) and the World Customs Organization (WCO), which includes 18 questions on blockchain uses in cross-border trade, provides a snapshot of the level of implementation by customs authorities among WCO members.

35. Figure 4 shows respondents' concerns about obstacles that may arise when adopting blockchain technologies. Lack of expertise and costs were two major concerns expressed by most respondents. Other obstacles included a lack of traction on the use of the technology by other stakeholders, and a lack of good practices.

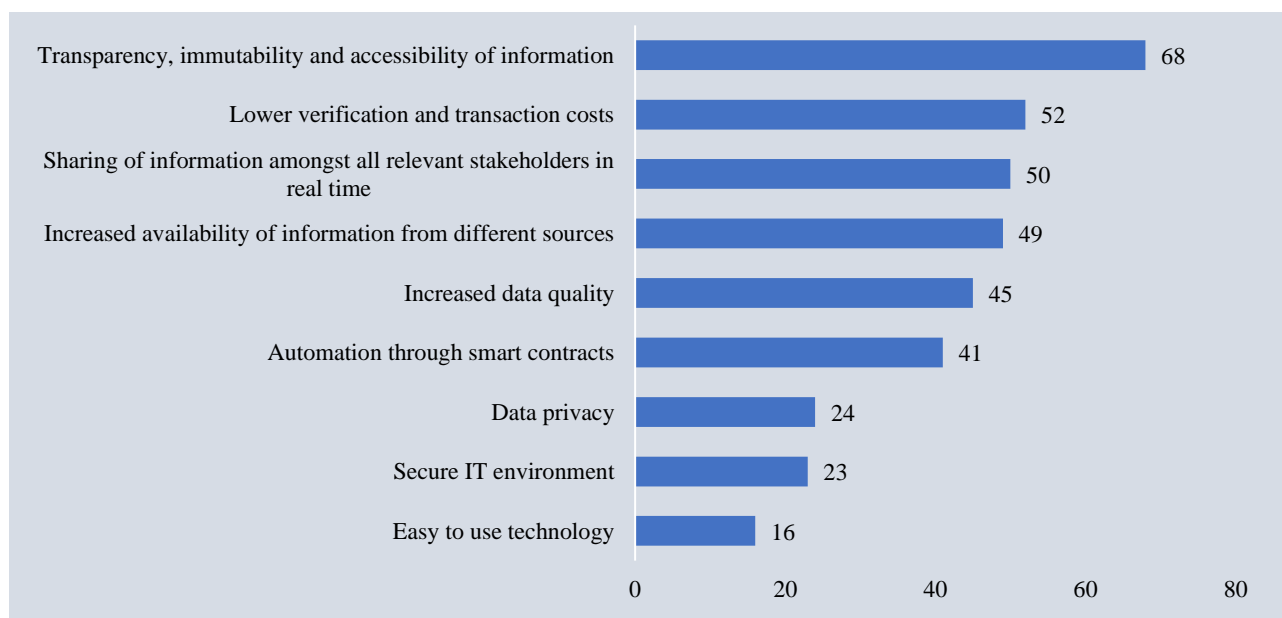


**Figure 4. Obstacles to adopting blockchain and DLT**

*Note:* AEOs, authorized economic operators.

*Source:* WTO and WCO, The role of advanced technologies in cross-border trade: a customs perspective, 2022.

36. The survey reflected the benefits that members believe blockchain would provide. A total of 68 of the respondents found that introducing blockchain would generate greater transparency, immutability and accessibility to information, while 52 said that it would reduce verification and transaction costs. Other positive attributes included facilitating the sharing of information between relevant stakeholders in real-time, and increasing the availability of information from various sources (figure 5).

**Figure 5. Benefits of introducing blockchain (Number of respondents)**

*Source:* WTO and WCO, The role of advanced technologies in cross-border trade: a customs perspective, 2022.

## **A. Examples of global initiatives in blockchain**

### *1. Canada*

37. The Canada Border Services Agency (CBSA) is taking part in pilot activities to assess the capacity of blockchain to provide a quicker, more dependable and straightforward supply chain. The pilot projects aim to assess the capacity of blockchain arrangements, and decide if the technology could assume a part in CBSA business processes. Nonetheless, full implementation is beyond the scope of the pilot projects.

### *2. Italy*

38. In February 2019, the Italian parliament passed a regulation that gives a lawful definition of DLTs and smart contracts, and recognizes their full lawful legitimacy and enforceability.

