Global Trade Digitalisation and Inclusive Economic Growth

Why coordinated adoption is essential to turn digital capability into economic growth

The International Centre for Digital Trade and Innovation (IC4DTI), TradeTech Solutions Ltd **and the** Teesside Digital Trade Testbed | Joint Global Strategic Discussion Paper | 5 November 2026

Evidence and attribution notes apply throughout.

Executive Summary

This paper examines the benefits of trade digitalisation, the barriers and their causes, and potential solutions. It seeks to encourage organisations able to accelerate adoption by micro, small and medium-sized enterprises to act.

It should be noted that AI is a supporting capability**.** Digital trade does not depend on AI. However, effective AI use depends on reliable digital information and connected processes.

The economic opportunity is substantial. OECD modelling indicates up to 18% higher global goods exports from coordinated border reforms. The WTO's 2015 assessment estimated up to US$1 trillion in additional annual exports from full implementation of its Trade Facilitation Agreement. These scenarios concern wider reforms than community services alone.

To benefit from this potential, businesses must address three connected imperatives:

1. statutory compliance
2. market competitiveness; and
3. trade expansion

However, available technology and statutory compliance alone cannot ensure effective adoption. Micro, small and medium-sized enterprises face significant barriers to adoption. These include

1. fragmented provision of services and information
2. limited awareness; and
3. severe implementation difficulties.

A new, coordinated approach is required to bridge these gaps.

To help SMEs adopt and utilise suitable digital services effectively, this paper proposes the establishment of Digital Business Communities (DBCs). They combine a single digital reference point with trading opportunities and, critically, proactive management.

Although for some countries a single, national DBC could provide the optimum solution, it is not necessary to provide effective solutions. Individual DBCs focused on the commercial interests of their community can be much easier to construct and manage. These individual DBCs can then be connected as deemed appropriate to provide wider market access to their members.

It is recommended that these communities are built upon existing, trusted business relationships.

1. Private-sector owners, such as telcos or banks supported by specialist service providers, can own, finance and promote their DBCs. As a return on this investment, the DBCs can provide a direct financial return through a blend of sales commissions, advertising and increased sales. Indirect benefits include client retention and market differentiation.
2. NGOs, charitable organisations, development agencies and philanthropic funds can also own DBCs or finance chambers, trade associations and large cooperatives to operate them. Their development mandates can support participation by micro-enterprises and groups that face barriers to established business networks.

Training and mentoring are central to this approach. Producers need practical help to meet buyer specifications and manage transactions. That support can prepare them to undertake higher-value activities such as grading, processing, packaging and branding.

Reliable transaction records can improve the basis for finance decisions. Connections with suitable lenders and buyers can help suppliers obtain working capital on better terms, while longer-term finance can support investment in supply-chain progression. The ADB estimated a global trade finance gap of US$2.5 trillion in 2025, illustrating the scale of unmet demand.

Timely action matters. Changing requirements and trading practices create both pressure and opportunity. The IC4DTI, TradeTech Solutions and Heterodox Global Advisory partnership can help organisations coordinate a practical response.

To explore how a Digital Business Community could benefit your organisation, or to discuss the findings of this paper in detail, please contact **Ian Dunning**, **Nick Daniel** or **Nick Davies** to arrange a no commitment consultation.

Purpose of this Paper

Digitalised trade offers substantial potential benefits to individual firms and the wider global economy. [1,2,5] However, significant barriers stand between available capability and effective adoption by smaller businesses.

This paper examines those benefits, the barriers to adoption and their underlying causes, and potential solutions. By showing how these solutions can deliver wider economic and commercial benefits, it seeks to encourage action by private-and public-sector organisations able to accelerate the adoption of digitalised trade.

The framework is intended to support different ownership and delivery settings. Short accompanying briefings can set out the investment proposition for particular organisations, while a DBC solution briefing explains implementation, services and operating responsibilities.

We consider this to be a practical deliverable and a proposal capable of sustainable operation. Other efforts have focused on new technology and platform development and have not succeeded as a result. . Our approach is to build on existing capability and to impact SMEs as little as possible so that benefits to both users and suppliers of new services can flow in a reasonable timeframe.

The global application gives particular attention to micro-enterprises and cooperatives in developing economies. “Smaller businesses” in this paper includes these entities as well as SMEs. Training, access to markets and finance should help participants build capabilities and retain a greater share of the value they create.

What Trade Digitalisation Means

Resolving trade digitalisation issues first requires a clear understanding of the term. Appendix A sets out the detailed definition and practical capability framework. [6,7,8,9]

In simple terms, trade digitalisation uses reliable, reusable digital information to connect business processes and trading partners, reducing repeated data entry and the need for paper documents. “Data not documents” is our watchword.

Businesses can benefit from individual improvements without every element being in place. However, improving internal systems or specific trading connections captures only part of the potential value. For example, a supermarket’s integration with its suppliers does not, by itself, help those suppliers adopt digital capabilities across their wider trading activities.

The Economic Opportunity

Economic Opportunity Figures

OECD modelling associates a 10% improvement in selected border automation, documentation and cooperation indicators with up to 18% higher global goods exports. [1]

The WTO estimated that full implementation of its Trade Facilitation Agreement could increase global merchandise exports by up to US$1 trillion per year. [2] These are separate scenarios for wider reforms, with scope and limitations set out in Appendix B.

Trade Digitalisation and AI

The opportunity estimates above concern trade digitalisation and wider trade reforms. They should not be presented as estimates of additional AI benefits. Suitable AI applications could support implementation and further improvements; any incremental benefit requires separate assessment.

The Three Imperatives

1. **Compliance is the first imperative**. Businesses must meet applicable digital information and reporting requirements as they take effect. Non-compliance can result in fines, corrective action or restrictions on products and market access, depending on the regime and breach. [10,11,12,13,14,15]

   Compliance alone does not deliver the full benefits of digitalisation: a compliant process can still involve repeated data entry, disconnected systems and manual handovers.

