INSTITUTE OF EXPORT & INTERNATIONAL TRADE

Trade data and digitilisation

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Foreword

Digitalisation is changing every aspect of how our society and economy functions. It has changed how we work, perhaps never more swiftly than during the pandemic, and it has changed how we interact with each other. While it is too much to say that it has eliminated distance, it has certainly made many people and places that were far away seem closer.

But trade has not been at the cutting edge of digital technologies. The accumulated build up of laws across assorted jurisdictions and, perhaps, a culture that looks to eliminate risk in transactions as far as possible has meant that change, which has come fast to some sectors, has been adopted much more slowly in international trade. That is not to say that there hasn't been progress, but it is happening more slowly than in other areas of economic activity. For example Bills of Lading, which trace their antecedents back to the 17th Century, still require so called 'wet signatures'.

It is because of that international failure to adapt that the opportunity before us is so huge. We can make up quite quickly for lost decades and then move forwards into the future. The Institute of Export & International Trade is not alone in that belief; the last few years have seen an explosion in interest in digitalising trade. Of course, there are big savings offered by the prospect of making trade more efficient through digitalisation but there are also new horizons for traders – in goods and perhaps more particularly services - opened up by what is now possible.

Trade has always been driven by advances in technology: in that respect the micro-processor stands alongside the wheel and the steam engine. Developed nations can now learn from the developing world where moves direct to mobile facilitated trade documentation are taking place.

What this Report does is to crystallise some of that thinking and break down the areas where trade is changing, the benefits that are available, and what that will mean for the wider economy.

Developed nations can now learn from the developing world where moves direct to mobile facilitated trade documentation are taking place.

Marco Forgione, director general, IOE&IT

Summary

International trade involves a multiplicity of actors, processes, and (copious) documentation. Digitalising trade is commensurately complex, involving not only digitalising processes and systems, but also ensuring their interoperability and synchronisation, nationally and internationally. Not surprisingly, progress has been slower than in many domestic parts of economies.

Digitalising international trade is a big undertaking, but the potential benefits are commensurately sized. This is particularly the case for the UK, where exports (two-thirds of which are goods, and one-third services) account for around one-third of GDP (with imports similarly large); digitalisation plays into a number of key areas of UK strength; and additional Brexit-related challenges are being faced, including an extra 270 million customs declarations per year.

Firms, sectors, and government stand to benefit from increases in efficiency – 'doing existing things better', and from the many opportunities that arise for new goods, services, and markets that will evolve alongside the technology-based backbone of digitalised trade. They include:

1. Lower costs of trade, including reduced delays at borders.

2. New combinations of goods and services and 'servitisation'.

3. Lower barriers to entry.

4. Economies of scale.

5. Wider supply of finance and insurance.

6. Reduced carbon footprints and improved sustainability.

7. Greater resilience to shocks.

8. Reduced theft, fraud, and tax evasion.

9. Growth in coverage and visibility of supply chains.

10. Better and speedier trade data.

Data flows not only have important effects at the firm, industry, and government level: they also produce quantitatively important effects on efficiency, growth, and overall performance at the macroeconomic level. They also facilitate the creation of new products, services, and combinations. Their total impact is thereby greater than the sum of their individual, microeconomic, parts.

The digitalisation of international trade is one component of this overall effect. Quantifying it however is not straightforward. But, at a minimum, full digitalisation of UK trade data, by reducing border delays by around 80%, stands to add over 1%, some £25 bn, to UK GDP.

Creation of a complete 'digital trade ecosystem' involving all G7 countries could add at least another 1% to UK GDP.

New products, services, and combinations will bring yet further gains, both direct and indirect, to GDP.

Put simply: in the area of digitalisation of international trade there is much to be put right, but also much to play for including enhanced productivity, increased exports, faster economic growth, and more jobs.

Recommendations

Government jointly with Business

- Develop a fully-integrated market-focussed national digitalisation plan in close coordination with business.
- Build on the DIT's five-point plan, unveiled in September 2021 and network of international agreements – many of which include digital trade provisions.
- Maximise multi-level business trade support across all areas where it is needed, including through increased awareness; training, skills development, and technical assistance; advice; and improved information delivery.
- Evaluate and build on best-in-class trade facilitation solutions from around the world.
- Make the law of England and Wales fit for digital trade and the best-choice of law for trade.
- Foster information exchange, including by ensuring that forums work effectively with private sector providers and other stakeholders.
- Foster interoperability and play a leading role in the setting of modern norms, rules, standards, protocols, and rulebooks on digital trade.
- Improve UK digital and technology infrastructure.
- Continue modernising the government sector with extensive joined-up e-services.