39. Italy is perhaps the first country to set out broad regulations on smart contracts, rather than conventional agreements for specific purposes. The law states that smart contracts must ensure that involved individuals are recognized digitally as per Agenzia per l'Italia Digitale guidelines.

### *3. European Union*

40. SEED-on-Blockchain is a European Commission research project by DG TAXUD, the division responsible for European Union policy on tax collection and customs, aimed at evaluating the specialized and authoritative practicality and benefits of blockchain for customs and taxation applications.

### *4. United States of America*

41. The United States Customs and Border Protection (CBP) led a proof of concept (PoC) (an initial assessment of blockchain viability) in September 2018 on the utilization of blockchain innovation in the accommodation process for entry summary statements under the Focal America Free Trade Agreement (CAFTA) and for exchange with Canada and Mexico. The appraisal of the application and the arrangement and legitimate issues raised by the PoC highlighted that the utilization of blockchain accomplished better correspondence between CBP and merchants, improved documentation of receipt, and eliminated manual documentation and duplicative information.

## **B. Overview of logistics systems in the Arab region**

42. Global supply chain flow is becoming more complex every day. Stakeholders are required to handle a huge amount of information, and keep track of transactions and records, while planning for future activities. Several parties are responsible for various areas of the supply chain, which may sometimes lead to redundancies and mistakes.

43. Some challenges faced in today's traditional supply chain system include the following:

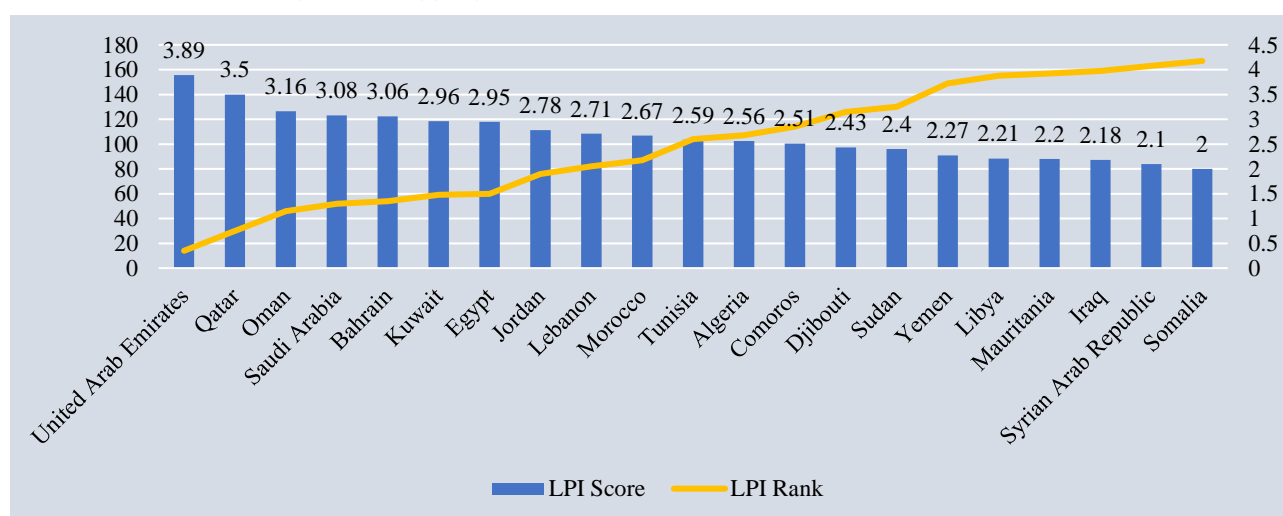
- Transparency: the correct and accurate flow of information.
- Speed and efficiency: ensuring that the correct goods are delivered to the appropriate destination in the most efficient way.
- Traceability: the ability to keep track of goods during every stage (stock, transport, shipping, receipt of goods).
- Payment: efficient transfer of money with documentation storage.

44. The measurement of logistics efficiency is essential, given its importance in positioning a country as a trade enabler. One of the tools developed to assess logistics performance is the Logistics Performance Index (LPI).

45. Arab countries' logistics performance is reflected in figure 6, summing up their scores from 2012 to 2018. Results indicate that the majority have not improved their logistics performance, with the exception of the United Arab Emirates, Qatar, Oman and Saudi Arabia, which have the top LPI scores in the region.

46. Major logistics deficits in the region include domestic logistics performance measured by in-country factors, including gateways such as ports and borders. The indicator is useful in analysing deficits inside the system that impede the smooth operation of the logistics chain.