2. **Competitiveness is the second imperative**, independently of regulation. Delayed adoption can leave firms facing higher costs, slower service and exclusion from customers' trading networks, putting their long-term viability at risk. [1,16,6]

3. **Trade expansion is the third imperative**. Businesses need to develop customer and supplier relationships in domestic and international markets. Digitalisation can support increased sales and access to suppliers that improve competitiveness, resilience and sustainability.

How Business Gains Support Economic Growth

Business gains provide routes to national and global growth. [1,2,5]

1. Lower administrative costs and fewer errors can release resources for productive activity.
2. Faster payments and improved access to finance can support working capital and investment.
3. Better market access can support additional domestic sales, exports and participation in larger customers' trading networks.
4. Reliable, reusable information can improve supply-chain management, traceability and environmental reporting.
5. Wider adoption can create demand for legal and related professional services, alongside technology, integration, assurance and training services.
6. Lower costs and greater choice can benefit business customers and consumers.

The extent to which these business gains translate into additional output depends on how firms use the resources released and opportunities created. It will also be a function of how easy and cheap it will be to access relevant digital systems – this is why the "first mile" service provision for such access is so important. Stronger demand and competition can encourage investment and expansion, while the local benefit also depends on how much of the resulting value remains in producing economies.

Appendix B sets out the principal estimates of the global economic opportunity, their assumptions and limitations.

Growth Through New Trading Relationships

The estimates reviewed in Appendix B illustrate opportunities for trade expansion alongside efficiency gains. They concern different policy scenarios and should be assessed separately. [1,2,17]

Opportunities extend across domestic and established international markets. Trade agreements provide an additional route to new trading relationships.

Regional trade agreements and economic partnerships create opportunities for businesses. For example, World Bank modelling estimates that full implementation of the African Continental Free Trade Area could raise African income by 7%, or about US$450 billion, by 2035 relative to a baseline without the agreement. [17] Firms must identify customers, establish trusted relationships and serve unfamiliar markets before they can benefit.

Distance, language differences, unfamiliar requirements and the cost of establishing reliable local contacts make entry into new markets difficult. The staff time and specialist support required can put otherwise attractive opportunities beyond an SME's practical reach.

Digitalisation offers a practical, scalable route to these markets. Market intelligence, multilingual visibility, virtual trade events and trusted business matching can reduce the cost of finding and engaging potential partners. These capabilities need to connect with practical support for market entry and subsequent transactions.

For micro-enterprises and cooperatives, regional markets can provide a route into larger trading networks. Aggregating supply and sharing services can help them meet order volumes and buyer requirements that would be difficult to manage individually.

Workforce Adjustment and Trade Expansion

Increased trade can also help businesses redeploy staff as digitalisation reduces manual administration. Retraining can support moves into market research, customer development and managing new trading relationships, although new opportunities will not automatically replace every displaced role.

Training and Mentoring for Practical Adoption

Training should help participants apply digital tools to their own trading activities. Accessible explanations, demonstrations and mentoring through a first transaction can help producers move from awareness to practical use.

Cooperatives can share the cost of training and arrange local assistance for members. Support in relevant languages and formats can help producers with limited connectivity or digital experience participate in the same trading opportunities.

Value Creation and The Distribution of Benefits

Digitalisation can help businesses identify opportunities to change supply chains so that producers undertake more value-adding activities and retain a greater share of the returns.

Better market information and connections with potential buyers can help establish the business case before investment. They can also support implementation by connecting producers with customers for their higher-value output.

Steven Pope's LinkedIn post illustrates this opportunity through the Kenyan tea trade. It estimates that farmers receive just 11% of the final value of a cup of Kenyan tea. It advocates investment in processing, packaging, cold chains and branding in producing countries, enabling more value to be added and retained locally. [18,19]

Kenyan public-sector sources also identify opportunities in processing, packaging and branding. [20,21] The potential benefit therefore extends beyond more efficient transactions to changing where value is created and who receives it.

Progressing into Higher Value Supply Chain Activities

Suppliers can use buyer feedback to identify the next value-adding activity they could undertake. A cooperative supplying a bulk commodity could assess grading, processing or packaging against the specifications and prices buyers will accept. The aim is to increase the margin retained by producers after the additional costs.

Progression requires skills, facilities and finance suited to the proposed activity. A DBC can connect producers with technical advisers, testing services, equipment providers and prospective buyers so they can establish the business case before committing to investment. [5]

Improving Access to More Affordable Finance

The ADB's January 2026 release estimated the global trade finance gap at US$2.5 trillion in 2025. It described a continuing need to expand finance for smaller suppliers. This provides context for improving access to working capital through better transaction information and suitable finance providers. [3]

A confirmed order can support an application for pre-shipment finance, while a buyer-approved invoice can support receivables finance after delivery. Better records can reduce verification costs, and arrangements based on a stronger buyer's credit can improve terms for eligible suppliers. [4]

Moving into processing, packaging or other higher-value activities often requires longer-term finance. Development agencies and philanthropic funds can help finance preparation, shared facilities or appropriately structured risk-sharing arrangements alongside qualified lenders. Funding should match the expected cash flows from the activity.

Access to cheaper finance depends on the risk of the transaction, enforceability, currency exposure and lender competition. Suppliers need to compare total costs and repayment terms, while prompt buyer payment can reduce the amount they need to borrow.

Changing Requirements and Supplier Readiness

Why Timely Preparation Matters

Digital capability requires continuing development as regulations, commercial requirements, technologies and trading practices change. The increasing pace of change and overlapping implementation timetables make timely preparation essential.