Business

- Become fully informed on all relevant dimensions of digitalisation, including laws and regulations, technologies, and detailed industry-specific information.
- Join trade bodies and groups of companies with aligned interests to exchange information.
- Seek out the training, skills development, technical assistance, and other support services that are available.
- Take strategic-level decisions and set board-level priorities so as to best take advantage of and benefit from digitalisation.

Introduction

Notwithstanding rapid growth in data, data flows, cross-border digital trade, and burgeoning new technologies, the digitalisation of international trade itself is proceeding only slowly and piecemeal. Most transactions, involving multitude actors and processes, continue for the most part to rely on manual interventions.

In the UK, as in other economies where international trade plays a big role, the benefits from the digitalisation of international trade will be particularly large. It warrants priority focus. Containing the additional costs that flow from Brexit and COVID-related supply chain frictions provide further reasons. Digital trade also stands to benefit less developed economies which have the opportunity to 'leapfrog' those dependent on legacy trade infrastructure.

Digitalisation however is complex and multi-layered, not least in terms of governance, and particularly in respect of services. To become a global leader in digital trade, progress is needed on many fronts, and will not be automatic: it is a big undertaking, both for government and business. To succeed, and quickly, a lot of things have to be got right.

The digitalisation of trade

The importance of trade to the UK

International trade is highly important to the UK. Exports and imports together amount to just over £1.2 tr, around 55% of UK GDP. But there is considerably more to the importance of exports and imports than that. From a macroeconomic standpoint, exports are unique in that not only do they contribute directly to aggregate demand and thereby to GDP, they also generate foreign exchange; support the exchange rate; enable economies of scale; and increase productivity and thereby real incomes.

Trade-led jobs are better paid and more productive.
The Board of Trade, March 2021.

Moreover, they are often produced by overseas firms that, having identified the UK as a commercially advantageous base from which to export, provide not only the requisite investment (FDI) and other financing, but also technical know-how and market access that might not have been available domestically.

Such is globalisation, that even the largest economies benefit from strong international trade. It is striking that what has historically been the world's largest economy – the US – has seen its share of exports in GDP rise from 5% in 1965 to around 27% today.

In the UK, exports support around 6.5 million jobs, three-quarters of which are outside London and spread across the country. Goods-exporting businesses are one-fifth (21%) more productive on average than those that do not export; and median wages in jobs directly and indirectly supported by exports are around 7% higher than the national median, helping with the levelling-up agenda and in reducing regional inequality.

What digitalisation is and what it is not

'Digital', 'digitisation' and 'digitalisation' mean different things to different people. In the context of international trade, common coherent definitions are elusive. That said, it is clear what digitalisation is not. For example, the ability simply to scan in a hand-filled-in form into PDF format and email it does not constitute true digitalisation, and is not what is being considered here.

True, or full, digitalisation in the context of international trade involves the digitalisation of all trade-related information flows. Thus full digitalisation:

- Enables the exchange of trade-related data, documents and electronic authorisations between relevant parties in the supply chain; and it:
- Encompasses a wide and growing range of related aspects of electronic commerce and trade management, from cybersecurity, privacy, and consumer protection, to legal, regulatory, and taxation requirements.

The digitalisation of trade

All this has to be underpinned by international interoperability, with all the co-operation and coordination that that implies.

A concise, but all-encompassing, definition of 'digital trade' is offered by the OECD/World Trade Organization (WTO)/IMF handbook:

> **All trade that is digitally ordered and/or digitally delivered.**

The scale and nature of cross-border digital trade

Definitions are not yet agreed; and the measurement of digital trade is not straightforward. Neither the scale nor the nature of cross-border digital trade are yet well understood. Official statistics and collection methods therefore do not yet capture accurately, coherently, or comprehensively the full extent and the monetary value of today's digitally-based trade.

Moreover, while digitalisation is important for trade, and trade is important for the diffusion of digital technologies, measuring the nature of the links, and thereby the scale of the policy challenge to enhance the digitalisation of trade, is also far from straightforward. Further, and separately from the digital element, the measurement of international trade itself is inaccurate (see Discrepancies in trade data below).

That said, a comprehensive organising framework to understand and measure digital trade's various components better is being led jointly by the OECD, the WTO, and the IMF. Until this nut is fully cracked however, poor measurement and the resulting lack of internationally-comparable statistics will continue to hamper decision making.

Growth in data and cross-border flows

However measured, both data and digital trade, facilitated by new technologies, new products, and new business models have been growing rapidly, both within and between countries. (*See figure 1*).