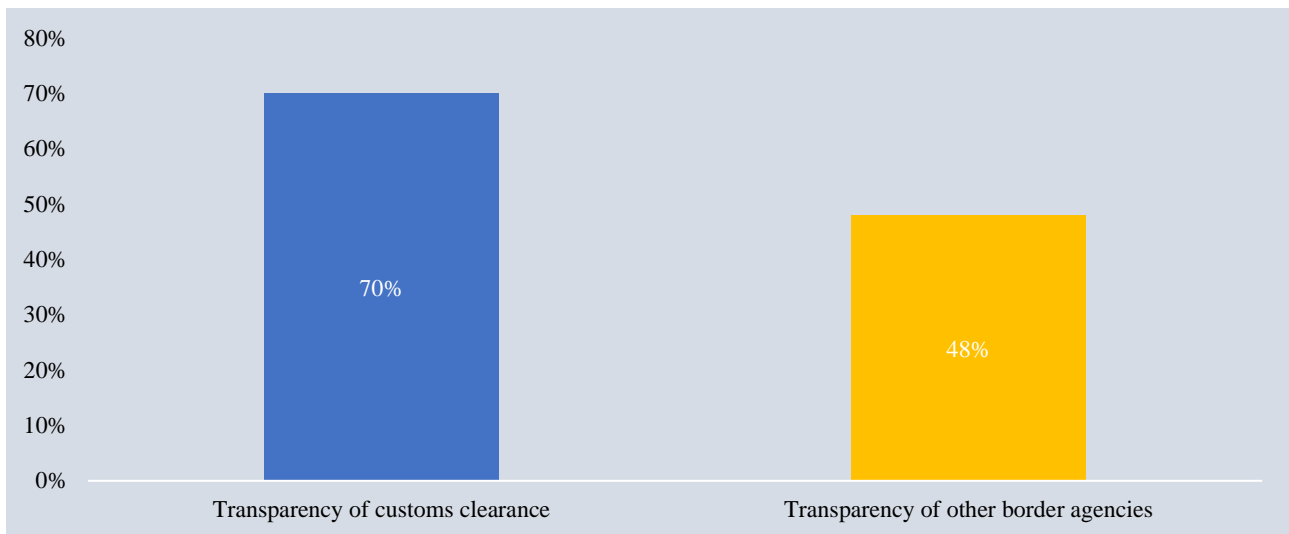
**Figure 6. Aggregate LPI score for Arab countries, 2012–2018**



Source: World Bank, Logistics Performance Index, 2018.

47. One of the main benefits that blockchain has to offer is transparency. According to a survey by the World Bank, 70 per cent of respondents in the region found that transparency of customs clearance in their country was often or nearly often a present factor (figure 7). However, transparency of other border agencies seemed to be a source of concern, with only 48 per cent of respondents recognizing their transparency. This may be due to a lack of communication and digital platforms that facilitate the exchange of information and documents.