Appendix B sets out selected legal and operational developments relevant to international trade. [10,11,12,13,22,15]

Preparation extends beyond a business's own systems. Larger customers also depend on reliable information from suppliers, whose readiness can affect the wider supply chain. Businesses therefore need time to organise data, train staff and coordinate with trading partners. [16,6,15]

Wider legal recognition of electronic trade records and greater standardisation can extend the use of digital processes across supply chains. Businesses considering investment cycles and longer-term commercial strategies need support from their digital service providers to plan for these developments. [22,1]

Law Is Enabling and Shaping Digital Trade

Legal developments can impose additional compliance costs through digital information and reporting duties, including measures to protect consumers and reduce fraud. However, they also support the digitalisation of trade, for example:

1. Recognising electronic transferable records through applicable national legislation. [22]
2. Supporting trusted digital identification and the exchange of verifiable claims, subject to applicable law. [23]

A Shared Responsibility for Supplier Readiness

Meeting one buyer's digital requirements does not ensure that a supplier operates efficiently across its business. Purchasing, inventory, logistics and invoicing may still depend on disconnected systems and manual processes. Larger customers therefore have an additional commercial interest in supporting broader digitalisation by suppliers, which can indirectly improve reliability, service and costs across their supply chains.

Scope 3 emissions create an additional information requirement. Buyers assessing or reporting emissions across their value chains need relevant emissions data from suppliers, beyond the information required to purchase their

products. Their reporting capability therefore depends in part on the quality and availability of supplier information. [24]

Conditions for Effective Digital Trade Adoption

Trust as a Condition for Digital Commerce

- **Confidence in counterparties.** Businesses need confidence in an organisation's identity, its representatives' authority and the purpose of contact. Familiar relationships support engagement but remain vulnerable to impersonation and fraud. [25]
- **Trusted participation.** Proportionate identity and authority checks, clear contact permissions and accountable handling of abuse should underpin participation in any coordinated trading environment.
- **Reliable supporting information**. Company Digital Vaults can facilitate onboarding and due diligence through controlled access to source documents. Verifiable credentials can support the exchange of identity and other claims, but verification does not replace assessment of their source, validity or commercial significance. [23]

For a hard-pressed smaller business with many suppliers and customers, participation in a reliable system can reduce repeated verification. The business still needs to assess the counterparty and the risks of the proposed transaction.

Considerations for End-To-End Adoption

- CargoLedger's experience illustrates the dependence of digital trade on independent supply-chain participants. Any one participant's inability or unwillingness to use a digital process can interrupt an otherwise connected workflow. [26]
- The FIT Alliance's 2026 electronic bill of lading (eBL) survey similarly identifies interoperability and platform fragmentation as leading concerns. International cooperation is helping address cross-border legal barriers through UNCITRAL's Model Law on Electronic Transferable Records (MLETR), which provides a common basis for recognising electronic transferable records through national legislation. [7,22]

  Achieving end-to-end digital trade therefore requires coordination across participants, systems and jurisdictions. Partial digitalisation can nevertheless deliver benefits while wider adoption progresses. [26]

Building on Existing Interoperability and Finance Infrastructures

Existing frameworks and emerging initiatives offer foundations for wider adoption. Peppol and DIFO illustrate the opportunities in document exchange and access to finance.

- Peppol combines common document specifications, secure exchange and governance. OpenPeppol[1] maintains the framework, through which buyers and suppliers connect using their chosen accredited service providers. [8]
- DIFO - Digital Invoice Finance Origination - aims to use digitised, standardised invoice data to support verifiable due diligence and SME-finance risk assessment. [27]
- SWIFT offers existing infrastructure for payment messaging using ISO 20022. Its shared-ledger initiative aims to support interoperability and cross-border payments using tokenised deposits. These developments can support more efficient settlement as participating financial institutions adopt them. [28]
- GS1 standards support identification and the exchange of supply-chain event data. These common records can improve traceability as consignments move between trading partners. [29]

[1] OpenPeppol does not endorse a particular DBC service.

These capabilities can be brought together to provide to trading entities data, finance and physical assurance all in the same digital environment, reducing replication of data, easing risk management and reducing costs.

AI as a Supporting Capability

Trade digitalisation does not depend on AI. However, effective use of AI in trade depends on reliable digital information and connected processes, making trade digitalisation an important foundation for its application.

Designing for Data Security

Digital trade requires secure handling of commercial information, with clear access permissions, reliable records and controls over how data is shared and used. Where AI is involved, additional controls should govern access to business data, its use for model training and authority to act. [25,30,31]

Designing and maintaining these safeguards often requires expertise beyond an SME's internal resources. Trusted specialist providers should supply this capability, supported by clear contractual responsibilities and appropriate assurance. Businesses retain responsibility for their decisions and authorised use of their information. [30]

Data Sovereignty

Data sovereignty concerns control over where data is stored and managed, who can access it and the conditions under which it can cross borders. Requirements differ between jurisdictions. Delivery arrangements should therefore establish applicable rules and provider responsibilities before information is exchanged. [1]

Barriers to SME Adoption

Many legal, technical and commercial components of digitalised trade are already available. What is missing is a coordinated approach that helps smaller businesses understand the opportunities, access suitable solutions and put them to effective use.

OECD research identifies gaps in the policy environment for paperless trade and the importance of interoperability. [1] UK business-support evaluations and the LSE Trade Policy Hub's review provide country examples of confusing offers, limited awareness and implementation difficulties. [32,33,16,9] These findings inform the coordination proposal, while local needs require assessment in each delivery setting.

Addressing these difficulties requires coordination across four connected areas:

1. **Fragmented provision:** businesses face separate offers and incompatible systems, making suitable solutions difficult to identify and connect.
2. **Reaching SMEs:** businesses need clear explanations of the benefits, communicated through relevant and accessible channels.
3. **Building trust:** concerns about identity, authority and credibility can prevent engagement, particularly when approaches are unsolicited. [25]
4. **Practical adoption:** businesses need time, skills, finance and support to select, implement and maintain suitable solutions.