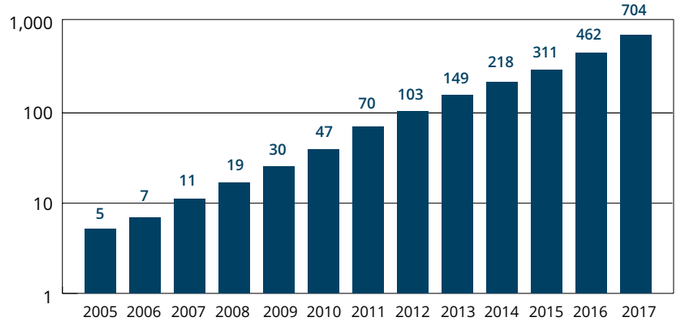
- Globally, over 2.5 quintillion (1×10^{18} or the width in metres of the Milky Way) bytes of data (2.5 billion gigabytes) are produced per day.
- The volume of data flows globally, through public internet and private digital networks, has increased about 45-fold in the ten years from 2005, and estimated to have doubled from 2019 to 2021.
  - Nearly 5 bn people – over 60% of the world's population – are online, and over 2 bn buy goods or services online.
- **Cross-border data movement** per capita is growing at around 50% per year.

FOUR PRINCIPAL TYPES OF DATA UNDERPIN TRADE

1. Data that are integrally bound up with imports and exports of goods and services, e.g. ships' manifests, customs documents etc.
2. Those that are the product or service that have value in their own right, e.g. data services, 'books', films, music etc..
3. Intra-company data that have little 'market' value, but considerable intrinsic value, e.g. real-time data received from aircraft engines in operation by the engine manufacturers.
4. Data that provide part of a company's overall service, but may also have modest market value, such as customer-location data relayed to a company or third party though a mobile-based app.

Figure 1: Total used cross-border bandwidth

Terabytes per second (Log scale)



Source: OECD Digital Economy Papers, August 2020, no. 297

DISCREPANCIES IN TRADE DATA

- Many extensive datasets are maintained and published by, among others: the World Bank, WTO, UN, UNCTAD, OECD, IMF, Eurostat, with base data provided by individual countries.
- Data published by the various sources differ however. Discrepancies can be large even for the same indicator, for the same year, for the same country.
- One basic reason is that two different approaches are used to estimate international merchandise trade:
  - One relies on customs records, with figures cross-checked with, and amended if necessary from, enterprise surveys data and other administrative records associated with taxation.
  - The second approach relies on estimating, or reconciling, trade data with macroeconomic data, including countries' National Accounts.

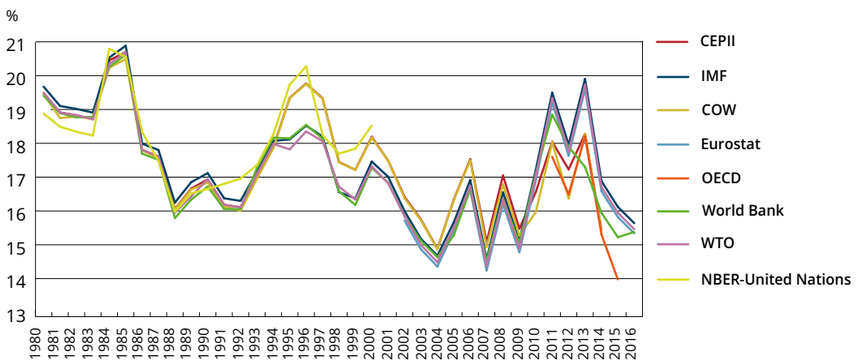
Discrepancies arising from differences in approach were highlighted recently by the different estimates of the post-Brexit reduction in EU-UK goods trade: Eurostat May 2021 figures for exports were 19% lower, and imports 11% lower, than two years ago.

Yet according to the ONS, exports were down by only 4%, and imports were down by 17%. These discrepancies arise in large part from differences in handling third-country inputs.

Other reasons that discrepancies arise include:

- Failure to adhere fully to protocols, even when the same accounting approaches are used.
- Inconsistent attribution of trade partners, due to a failure or inability to follow the guidelines on how to treat goods passing through intermediary countries for processing or merchanting purposes. One classic case is the attribution of imports from China and Hong Kong.
- Differences in customs and tax regimes, and between 'general' and 'special' trade systems (Statistical territories and actual country borders often do not coincide due to arrangements such as 'custom free zones').
- Use of different exchange rate, time of recording, confidentiality policies, product classification, and deliberate misinvoicing for illicit purposes.

Figure 2: Merchandise trade as a share of GDP, various sources



Source: Our World in Data

E-commerce

From a base of near zero twenty years ago, over 12% of the global physical trade of goods today is conducted via international B2B and B2C e-commerce; and approximately 50% of all traded services are enabled by information and communication (ICT) technologies.

The rapid growth of e-commerce in the trade of goods and services has increased the ability and willingness of companies and individuals to buy from beyond their home or neighbouring countries. Digital commerce exhibits only around half as much 'home bias' as does 'traditional', pre-digital, commerce.