**Figure 7. Transparency (Percentage of respondents answering often or nearly always)**

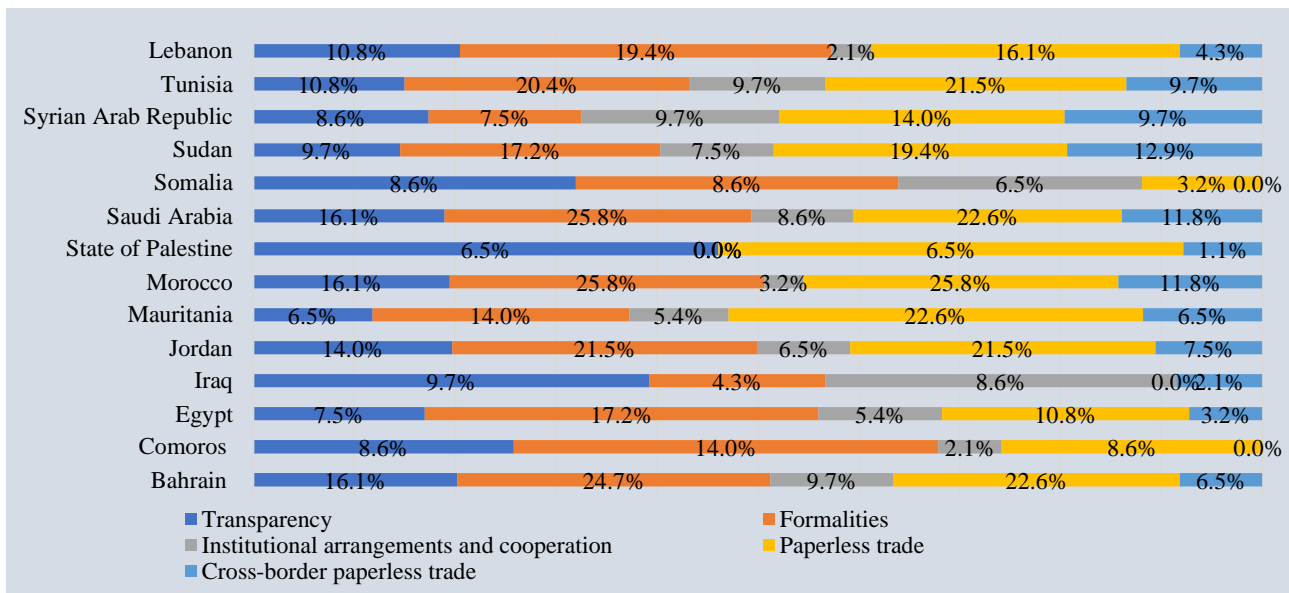


Source: World Bank, Logistics Performance Index, 2018.

**C. Digital sustainable trade facilitation**

48. ESCWA and the other United Nations regional commissions have been closely monitoring digital and sustainable trade facilitation measures through a global survey, which sheds light on the status of trade facilitation measures and the challenges they are facing in achieving a sustainable and digital trade environment that supports cross-border trade.

**Figure 8. Overall implementation of trade facilitation core measures in Arab countries, 2021**



Source: United Nations Global Survey on Digital and Sustainable Trade Facilitation, 2021.

Note: The core measures are 31 measures under the five categories of transparency, formalities, institutional arrangement and cooperation, paperless trade, and cross-border paperless trade.

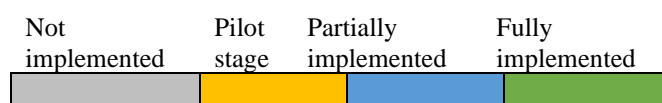
49. The overall implementation rate of Arab countries was 54 per cent in 2021. Saudi Arabia positioned itself as a regional leader according to the survey, with 85 per cent overall implementation, followed by

Morocco and Bahrain with 82.8 per cent and 79.6 per cent, respectively. Iraq and the State of Palestine were among the lowest performers, with only 24.7 per cent and 14 per cent, respectively.

### Status of measures implemented across Arab countries, 2021

|  | Bahrain | Comoros | Egypt | Iraq | Jordan | Mauritania | Morocco | State of Palestine | Saudi Arabia | Somalia | Sudan | Syrian Arab Republic | Tunisia | Lebanon |
|--|---------|---------|-------|------|--------|------------|---------|--------------------|--------------|---------|-------|----------------------|---------|---------|
| Automated customs system   | Green   | Green   | Blue  | Grey | Green  | Green      | Green   | Blue               | Green        | Grey    | Blue  | Blue                 | Blue    | Blue    |
| Customs and/or other regulatory authorities engaged in blockchain-based supply chain projects covering trade finance | Grey    | Grey    | Grey  | Grey | Yellow | Grey       | Grey    | Grey               | Green        | Grey    | Blue  | Blue                 | Green   | Grey    |
| Electronic application and issuance of import and export permits   | Green   | Grey    | Grey  | Grey | Blue   | Green      | Green   | Yellow             | Green        | Grey    | Blue  | Blue                 | Green   | Blue    |
| Electronic application and issuance of preferential certificates of origin   | Grey    | Grey    | Grey  | Grey | Grey   | Blue       | Blue    | Grey               | Grey         | Grey    | Blue  | Grey                 | Blue    | Blue    |
| Electronic single window system  | Green   | Grey    | Grey  | Grey | Green  | Blue       | Green   | Grey               | Green        | Grey    | Blue  | Yellow               | Blue    | Yellow  |
| Electronic submission of customs declarations  | Green   | Blue    | Blue  | Grey | Blue   | Green      | Green   | Yellow             | Green        | Grey    | Blue  | Blue                 | Green   | Blue    |
| E-payment of customs duties and fees   | Green   | Grey    | Blue  | Grey | Green  | Blue       | Green   | Grey               | Green        | Grey    | Blue  | Yellow               | Green   | Grey    |
| Implementation of additional cross-border paperless trade measures in times of crises and emergencies                | Blue    | Grey    | Grey  | Grey | Green  | Grey       | Grey    | Grey               | Grey         | Grey    | Blue  | Grey                 | Grey    | Blue    |
| Internet connection available to customs and other trade control agencies  | Green   | Green   | Grey  | Grey | Green  | Green      | Green   | Blue               | Green        | Green   | Blue  | Blue                 | Blue    | Green   |
| Laws and regulations on electronic transactions  | Green   | Grey    | Grey  | Blue | Green  | Blue       | Green   | Grey               | Green        | Grey    | Blue  | Blue                 | Blue    | Grey    |
| National legislative framework and/or institutional arrangements for   | Green   | Grey    | Blue  | Blue | Green  | Blue       | Grey    | Grey               | Green        | Green   | Blue  | Green                | Green   | Blue    |