Micro-enterprises and cooperatives can also face unreliable connectivity, language barriers and limited access to training or affordable specialist assistance. A community serving these participants needs practical local support alongside its digital services.

Our partnership is set up to provide coordination, leadership and practical assistance so smaller businesses can participate more fully in the digital economy.

Why Potential DBC Owners Have Yet to Act

Our analysis identifies a gap between the capacity to coordinate adoption and the commercial incentive to do so. Organisations with reach and resources understandably focus on their core activities. Coordination will remain

peripheral unless it offers a clear business return and receives funding, staff time and an explicit mandate. A viable delivery model must make these incentives and responsibilities concrete.

Why Demand for Coordination Does Not Emerge from Below

Potential beneficiaries do not necessarily recognise the aggregate opportunity. SMEs are more likely to focus on immediate business needs, while consumers rarely see how fragmented trade processes affect the prices they pay. Even where benefits are understood, there is no obvious organisation to approach with the remit, resources and commercial incentive to coordinate delivery.

Digital Business Communities (DBCs) as a Coordinated Response

The preceding analysis identifies four requirements for effective SME adoption:

1. **Trusted reach**: communicating trading opportunities, new economic partnerships and adoption requirements through credible, established channels.
2. **Coordinated services:** bringing together relevant knowledge, solutions and providers.
3. **Practical implementation support:** helping businesses select, adopt and use suitable services.
4. **Sustained participation**: proactive outreach, useful introductions and implementation follow-up to turn initial interest into continuing use as needs and requirements change.

The research and analysis reviewed in this paper indicate that coordinated provision across all four areas could address many of the barriers identified. [32,33,16,6,9,1] Our analysis proposes a DBC as a practical framework for bringing these elements together.

In this paper, a DBC is a business community whose participants access coordinated digital knowledge, services and trading opportunities.

Starting from an Existing Business Community or Corporate Customer Base

Establishing a new community from scratch requires substantial time and investment. Attracting the first participants is particularly difficult when there are few businesses with which to interact or trade.

The Digital Business Community Owner (DBCO) should therefore have a sufficiently large and varied client or membership base to support useful activity from launch. Established relationships provide a route to explain the benefits, encourage participation and introduce relevant services.

Customers need not already interact with one another. Shared access to useful services and trading opportunities can provide the basis for developing the community.

The Four Defining DBC Characteristics

1. **A single point of digital reference** for relevant knowledge, requirements, services and support.
2. **Opportunities to increase trade** through business matching, customer and supplier introductions, and access to new markets.
3. **Proactive central management** to maintain information, coordinate services, assist implementation and sustain participation.
4. **A critical mass of participants from launch** to generate useful interactions, relevant trading opportunities and demand for services.

A designated management team should turn the DBCO's existing reach into active participation. It should welcome participants, identify their needs, organise communications and introductions, and follow up on service uptake.

Regular feedback and participation data should guide improvements. Technology provides the means; critical mass and proactive management together turn access into productive activity.

Ownership and Potential DBC Owners (DBCOs)

A Digital Business Community needs an owner able to organise, finance and sustain its delivery, drawing on specialist providers. A prospective DBCO should have:

- A sufficiently large and varied client or membership base to support useful activity from launch.
- A clear commercial interest or development mandate in promoting SME growth.
- The authority, organisational capacity, commercial expertise and finance to build, launch and manage the DBC, including a dedicated team and continuing operating budget.

Potential owners include telecoms providers, banks, large buyers and federated professional-service networks.

The Commercial DBCO Investment Case

The commercial investment case can be built around these three elements:

1. Existing assets can lower the cost of establishing a DBC. Customer and supplier relationships provide routes to participation, while suitable existing digital infrastructure, service channels and support capabilities can be reused[2].
2. A DBC can strengthen commercial relationships, differentiate the owner's offer and improve supply-chain performance.
3. A DBC can generate additional revenue from the owner's existing customer or supplier base through subscriptions, paid services and provider arrangements.

The Economic and Development Investment Case

Wider economic benefits can also justify investment in a DBC. These can accrue nationally or to a defined group, such as agricultural commodity producers.

For these groups, training, access to buyers and affordable finance can support progression into higher-value activities and increased local earnings. These benefits can provide an investment case for public bodies, development agencies and philanthropic funds.

The Role of Chambers of Commerce, Trade Associations and Cooperatives

Chambers of commerce, trade associations and large cooperatives can own and operate DBCs where they meet the ownership requirements set out above. Otherwise, they can support delivery through collaboration where their members' interests align.

The Role of Development agencies

Development agencies, NGOs, charitable organisations and philanthropic funds can also act as owners or finance capable local institutions to lead delivery.

Selecting Services and Solution Providers

A DBC should bring together recommended services and specialist providers across the needs of its participants. These include digital trade solutions, training and mentoring, a business knowledge centre, market intelligence, virtual trade events and business matching.

Recommendations should reflect business needs, service quality, interoperability and affordability. Active administration should help participants identify suitable support and put it to effective use.

[2] Specialist partners can supply additional trade expertise and services. Each prospective owner should assess which assets are transferable and what further investment is required.

Provider-selection criteria and relevant commercial relationships should be transparent to participants.

Viable Scale and Connections Between DBCs

A DBC needs sufficient active participation and income to sustain useful services and cover continuing costs. An established sector, regional, professional or corporate community can provide a reasonable starting base. It is important to note that viability depends on engagement and commercial performance, rather than a fixed membership threshold. Indeed, excessive scale can complicate administration.

Multiple DBCs can coexist and, by agreement between their owners, connect to extend business matching, knowledge sharing and access to services. These connections require compatible systems and agreed governance, but not common ownership.

There is therefore no requirement for a single national or government-sponsored DBC. Individual DBCOs can organise delivery at a viable scale, supported where appropriate by development or philanthropic finance.