Large e-commerce sites – including Alibaba, Amazon, eBay, Flipkart, and Rakuten – have morphed into major marketplaces that host millions of small enterprises around the world, turning them into 'micro-multinational' exporters.

In China, nearly 20% of import and export trade now takes place on digital platforms – approximately double the proportion in Europe.

In the UK, overseas sales via websites as a proportion of overall such business have been increasing strongly, and are slightly higher than the EU average.

- The share of UK businesses making website sales to EU countries increased from 6.2% in 2010 to 7.5% in 2018; and to non-EU countries from 5.0% to 5.7%.
- The sector in the UK with the highest proportion of website sales in 2018 was the retail sector, with 15.7% to the EU, and 10.9% to non-EU countries.
- In 2019, 33% of adults reported that they bought goods and services online from EU sellers (up from 15% in 2010), and 39% from non-EU sellers (up from 18% in 2010).
- In 2019, UK cross-border e-commerce sales of goods and services were worth around £120bn.

The growing role of ICT-enabled services

The growing importance of 'ICT-enabled' services, and the resulting changing nature of trade, stand to become increasingly pronounced as economies become proportionately more services-oriented.

Manufacturing meanwhile is increasingly incorporating services in its output. Indeed sometimes the services component can be the larger part – as for example with aircraft engines, where the revenues from post-sales service contracts outweigh, often by a multiple, those from the sale of the hardware.

The UK is a heavily services-oriented economy. The value of UK services exports that are digitally delivered is currently £207 bn per year, almost two thirds of total UK services exports. Exports of 'potentially ICT-enabled services' – services that, while not necessarily currently being delivered over ICT networks, could be at some future date − amounted in 2018 to £221 bn (74% of total services exports), and imports to some £107 bn (55% of total services imports).

The resulting trade surplus, £114 bn, represented a more than fourfold increase from 1997, being driven principally by robust growth in exports of financial and business services.

CONCLUSION. The pervasive and multidimensional nature of the technological disruptions driving digitalisation and change in economies and societies calls for a plan for digital trade that is economy-wide and aligned with other areas of policy. This includes, importantly, the 'levelling up' and 'sustainability' agendas. A framework that enables efficient, competitive, and resilient transitional change, and provides a clear direction of travel, can be provided only by government. This is an overarching policy recommendation under which all the recommendations follow.

RECOMMENDATION (GOVERNMENT):

» Develop a national fully-integrated digitalisation plan

Develop, in close coordination with business, a coherent, market-focused, digitalisation plan to create a predictable policy environment.

Modernising trade facilitation

Digitalisation of trade is proceeding slowly and piecemeal

A country's international logistics performance depends on the extent and modernity of its trade facilitation reform.
London School of Economics (LSE) and World Bank

An increasing proportion of output is being digitalised, in one way or another. Buyers, sellers, and intermediaries are increasingly relying on the speed, efficiency, and scale of the digital technologies, particularly in the B2C world. And data-intensive business services have been among the fastest growing components of world trade.

However, elsewhere digitalisation is proceeding more slowly, piecemeal, and by no means along the full length value chains.

National commitments to modernise across the four modes of services trade have been slow. This has been so across all four modes – cross-border trade (mode 1); consumption abroad (mode 2); commercial presence (mode 3); and presence of natural persons (mode 4) – in the Doha Round and in the General Agreement on Trade in Services (GATS); as well as bilaterally in preferential trade agreements.

Many customs administrations are still in the early stages of adopting ICT technologies and processes, with customs procedures often still relying on hard-copy paper documents and inefficient manual processes. According to the Global Express Association's Customs Capability, 63 of 139 countries (45%) currently do not accept, or electronically process, the data required for release of shipments in advance of their arrival − a global benchmark for efficient and secure customs processing.

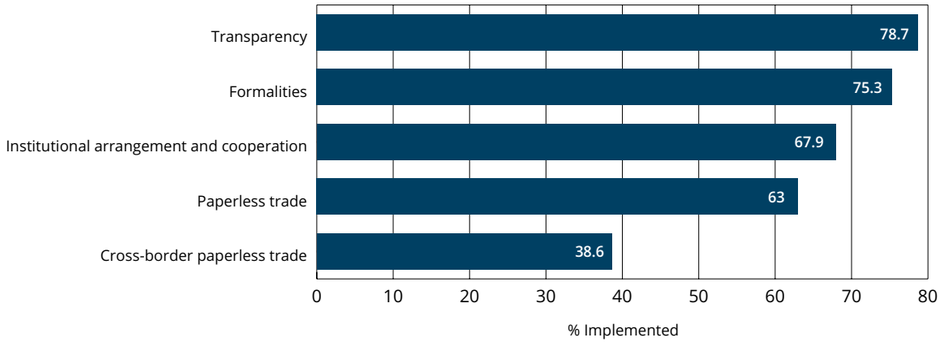
A 2019 UN global survey on digital and sustainable trade, which goes beyond the WTO Trade Facilitation Agreement (FTA) measures to include paperless and cross-border paperless measures, shows that steady improvement has been made in digital trade facilitation over the years, with the developed economies and the region of South East and East Asia leading.