|   | Bahrain | Comoros | Egypt | Iraq | Jordan | Mauritania | Morocco | State of Palestine | Saudi Arabia | Somalia | Sudan | Syrian Arab Republic | Tunisia | Lebanon |
|---|---------|---------|-------|------|--------|------------|---------|--------------------|--------------|---------|-------|----------------------|---------|---------|
| border agencies' cooperation  | Green   | Grey    | Blue  | Blue | Green  | Blue       | Grey    | Grey               | Green        | Green   | Blue  | Green                | Green   | Blue    |
| Paperless collection of payment from a documentary letter of credit | Grey    | Grey    | Blue  | Grey | Blue   | Grey       | Grey    | Grey               | Blue         | Grey    | Blue  | Green                | Green   | Grey    |



Source: UN Global Survey on Digital and Sustainable Trade Facilitation, 2021.

50. For paperless trade measures, the results indicate that many areas still need significant improvements in Arab countries. Customs and/or other regulatory authorities engaged in blockchain-based supply chain projects covering trade finance are not yet implemented by 64.29 per cent of countries, with 7 per cent in the pilot stage; 14 per cent partially implemented; and only 14 per cent, including Saudi Arabia and Tunisia, having successfully adopted the measure. Electronic application and issuance of preferential certificates of origin have not been implemented in 64 per cent of Arab countries, with 35 per cent partially implementing the measure.

#### D. Blockchain in the Arab region

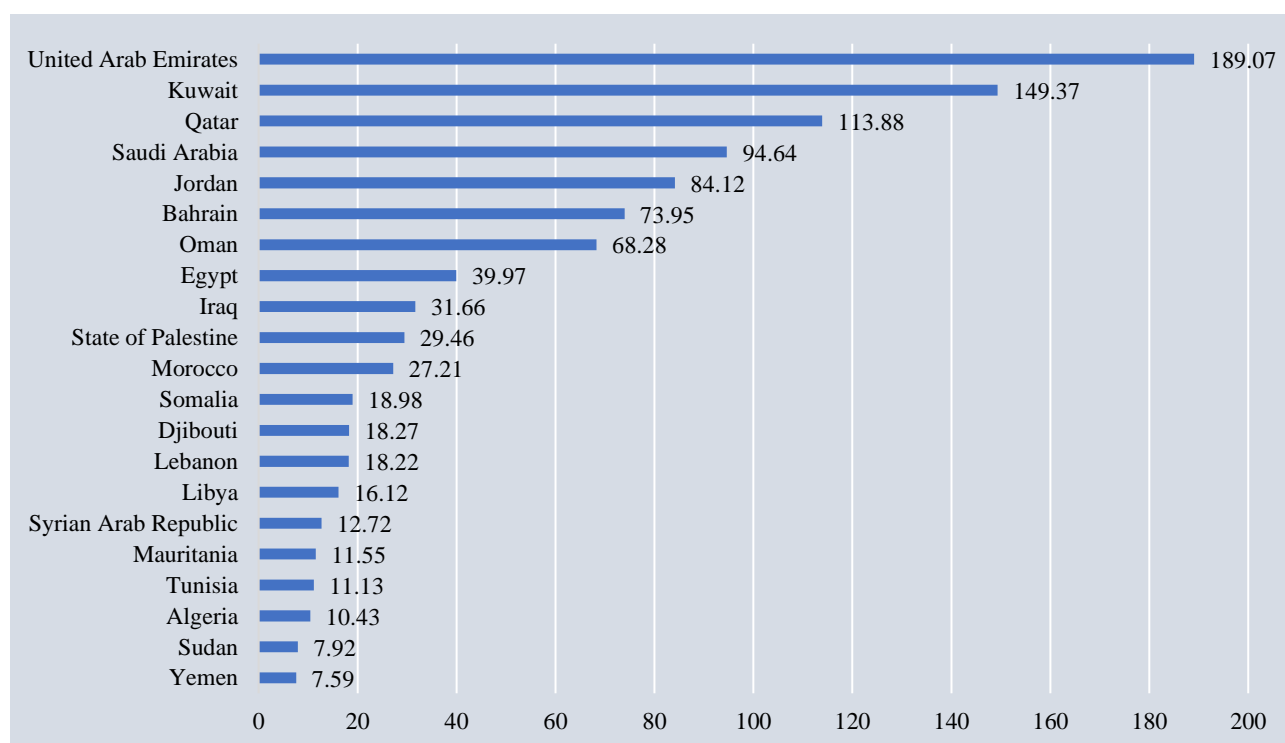
51. Arab countries are highly diverse in terms of digital improvement. On the one hand, Gulf Cooperation Council (GCC) countries are driving the region across numerous information and communication technology (ICT) markers, at advanced levels similar to those of developed countries. On the other hand, the Arab least developed countries (LDCs) are struggling with digital advancements owing to tenacious structural challenges, including underlying economic variables, socioeconomic structures, protracted conflict, and the impact of climate change. Moreover, Arab LDCs struggle to develop their communication infrastructure owing to their rural nature and less populated land areas. Therefore, ICT capacities differ greatly between Arab countries.