Making DBCs Financially Sustainable

Commercial Incentives and Funding

Sustainable coordination requires a viable case for each participant. DBCOs need funding that justifies investment and continuing administration. Smaller businesses need benefits that outweigh the costs of adoption and use, while service providers need viable remuneration.

Initial investment must be matched by recurring income or committed funding to sustain delivery. Subscriptions, paid services and provider arrangements can generate revenue, with stronger customer relationships and improved supply-chain performance adding to a commercial owner's return.

Development agencies and philanthropic funds can finance initial coordination, training and participation by underserved businesses. They can also support a local owner's operating costs where the development case justifies continuing support. The funding arrangement needs to identify who will meet recurring costs and how services will remain accessible.

Leadership and Delivery Responsibilities

A DBC provides leadership, funding and an explicit mandate to develop and sustain the community. A designated management team needs time, resources and clear operational responsibilities to deliver the activities described above.

The DBCO does not need every capability in-house. IC4DTI, Heterodox Global Advisory, universities and other specialist organisations can contribute research, interpretation, education and technical expertise. Independent providers can supply digital solutions, business services and implementation support. [34,35]

Reusing infrastructure does not by itself establish trade readiness. Existing onboarding provides a starting relationship, while trade, finance and regulated services can require additional verification. Responsibilities for specialist services, information and participant support must be agreed before delivery.

Delivery arrangements should distinguish the DBCO's community-management role from each provider's responsibilities for its own services and information. Contracts should define these responsibilities, participant support and escalation routes.

How Other Organisations Can Support Adoption

Organisations outside the DBC's delivery structure can help accelerate adoption:

- **Government and public agencies** can clarify legal requirements, support common standards and ensure public processes work digitally.

- Chambers, trade associations, cooperatives and NGOs can communicate opportunities, identify shared needs and encourage participation by smaller businesses.
- **Large buyers, banks and professional advisers** can identify readiness gaps, direct businesses towards suitable support and help finance improvements where commercially justified.

Development agencies and philanthropic funds can finance training, supplier progression and access to finance. Where they fund a local DBCO, responsibilities for delivery and continuing operation should be agreed with that institution.

- Trade intermediaries, carriers, ports and customs authorities can help align data exchange with their operational requirements.

These contributions can strengthen delivery through local institutions, corporate networks and specialist providers.

Assessing DBC Delivery and Outcomes

A DBC should use statistical analysis by independent evaluators to assess participation, service use, business introductions and its own commercial performance. These measures can guide improvements, but do not by themselves establish the economic benefits achieved by participants.

Individual businesses will hold their own performance data and are unlikely to share detailed commercial information with the DBCO. Assessment of wider outcomes should therefore draw on voluntary feedback, surveys and case studies, with clear distinctions between recorded activity and reported business benefits.

Conclusions

Digitalised trade offers substantial benefits to businesses and the wider global economy. Realising these benefits requires effective adoption, beyond the availability of technology or compliance with individual requirements. Businesses face three connected imperatives: compliance, competitiveness and trade expansion.

Many of the necessary capabilities already exist, but fragmented provision, limited awareness, lack of trust and implementation difficulties obstruct adoption by smaller businesses. The principal challenge is to bring knowledge, services and practical support together through channels that businesses can access and trust.

Our analysis identifies Digital Business Communities as a practical framework for meeting this challenge. Built on established business relationships, they combine a single point of digital reference, increased trading opportunities, proactive management and a critical mass of participants from launch. Continuing outreach, implementation support and follow-up are essential to sustained participation.

Commercially motivated owners and organisations with development mandates can organise and finance this delivery, drawing on external expertise and specialist providers. Additional service revenues, stronger customer relationships and improved supply-chain performance can provide reasons to invest. Individual DBCs can operate at a viable scale and connect where their owners see mutual benefit, without requiring a national platform or government sponsorship.

The opportunity calls for timely action. Regulations, technologies and trading practices continue to develop, increasing both the pressures on businesses and the opportunities available to them.

By accelerating adoption, this approach could help businesses participate in the wider opportunities identified by international research. For micro-enterprises and cooperatives in developing economies, training, progression into higher-value activities and access to affordable finance can help turn trading opportunities into increased local earnings. [1,2,17,4,5]

Readers wishing to discuss the opportunity or explore the development of a Digital Business Community are invited to contact one of the authors listed below.

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Third-party organisations, individuals and sources are cited for evidence, context or attributed observations. Their inclusion does not imply review, approval, endorsement or commercial commitment. References to individuals do not establish endorsement by their organisations.

Proposed solutions and conclusions are the authors' analysis unless expressly attributed. First-party descriptions state the source's own position; they are not independent evaluations of achieved results. The institutional explanation draws on stakeholder observations. It is not a representative assessment of organisational practice.

The paper's contribution is to integrate established findings into a practical proposition for commercially motivated owners and institutions with development mandates. It presents a strategic synthesis and delivery proposal, rather than a new theory or an empirically validated model. [36,37]

The Kenyan example draws on public posts and institutional sources. The 11% figure is Steven Pope's attributed estimate. [18,19]

Country-specific research is used to inform the coordination argument. UK studies and guidance retained here provide evidence or practical examples within their stated jurisdiction; they do not establish global adoption rates or replace applicable local law.

Appendix A - Practical Meaning and Capabilities of Trade Digitalisation

This appendix sets out the authors' proposed working framework for domestic and international trade digitalisation. It is a synthesis for discussion, not a prescribed standard, statutory checklist or certification scheme. Requirements depend on business role, products, markets, counterparties and the workflow being assessed. [16,6,22,8,9]

Working Definition

Trade digitalisation is the coordinated use of reliable, reusable digital information to conduct and manage trade within and between businesses and relevant authorities. It connects commercial, financial, logistics and compliance processes through compatible systems, with appropriate legal recognition, permissions and controls.