- Globally, average implementation rates of paperless trade measures currently stand at around 60%, but measures related to the cross-border exchange of electronic data and documents are far lower, at under 40%. *(See figure 3)*.

- The UK scores 85% on paperless trade, and nearly 62% for cross-border paperless trade. 'Best-in-class' Singapore scores (100% and just under 78% respectively); Australia (100% and just under 84%); and New Zealand (96% and 94%). UK government is undertaking digital economic agreements with all three countries.

Some countries have been particularly innovative in integrating their trade digitalisation with the broader policies, including with respect to data security and privacy. Estonia's X-Road platform, for example, which operates with no centralised master database, is a world-leader in interoperability, enabling the nation's public and private sector e-service information systems to link up and function securely, efficiently, and in harmony; Singapore leads in a number of areas, including digital finance registries.

Figure 3: Global implementation of Trade Facilitation and Paperless (digital) Trade



Source: Unctad and Llewellyn Consulting

Notes: Based on data from the 2019 UN Global Survey on Digital and Sustainable Trade Facilitation

CONCLUSION. In most countries considerable scope remains to implement the full range of trade facilitation measures, and to learn from work done by others.

RECOMMENDATION (GOVERNMENT):

» Emulate 'best-in-class'

- Evaluate and build on the most effective trade facilitation solutions in operation around the world.

Document verification is one of the biggest issues in eliminating the use of paper. The law in many significant trade jurisdictions, including the law of England and Wales, does not recognise 'intangible things' as amenable to possession. Electronic trade documents, which are considered to be intangible therefore cannot be possessed and function in the same way as their paper counterparts: the so-called 'possession problem'.

A survey by the WTO and Trade Finance Global on the impact of COVID-19 on Distributed Ledger Technology (DLT) and trade observed that: "legal challenges were rated as posing a more pressing challenge than any of the other challenges" pointing to the "lack of legal clarity and enabling regulatory framework" in particular.

The Law Commission is undertaking much valuable work in this area and progress is being made at G7 and UK levels. In 2021, G7 digital and technology ministers committed to adopting electronic transferrable records in international trade transactions, and to a united support for open digital markets. And the Department for International Trade (DIT) has laid out a five-point plan on digital trade. The law of England and Wales is one of the pillars that makes the UK a global centre for finance, innovation, and international business. If the UK can fully digitise trade documentation, an important precedent will be set across all 54 Commonwealth countries and all contracts that use English law.

CONCLUSION. There is much at stake. The status that the law of England and Wales currently often enjoys as the law of choice in global commerce, and the benefits that it brings to the UK, will be at risk unless it evolves sufficiently quickly to reflect new technological possibilities.

RECOMMENDATION (GOVERNMENT):

» Make law of England and Wales fit for digital trade

- Jointly with the legal profession: Solve the 'possession problem'.
- Undertake multilateral diplomatic push to have the law of England and Wales recognised internationally as fit for digital trade.

A multitude of actors and processes

Moving to paperless trade is not straightforward: non-ecommerce international trade in goods is intricate and complex, involving a multitude of actors and processes, and the submission of copious documentation, often in more than one language. *(See figures 5 and 6)*.

There are four main categories:

1. Commercial transaction-related documents, including a sales contract, commercial invoices and, if needed, a packing list submitted by the exporter prior to exportation.

2. Trade financing documents, such as letters of credit, a right to payment e.g. a bill of exchange which instructs an entity addressed in the bill (the 'drawee') to pay a sum of money to another (a specified person, or the bearer).

3. Transport documents, including bills of lading, which are used in the carriage of goods by sea, and embody a right to claim delivery of the goods.

4. Border procedures documents, including:

- **Certificates of origin** – delivered by accredited chambers of commerce or, in some countries, by other bodies, such as ministries or customs authorities.
- **Sanitary and phytosanitary certificates,** for food, plants, and agricultural products – usually under the remit of ministries of health and agriculture.