52. Over the past few years, the region has been characterized by a slow but continual growth in ICT infrastructure. On average, the percentage of households with Internet access in the region in 2021 reached 80.97 per cent, according to data from the Network Readiness Index. While three GCC countries, namely the United Arab Emirates, Kuwait and Qatar, lead the region in high Internet speeds above 100 megabytes per second, over half of Arab countries have speeds below 30 megabytes per second, lower than the global average of 70 megabytes per second.

53. In figure 10, subindicators of the Network Readiness Index were used to further assess a country's readiness and development. Cybersecurity, which is the collection of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, and technologies to protect the cyber environment and user, seems to be an area where most countries are succeeding. Other than GCC countries, whose scores range from 95 to 100 per cent, other Arab countries such as Morocco (82.10 per cent), Jordan (70.4 per cent), and Tunisia (85.99 per cent) have also shown significant improvements in cybersecurity. However, ICT skills still require further development in the region, with Kuwait topping the ranking at 83.17 per cent, far above the regional average of 50.74 per cent. Investments in emerging technologies are also an area where the region is

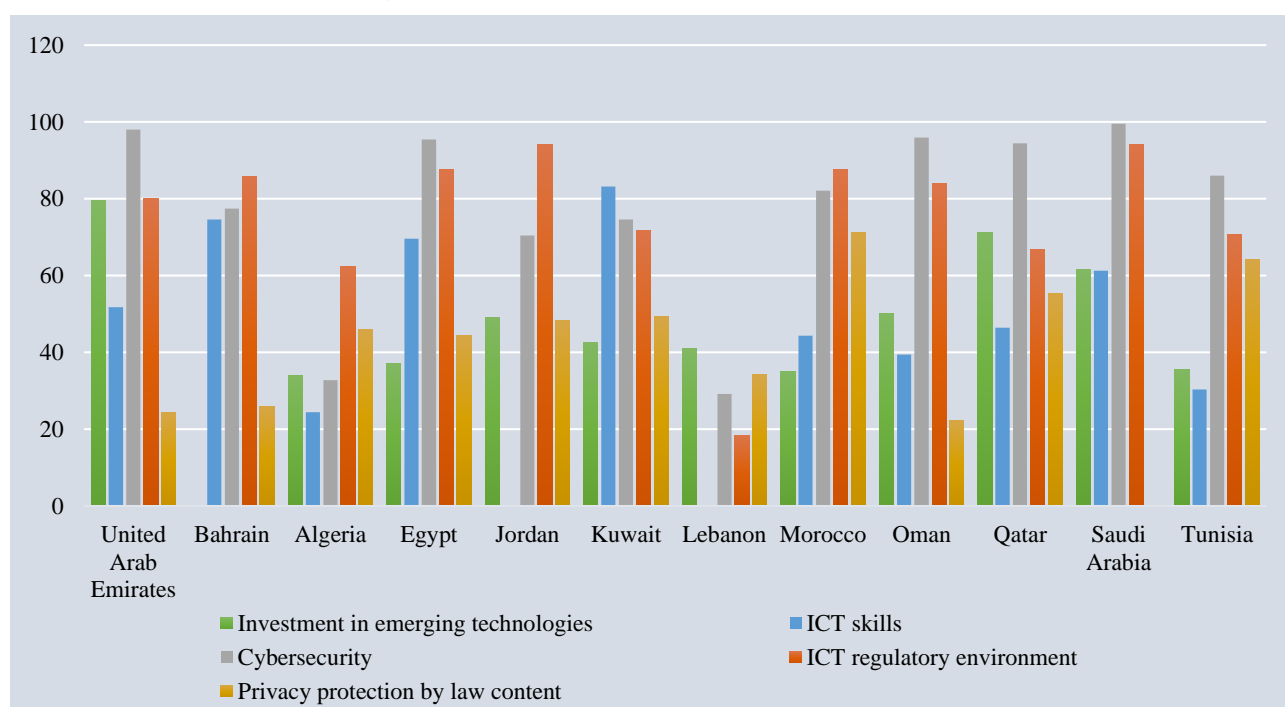
lacking, with an average of 45.81 per cent. Half of the countries fall below that value, with the highest ranked being the United Arab Emirates at 79.57 per cent, and the lowest being Algeria at 33.92 per cent.