The practical test is whether information can pass through a trading process, be accepted by the next participant and support the required action. Unnecessary re-entry, paper handling and repeated verification should be reduced. A workflow can be assessed in stages; useful partial improvements do not require universal adoption. [6,26,22,8,9]

Three Levels of Implementation

Digital records place information in electronic form, including PDFs, spreadsheets and scans. Digital business processes use information within a firm's systems. Connected digital trade enables independent participants to exchange, accept and reuse information across a relevant transaction or supply chain.

Each level can create value. Advanced internal processes do not establish connected implementation across counterparties. Conversely, remaining friction does not show that every business needs every technology or that a headline economic estimate is achievable by each firm.

Capabilities to Assess

"Full" digitalisation is not a fixed endpoint or a requirement to adopt every available technology. The objective is proportionate improvement across relevant activities as needs and capabilities change. Partial benefits remain valid; further opportunities and net returns should be assessed separately.

Compliance is one dimension of readiness. Meeting legislation or one buyer's requirements does not establish that all worthwhile improvements have been captured. Assess relevant activities and counterparties, including processes outside the selected customer relationship.

Identity and Authority

Establish the parties' identities and who can represent them, approve actions or access information. Verification must be proportionate and does not guarantee creditworthiness or conduct. [25,23]

Reliable Business and Product Data

Maintain accurate identifiers, records and supporting evidence that can be reused for relevant purposes. Specify ownership, provenance, review responsibilities and access permissions. Apply relevant data-protection requirements when personal information is involved. Product and reporting requirements vary. [12,13,24,15,30]

Connected Commercial Processes

Exchange and process enquiries, quotations, orders, invoices and related records through compatible arrangements. Assess repeated entry, reconciliation and acceptance by customers and suppliers. [1,6,8]

Logistics and Trade Documents

Exchange and verify required transport, customs and trade records. Where documents embody rights, establish reliable control and legal recognition for the relevant handovers and jurisdictions. [22,10,6]

Payments and Finance

Connect transaction evidence, invoicing, reconciliation and financing processes where commercially appropriate. Measure payment delays and financing costs separately. Credit decisions still depend on lender requirements and risk assessment. [27,9]

Distinguish working capital for existing orders from investment in processing, equipment or shared facilities. Compare total financing costs, buyer payment terms and the risks borne by producers. [4]

Compliance and Assurance

Produce and share evidence required for applicable tax, customs, product, environmental and customer requirements. Distinguish statutory obligations from buyer specifications and future requirements. [1,11,12,13,24,15]

Service Selection and Continuity

Select services that fit the business need and existing systems. Assess interoperability, support, affordability and the ability to retrieve records or change providers. Clarify responsibilities at handovers between providers and trading partners. [16,6,8,30]

Continuing Operation

Provide security, permissions, trained staff, exception handling, support and performance monitoring. Assign responsibility for maintenance, data retention and changing requirements. Where AI is used, govern access to information, model-training use and authority to act. [14,16,6,25,30,31]

Knowledge and Implementation Support

Identify the knowledge, training, mentoring and specialist assistance needed to select and use suitable services. Provide accessible explanations of changing requirements and help businesses progress from interest to implementation. [32,16,6,9]

For micro-enterprises and cooperative members, include local language assistance and mentoring through practical transactions. Connect training with the quality, production and commercial skills needed for progression into higher-value supply-chain activities.

Market Discovery and Trade Expansion

Assess market research, multilingual visibility, virtual trade events and trusted business matching for customer and supplier development. Connect suitable opportunities with due diligence and transaction support, including relevant trade-agreement requirements. [17] Distinguish introductions and reported additional sales from administrative savings.

Workforce Capability and Adjustment

Identify affected tasks and assess staff training and redeployment needs. Explore opportunities in market research, customer development and managing trading relationships. Employment outcomes are matters for participating businesses; any DBC-level assessment should use voluntarily shared information.

Community Readiness and Commercial Sustainability

For community delivery, assess the reachable customer or supplier base, immediate value for participants, expected service use and continuing administration costs. Test owner revenues, committed funding and participant incentives. Existing participants need not already interact, and no universal minimum community size is assumed.

Applying The Framework

Begin with a real workflow and its counterparties. Identify systems already in use, manual handovers, data gaps and acceptance constraints. Agree the improvement sought, who must participate, responsibilities, costs and measures of success. Preserve suitable existing systems and assess net value before expansion.

Appendix B - Economic Estimates And Selected Legal Developments

Selected reference map as at 5 November 2026. Applicability depends on product, jurisdiction, operator and transaction. An enabling law or application date is not a universal mandate. EU examples concern relevant EU market access, transactions or activities; the applicable responsibilities of overseas suppliers must be established for each regime. Sources and qualifications appear in Appendix C.

Source and scenario	Estimated opportunity	Scope and time basis
OECD 2025 [1]	Up to 18% higher global goods exports.	Modelled level change associated with a 10% improvement in selected trade facilitation indicators. Includes documentation and agency cooperation alongside automation.
WTO 2015 [2]	Up to US$1 trillion in additional global merchandise exports per year.	Historical full-implementation scenario for the Trade Facilitation Agreement. Wider reforms than digitalisation alone; no new DBC forecast is inferred.
World Bank 2020 AfCFTA [17]	7% higher African income, about US$450 billion, by 2035.	Income level in 2035 relative to a baseline without the agreement. Broader trade integration scenario, including trade facilitation.
ADB January 2026 release [3]	US$2.5 trillion global trade finance gap in 2025.	Estimated unmet financing demand across the global market. A financing constraint, not a growth or savings estimate.

How To Describe The Macroeconomic Opportunity

The estimates summarised above concern different scopes and appraisal assumptions and should not be added together. In particular, the trade facilitation scenarios include legal, administrative and border reforms that community services alone cannot deliver.