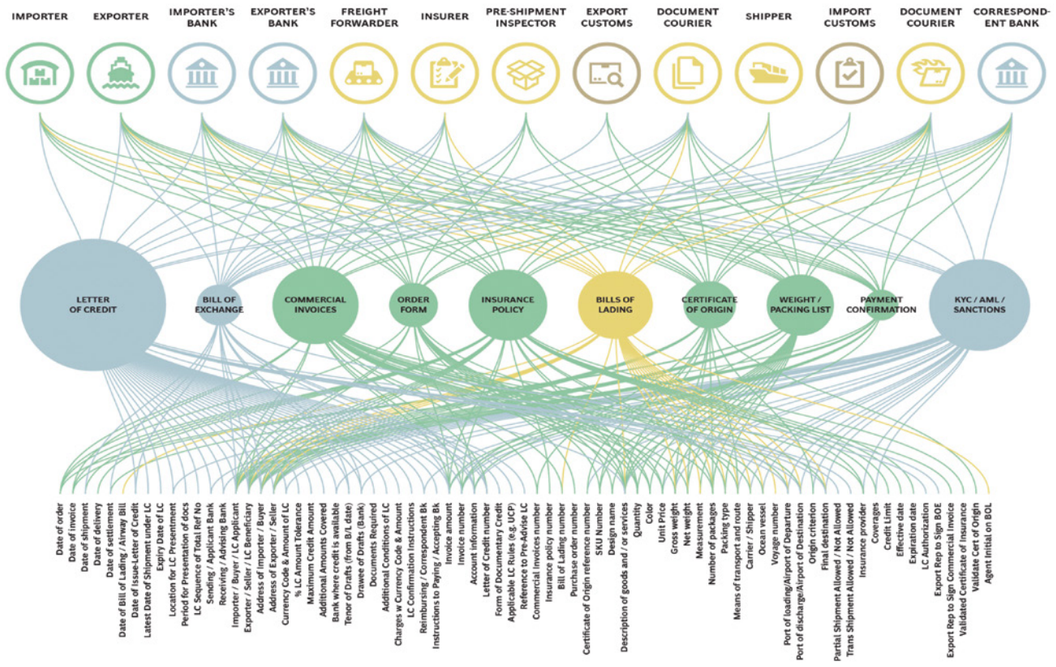
- **Certificates of conformity** that certify that products and services meet the particular standards in the country of importation.
- **Export or import licenses,** if required by the exporter's or importer's country.
- **Customs declarations and customs inspection documents**.

A typical trade transaction involves around 20 entities, 10 to 30 paper documents, often totalling over 100 pages.

Trade finance, and letters of credit transactions in particular, is complex and labour- and paper-intensive. Only about 1% of trade finance interactions create value, with 85-90% of the transactions consisting of 'ignore/transmit to the next party' actions. Customs transactions are similar: in the UK for example they involve 20 to 30 parties, around 40 documents, 200 data elements, and the re-keying of 60% to 70% of data.

The international trade industry as a whole generates some 4 bn paper documents per year.

Figure 4: The numerous players, documents and data elements involved in a trade finance transaction



Source: Boston Consulting Group

Figure 5: Typical international trade documentation and compliance requirements

	Exporter (i.e shipper)	Exporter's bank/ insurer	Export customs	Forwarder	Export port	Carrier (air, ocean)	Import port	Import customs	Importer's bank/ insurer	Importer (i.e. Consignee)
Typical documentation and compliance requirements	Sales contract and trade terms	Letter of credit	Document evidence compliance with rules of origin	House bill of lading/ House airway bill	Port declaration	Master bill of lading/airway bill	Port declaration	Customs clearance	Letter of credit procession	Purchase order
	Commercial invoice	Insurance policy	Customs value declaration	Delivery note	Manifest	Shipment status (e.g. booking confirmation, arrival notification)	Manifest	Import licenses/ certificates		Importer's knowledge for compliance with rules of origin
	Packing list		Safety & Security declaration	Shipping status	Shipment status		Shipment status	Document evidence compliance with rules of origin		Import pre-notification for SPS goods
	Pro-forma invoice may be required for exports to developing countries		Export licences/ certificate	Convention Merchandise Routier (CMR)			Inspections may be carried out on certain types of goods e.g. animal products			Customs compliance including commodity code
	Export Health Certificate, Catch Certificate, Phytosanitary Certificate for SPS goods			Groupage / Consolidation			Import pre-notification for SPS goods			Payment of import duty and import VAT (unless DDP)
	Agree commercial terms with importer, including Incoterms									Agree commercial terms with exporter, including Incoterms
	Customs compliance including commodity code									Post-audit compliance
	Post-audit compliance incl. 'Proof of Export'									

Source: Accenture, Institute of Export and International Trade, and Llewellyn Consulting

Notes: Incoterms stands for International Commercial Terms; SPS for sanitary and phytosanitary; DDP for delivery duty paid

Modernising trade facilitation

The impact of Brexit

Following the UK's departure from the Single Market and Customs Union, trade between Great Britain and the EU became subject to previously unnecessary customs formalities, checks, and paperwork to ensure that tariffs/duties are paid, standards are met, international obligations complied with, and illicit activity prevented.