**Figure 9. Internet speeds in Arab countries, 2022**



Source: Data from the Speedtest Global Index (accessed March 2022).

**Figure 10. Network readiness indicators, 2021**



Source: Network Readiness Index data, available at <https://networkreadinessindex.org/> (accessed March 2022).

## **E. Blockchain initiatives at the national level**

54. Governments are investing considerably in the digital economy, especially after the COVID-19 pandemic and its negative effects on supply chains. Various technologies in several sectors, such as artificial intelligence, DLT and blockchain, are being explored. Strategies to adopt blockchain transformations are set by objectives and priorities at the national level, which coordinate efforts, guarantee the collaboration of various stakeholders, and develop plans among relevant government entities.

### *1. United Arab Emirates*

55. A cross-border e-commerce blockchain-based platform was built by Dubai Customs and the Federal Customs Authority in 2019, in line with WCO standards for cross-border e-commerce. The platform ensures a trustful digital environment, benefiting all stakeholders involved. Some characteristics of the platform include paperless transactions, reduced delivery time owing to automated processes, and visibility of orders.

56. In 2020, Abu Dhabi Ports introduced a new blockchain platform for traders, known as Silsal, which is a blockchain technology launched through the Maqta Gateway. The platform combines blockchain technology and unique digital user identities, linking stakeholders across the trade community. The technology will first be available to freight forwarders and their clients, and then to the rest of the trade community. The project was initiated by the Digital Innovation Lab, and has been tested by Abu Dhabi Port's strategic customers.

57. DP World is an Emirati global logistics company that specializes in cargo logistics, port terminal operations, and other services. Emirati logistics entities plan to collaborate with DP World in new free-zone customers registration to facilitate the registration process and the obtention of licenses and memberships, and to digitize entry/exit certificates, certificates of origin, and annex export authorizations. Another benefit would be the creation of a permissioned blockchain for beneficiary cargo owners and their partners, promoting data sharing and process integration.

58. Implementation of this strategy will be completed in the following three phases:

- The first phase consists of a memorandum of understanding signed between relevant organizations, setting a road map to incorporate further entities as the project progresses.
- The second phase aims to develop the technology platform, and conduct several workshops to clarify the potential of blockchain technology.
- The third phase entails the adoption of a universal platform to enable global trade.

### *2. Egypt*

59. The Egyptian Government has entered into an agreement with CargoX, a leading global blockchain company in the digital transfer of trade documents, so as to achieve the digital transformation of Egyptian trade flows worldwide. The partnership is 80 per cent owned by the Egyptian Government, which has appointed CargoX as its blockchain document transfer service through *Nafeza* (a new customs facilitation system in Egypt), which has made CargoX the fastest growing blockchain platform in logistics history.

60. Since its launch, the initiative has successfully transferred over 1,100,000 trade finance documents for more than 75,000 customers. Users who engaged with the platform have noticed an increase in transparency, reducing average cargo release times by 20 days, with a reduction in compliance costs for shippers of more than \$400.