These estimates provide context for the opportunity. They do not establish a forecast for a DBC, an individual business or a particular country. The financing gap measures unmet demand and cannot be treated as an estimate of additional output.

Released working capital is distinct from an annual operating-cost saving. Financing-cost reductions and additional sales should also be assessed separately to avoid double counting.

Selected Legal and Operational Developments

Development	Status and scope	Implication
Electronic transferable records [22]	UNCITRAL MLETR provides a model for national legislation. Legal recognition depends on relevant jurisdictions and the transaction.	Check reliable control, integrity, governing law and acceptance at each handover.
Structured invoices and digital reporting [11,8,1]	National systems and timetables differ. EU ViDA provides one regional example of phased change.	Select compatible providers and check the requirements of each market.
Electronic freight information [10]	EU eFTI establishes a framework for electronic freight information used by authorities.	Check platform, authority and transaction requirements. Freight data and title transfer have distinct legal functions.
Product and battery information [12]	EU product information and battery passport obligations depend on product category, legal role and relevant measures.	Suppliers serving affected markets need reliable product records and agreed data responsibilities.
Packaging and traceability [13,15,29]	EU packaging and deforestation rules illustrate product and supply-chain information requirements. GS1 offers shared identification and event-data standards.	Check applicable product scope and evidence requirements. Standards support data exchange but do not establish compliance on their own.
Digital identity and data governance [14,23,30,31]	Verification, privacy, AI and cross-border data requirements vary by jurisdiction and use case.	Establish identity, access, permitted use and applicable data rules. Obtain local advice where required.

Appendix C - References and Status of Information

References support the main text and appendices. Official sources establish legal and policy status; research findings apply within their stated scope. Stakeholder observations and the authors' proposals are identified separately. New global economic and infrastructure sources were checked for this version on 5 November 2026. Sources retained from the UK paper preserve their stated scope and retrieval qualifications.

[1] OECD. The Digitalisation of Trade Documents and Processes. Going Paperless Today, Going Paperless Tomorrow, Trade Policy Papers No. 297, 2025. Modelled trade effects of coordinated policy reforms. The up to 18% result is a scenario estimate, not an annual growth rate or an estimate of DBC impact. | Source

[2] WTO. World Trade Report 2015 and Trade Facilitation overview. The full-implementation scenario projects up to US$1 trillion additional global merchandise exports per year. It concerns broad trade facilitation reforms and is retained as a historical opportunity estimate. | Source

[3] Asian Development Bank. Demand for Trade Finance to Rise Amid Supply Chain Realignment, 15 January 2026. Reports an estimated US$2.5 trillion global trade finance gap in 2025. The release describes data and opinions collected during 2023–2025. It measures unmet demand across the market, not the amount available to any particular group. | Source

[4] International Finance Corporation. Scaling Up Supply Chain Finance Could Unlock Billions for SMEs, 2025. Explains financing constraints affecting emerging-market suppliers and the role of financial and advisory support. Supports the finance mechanism and market context; no universal reduction in borrowing costs is established. | Source

[5] World Bank. World Development Report 2020. Trading for Development in the Age of Global Value Chains. Provides context for growth, jobs and development through value-chain participation, subject to policy and institutional conditions. The practical DBC proposals remain the authors' analysis. | Source

[6] Ipsos Electronic trade documents SME exporter research Published 6 July 2026. Executive summary pp 8–10 and methodology pp 15–18. Fifteen SME exporters and eight intermediaries interviewed in February–March 2026. Awareness, capability, interoperability and acceptance barriers; qualitative findings, not statistically representative adoption rates. | Source

[7] ICC and FIT Alliance. Electronic Bill of Lading adoption grows as focus shifts to interoperability, 21 October 2026. Industry survey statement; supports fragmentation and acceptance barriers, not DBC effectiveness. | Source

[8] OpenPeppol. About and Peppol Interoperability Framework, accessed 31 October 2026. Primary descriptions of document specifications, governance, accredited service providers and the four-corner model. However, no completed DBC–Peppol integration is being claimed. These comments simply support the infrastructure description, not endorsement of the paper or a DBC. | About Peppol | Interoperability framework

[9] Garnizova, E., Strong, L. and Fisch, T. T. V. Rapid Evidence Review on the SME Capability and Digitalising Trade with ETDs. LSE Consulting Trade Policy Hub, report dated June 2026; published by DBT on 6 July 2026. Review of 17 sources from 2017–2025 and five expert interviews. Scope is electronic trade documents. Supports awareness, interoperability and coordination findings; economic figures are projections. | Source

[10] European Commission eFTI implementation. Operational timetable and legal framework. | Source

[11] Council Directive EU 2025 516. VAT in the Digital Age and phased national implementation. | Commission implementation overview | Source | Additional source

[12] Ecodesign for Sustainable Products Regulation EU 2024/1781, Articles 4 and 9–12: product-specific measures determine passport obligations. Battery passports have a separate legal basis in Regulation EU 2023/1542, Article 77; specified categories from 18 February 2027, with distinct dates for particular information requirements. | Source | Additional source

[13] Packaging and Packaging Waste Regulation. Regulation 2025/40, including Articles 12 and 71. | Source | Additional source

[14] European Commission. AI regulatory framework and implementation overview. Scope, legal role, risk classification and phased obligations require assessment for each application. Cited as an EU example with potential relevance to suppliers and providers serving that market. | Source

[15] Council of the European Union and Regulation (EU) 2023/1115. Deforestation-free products framework. Product scope, market activity and operator role determine responsibilities. Overseas suppliers can need to provide evidence to covered buyers. Consult current consolidated legislation and implementation guidance for applicable dates. | Source | Additional source