The nature and extent of the issues, and the key areas where post-Brexit Trade and Cooperation Agreement (TCA) is impacting exporters, include: rules of origin, product marking and product standards, customs regulations and VAT, tariffs, adherence to environmental and labour standards, sanitary and phytosanitary (SPS) regulations, UK companies' exposure to broader EU regulations that apply to third countries, and tax and VAT rules.

Given the complexity of the changes and the short timeframe between the agreement of the TCA and its coming into force, a series of grace periods were agreed, most of which have now, early 2022, come to an end. At the time of writing trade seems to be flowing reasonably well, but businesses have had to adapt fast and there remain several issues to address, notably pending SPS checks on food imports. Businesses have been helped by 'light touch' implementation by government to prioritise flow, and the many firms which have prepared reasonably well. The digitalisation of trade information presents a long term opportunity to mitigate some of these issues.

Pre Brexit, UK Customs processed around 55 million import and export customs declarations per year for trade outside the EU. Post Brexit, Institute for Government estimates suggest that an additional 270 million customs declarations will be required per year − around 740,000 per day − from UK companies importing goods from the EU. A similar number is expected on the EU side of the border.

The costs of filing a typical customs declaration have been estimated at between £25 and £55 per declaration. Taking a mid-range figure of £40 points to an extra cost to UK business of the order of £7.5 bn to £10 bn annually, just for the additional declarations. Digitalisation is ameliorating some of these costs and there are potential further savings to be made.

The Northern Ireland protocol is not yet being fully implemented. Currently there are disagreements between the UK and the EU on how it should operate, and both sides are making proposals. The situation at the time of writing is fluid, and it is not yet clear what the final arrangements will be.

MOST-CITED CHALLENGES OF POST-BREXIT EU TRADE AND DIGITALISATION

(as cited by IOE&IT members and other UK companies interviewed for this report)

1 **Extra administrative burdens and complexity of systems and processes**

The sheer complexity of some cargos, combined with customers' expectations of 'business as usual', has for many necessitated reorganisation and increased digitalisation for maintaining trade post-Brexit.

"For companies that exported only to the EU the learning curve is particularly steep."

"With EU trade, the time available to get the paperwork in order is shorter than with further-away locations."

"Ensuring that clients see no difference has meant establishing an additional company in Europe."

"We are about 30% digitised, but have achieved 100% with some EU loads."

Problematic areas remain however, including with supplementary declarations, and with products of multi-country origin.

"The EU TRACES system is really designed for containers where time is not critical. It does not work well for 'just-in-time'."

2 **Time delays at border crossings,** including in particular with respect to health certificates, customs declarations on animal and dairy products, particularly when changes need to be made; and physical checks undertaken.

3 **Knowing what to do and how to do it.** Determining the correct processes and procedures for specific imports and exports, how to follow them to ensure to avoid being turned away at the border or fined, and getting timely answers to queries can be particularly costly, or impossible requiring 'work-arounds'

"Things are changing faster than we can read about … we employ one person full time just to keep abreast of all the changes that are taking place."

CONCLUSION. While economies everywhere face adjustment problems, including as a result of the pandemic, the UK and its businesses face additional Brexit-related challenges.

A positive consequence of Brexit however is that it has not only increased the impetus for, but has also speeded up, the streamlining and digitalisation of processes. Indeed, some UK companies are now more digitalised with respect to their trade with the EU than they are with respect to their trade with the rest of the world.

RECOMMENDATIONS (GOVERNMENT JOINTLY WITH NGOs AND BUSINESS):

» Maximise multi-level business trade support

- Increase general awareness of the advantages of digitalisation and the costs of not going digital.
- Provide training and technical assistance including in customs facilitation, systems know-how, digital skills, codes of practice etc.
- Provide advice on systems interoperability, cybersecurity, data privacy.
- Develop a central 'one stop shop' information portal, potentially based on the Export Support Service (ESS), where all relevant information can be accessed.

Building blocks of digital trade

Moving to digital requires not only changing processes and systems from analogue to digital, but also the optimisation, synchronisation, and interoperability of these processes between differing parties through innovative technologies and connectivity. Redressing the inefficiencies and risks that the current lack of interoperability engenders (including delays and the need for (error-prone) manual re-inputting of data at different points of the supply chain), and moving to seamless hands-off processes is a major challenge for both governments and businesses.

Primary building blocks for the move to digital include:

1. Digitalised data collection and transmission, at source, in real time

» This requires, digital tracking technologies (e.g. radio frequency identification (RFID)), and tracking systems and networks that enable regulatory checks, including behind-the-border.

2. Secure and reliable data transmission and storage

» This includes, for those who have been granted permission, the ability to see parts of, or the entire, supply chain.