61. *Nafeza* is being used by more than 50,000 importers and exporters, 300 shipping agencies, and 70,000 foreign exporters. As planned, the platform will be further extended to include 30 additional sites, including airports, seaports, free zones and warehouses.



62. Benefits from this initiative resulted in the integration of 26 governmental bodies associated with cargo clearance, digitally transforming 6 trade documents and eliminating 11 others.

### 3. *Saudi Arabia*

63. Saudi customs authorities are seeking to collaborate with other customs authorities to enhance customs clearance processes by adopting a common blockchain platform. The platform will facilitate the exchange of customs declarations and documents in real time, ensuring customs efficiency and speed while minimizing errors.

64. In May 2019, Saudi Customs teamed up with TradeLens to successfully complete a shipment test using blockchain technology. The shipment was made from Dammam port in Saudi Arabia to the port of Rotterdam in the Netherlands. The test involved several steps: The customer uploaded the commercial invoice and packing list on the TradeLens platform, then export customs brokers used the data to submit customs declarations to Saudi Customs, which then accessed this information to register the export clearance. After that, Rotterdam Port provided customs authorities with release messages directly through the TradeLens platform. The entire process was monitored through TradeLens, while enabling both import and export customs to analyse the shipment's document data through the platform.

### 4. *Bahrain*

65. APM Terminals in Bahrain operate Khalifa Bin Salman Port, and plays a key role in facilitating external trade and marine services through container terminal activities and port services, among others. Lately, APM Terminals has integrated the TradeLens platform, which enables the business to digitally connect, share information, and collaborate across the supply chain.

66. Another initiative is the OFOQ2 programme launched by Bahrain Customs Affairs, which initially aims to cover all customs border points, in addition to all import and export processes. In 2021, CrimsonLogic, a leading provider of trade solutions, agreed with Bahrain Customs Affairs to incorporate blockchain technologies in their operations, further enhancing the accuracy of digital transactions, protecting information confidentiality, and limiting human interference. This initiative is in line with the country's strategy to enhance the logistics services sector, as part of the priorities of its economic recovery plan.

### 5. *Jordan*

67. In 2019, Jordanian Customs signed an agreement to test TradeLens, so as to facilitate information exchange between partners and simplify shipping operations and goods discharged in ports. The aim is to simplify the release of goods and consignments, and the exchange of technical information. The agreement strives to enhance economic and commercial exchanges, strengthen cooperation and communication, and allow companies to transport goods and services safely and transparently.

### 6. *Morocco*

68. The Moroccan customs authorities has entered into an agreement with DHL and the German Agency for International Cooperation to develop a blockchain platform dedicated to collecting and sharing international transaction information on traders, customs authorities, and other stakeholders. The platform aims to make procedures easier and improve risk management in customs operations.

69. In 2020, the Moroccan customs authorities launched a partnership project with Alliance, a blockchain platform for customs clearance dedicated to facilitating cross-border trade procedures in Morocco and enhancing security and transparency. As the project progresses, other stakeholders, such as e-commerce sellers and exporters, will become part of the blockchain platform and will benefit from enhanced clearance processes.

#### **IV. Conclusion and recommendations**

70. Inefficiencies in today's traditional logistics system, such as slow processes, inaccurate information and high costs, impede the smooth flow of goods across the value chain. Despite recent efforts to digitize processes, many transactions are still paper-based. The success of blockchain relies on all parties jointly working together to transform processes and create new logistics values.

71. Countries such as Egypt, Bahrain, Jordan and Saudi Arabia have partnered with various agencies to successfully test several blockchain trade transactions in their customs and port authorities.

72. Undoubtedly, blockchain is becoming an area that all countries are looking to invest in. Setting up a national plan that identifies gaps in a country's operating system, as well as investments in infrastructure and IT skills, are key elements to implementing blockchain technology in logistics operations.

73. To this end, member States are requested to take note of these developments, and are encouraged to benefit from this technology in the transport sector, as follows:

(a) Invest in research and development and assess how blockchain technology can contribute to building a trusted digital platform. Research should focus on scalability, performance, security and privacy, and on detecting weaknesses in adopting this new technology.

(b) Ensure Government collaboration with other member States, in addition to national and global blockchain suppliers, so as to adapt the new technology. Collaboration may include advisory services, consultancy, and access to platforms needed for blockchain transactions.

(c) Conduct several pilot tests before final implementation to identify gaps and weaknesses, and to slowly adapt national traders to this new digital transition.

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