[16] RSM Help to Grow Digital final evaluation Published 18 January 2024. Report p 38 discusses awareness, accountants, chambers and routes to market; p 57 illustrates implementation complexity and demand for assistance. Mixed-method evaluation; small interview and follow-up samples limit generalisation. | Source

[17] World Bank. The African Continental Free Trade Area. Economic and Distributional Effects, 2020; institutional summary dated 27 July 2020. Full implementation could raise African income by 7%, about US$450 billion, in 2035 relative to the baseline. This is an economy-wide trade integration scenario, not a digitalisation-only estimate. | Source

[18] Steven Pope. Who earns what in a cup of Kenyan tea, LinkedIn, 19 October 2026. The roughly 11% figure is Pope's estimate. The post is stakeholder analysis, not approval of this paper or a commitment. | Source

[19] Steven Pope. Adding value where it's grown a year of exploration, LinkedIn post; full text and link supplied on 29 October 2026. Describes a practical Kenya plan. Price comparisons and the approximately 5% value-added export share are not independently adopted as current sector statistics here. | Source

[20] Kenya Export Promotion and Branding Agency. Tea packaging value addition of Kenya tea, 25 January 2024. Independent primary institutional context for packaging, branding and diversification opportunities; not verification of Pope's wording. | Source

[21] Tea Board of Kenya. Terms of reference for product design development branding and packaging services, section 1.1. Discusses ownership changes, farmer returns and barriers to value addition; procurement document, not an impact evaluation. | Source

[22] UNCITRAL. Model Law on Electronic Transferable Records, 2017, overview and explanatory material. Model law, not automatically applicable domestic legislation. | Source

[23] W3C. Verifiable Credentials Data Model v2.0, Recommendation 15 May 2025. Issuer holder verifier model, security and privacy considerations. A credential expresses issuer claims; verification and trust decisions are distinct. This is a technical option, not evidence of completed DBC implementation or mandatory reliance on this standard. | Source

[24] Carbon Trust. Scope 3 guidance; GHG Protocol Corporate Value Chain Scope 3 Accounting and Reporting Standard, 2011. The standard supports value-chain emissions accounting and supplier engagement; it does not itself impose identical statutory duties on all SMEs. Carbon Trust | GHG Protocol | Source | Additional source

[25] National Cyber Security Centre. Business payment fraud and Phishing attacks defending your organisation, accessed 29 October 2026. Documents impersonation, fraudulent payment requests and layered organisational and technical defences. Establishes risk and mitigation principles, not a measured DBC effect or ranking of adoption barriers. | Source | Additional source

[26] CargoLedger. Statement on coordination constraints and partial digitalisation, approved for use by Roel Crooijmans. Roel is a CargoLedger shareholder involved in the company's strategy. This is an approved stakeholder observation, not an independently evaluated case study. (Roel also works on business development for OpenPeppol, where he supports engagement with public authorities and market participants on Peppol adoption and cross-border interoperability.) | Source

[27] Global Finance and Technology Network. Democratising Access to Finance keynote by Vittorio Di Bello (International Finance Corporation). Event organiser synopsis identifies Digital Invoice Finance Origination and its intended role in verifiable due diligence and SME-finance risk assessment; not a production deployment assessment. Accessed 29 October 2026. | Source

[28] SWIFT. Swift's Blockchain-Based Shared Ledger Progresses to MVP Implementation, 30 March 2026. Describes development of a shared ledger intended to enable interoperability between tokenised deposits for cross-border payments. A provider roadmap and infrastructure example, not evidence of universal availability or completed DBC integration. | Source

[29] GS1. EPCIS Standard, version 2.0, June 2022. Defines sharing of visibility event data within and across enterprises. Supports the traceability and data-exchange description; it does not certify product quality or legal compliance. | Source

[30] Information Commissioner's Office. Data sharing advice for small organisations; Information security checklist. Covers lawful sharing of personal data, accountability, provider assurance and controller–processor contracts. Personal-data rules are distinct from controls over all commercial data. Guidance notes ongoing updates following the Data (Use and Access) Act. | Source | Additional source

[31] Information Commissioner's Office. What are the accountability and governance implications of AI. Explains allocation of controller and processor responsibilities where AI processes personal data. General commercial confidentiality and agent authority also require contractual and operational controls. | Source

[32] DBT Backing your business evidence annex Updated 9 January 2026. Sections Business support fragmentation and Digital adoption describe inconsistent provision, difficult navigation, awareness gaps and difficulty finding suitable solutions and independent advice. A synthesis, not a new provider-market census. | Source

[33] Technopolis Evaluation of the Growth Hubs 2015 to 2020 Published 6 July 2023. Report p 52 discusses confusing messaging and competing offers; p 67 discusses awareness and access barriers. Independent evaluation combining interviews, administrative data and impact analysis. The cited navigation findings are qualitative, not national SME prevalence rates. | Source

[34] Teesside University support for C4DTI. The university identifies itself as a founding partner and describes research, training and legal support. This supports the description of intellectual capability; it does not establish endorsement by every institution named in this paper. | Source

[35] Teesside Digital Trade Testbed. University describes interdisciplinary digital trade capability, knowledge exchange and industry collaboration. | Source

[36] OECD (2026). SME Technology Adoption in the United Kingdom. OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris. Published 22 April 2026. Draws on desk research and fact-finding in Greater London, the West Midlands and the North-East. Supports the discussion of trusted intermediaries, peer learning and supply-chain relationships; not an evaluation of DBC delivery. | Source

[37] Rossi, F., Colovic, A., Ciappei, S. and Bonomi Savignon, A. (2026). Business models for digital innovation intermediaries: evidence from the digital innovation hubs initiative. Industrial and Corporate Change, dtag042. Published 22 July 2026. Qualitative interviews with 20 digital innovation hubs in Italy, Spain, France, Germany and the UK. Examines business models and governance in policy-driven digital transition; does not establish the viability of the proposed privately financed DBC model. | Source