» This can be achieved through distributed ledger technology (DLT), such as blockchain, which enables:

- End-to-end visibility in the supply chains.
- Closer collaboration, e.g. with banks, than previously possible.
- Tailored programming, to take into account such matters as geopolitical issues, regulation and data privacy concerns.

» While digitalisation of process does not in and of itself deal with the issue of interoperability, application programme interfaces (APIs) allow structured data to be transferred from older legacy systems to newer, more flexible platforms.

3. Single Trade Window based system

» This involves the use of standardised information and documents, and internationally-agreed definitions that are available and readable in many languages etc.

THE 'SINGLE TRADE WINDOW' CONCEPT

The 'Single Trade Window' concept embraces a wide range of different systems and platforms across a number of areas, including banking, investing, politics, and trade. In the context of trade:

» The Single Trade Window allows all parties (traders, freight forwarders, carriers etc.) to submit standardised information and documents through a single entry point to fulfil all import, export, and transit-related regulatory requirements more efficiently and at lower cost than is possible in traditional pre-single-window environments.

» Information – customs declarations, shipping manifests, licences and certifications etc. – is uploaded through a single login, rather than through multiple agencies.

» Data in principle need to be submitted only once.

» Traders may be able to self-serve and make their own declarations through an Application Programming Interface (API) link which facilitates bulk uploads as well as single-file uploads.

» The Single Trade Window should also provide information back to the trader of their customs and trade activity.

The concept is promoted by a number organisations concerned with trade facilitation, including the United Nations Economic Commission for Europe (UNECE) and the Centre for Trade Facilitation and Electronic Business (UN/CEFACT), the United Nations Network of Experts for Paperless Trade and Transport in Asia and the Pacific (UNNExT), the Association of Southeast Asian Nations (ASEAN), and the World Customs Organization (WCO).

The concept is also being prioritised by the UK government who, building on early proof of concept work developed with industry announced, an investment commitment of £180m, to develop a world-leading UK Single Trade Window (STW) for roll-out. Capabilities are to be grown iteratively over the coming years, and functionality extended to users in stages. Countries where a Single Trade window is currently operational include Singapore, Malaysia and Kenya.

Modernising trade facilitation

4. International co-operation and mutual recognition

- Digitalisation of trade, as with all international endeavours, requires an underpinning of effective international co-operation, including increased:
  - Co-operation of laws internationally.
  - Mutual recognition of relevant categories, standards, licenses, and qualifications etc.
  - Inter-country recognition of electronic documentation.
- As trade becomes digitalised, the impetus for international cooperation increases given the need to coordinate electronically across borders.
- For example the IOE&IT is working with TradeMark East Africa, a development organisation, to set up a data pipeline for companies trading between the UK and Kenya. This will enable traders to input their data to a single distributed ledger, visible to all participants in the supply chain, thereby significantly cutting the administration overhead – bringing particular benefit to small and medium sized exporters. The Trade Logistics Information Pipeline (TLIP) also has the capability to carry real-time market information to enable exporters to plan effectively in response to importers' market needs.

CONCLUSION. Requisite technologies and data already exist, with 'proof of concept' established in many areas. The focus now needs to be on creating a stable, 'future proofed', operational policy framework within which the private sector as a whole can operate more effectively.

As a champion of open and inclusive trade, it is important that the UK stands against 'digital protectionism', favouring internationally-compatible regulatory systems, protocols, standards, and governance that are integral to achieving and maintaining a well-functioning international system that promotes innovation and healthy competition, while safeguarding financial stability. The UK should also continue to reject data localisation – where countries insist on the hosting of data 'in country' which leads to expensive and counterproductive duplication - and argue for the preservation of the WTO Moratorium on Customs Duties on Electronic Transmissions.

RECOMMENDATIONS (GOVERNMENT):

Promote an open global operating framework

- Build on both the DIT's five-point plan, unveiled in September 2021, and the UK's network of international agreements.
- Foster information exchange, including by ensuring that forums work effectively with private sector providers and other stakeholders.

RECOMMENDATIONS (GOVERNMENT) continued:

- Develop additional forums: the UK's new post-Brexit FTAs could be a centrepiece. The UK-Australia agreement is a good exemplar.
- Promote open digital markets and values, including by forming alliances with countries and partners with aligned interests in forums like the WTO.
- Foster interoperability, and seek to play a lead role in setting modern, market-appropriate, norms, rules, standards, protocols, and rulebooks on digital trade.

The benefits of digitalisation

The benefits of digitalisation

COVID-19 has accentuated the friction, inefficiencies, risks and control challenges associated with paper-based processes. The digitisation of trade can no longer be an 'if' but must now be a 'now and how'.

Swift, 2021

Going fully digital is a big endeavour, but the potential benefits are big too, and they add up to more than the sum of their parts. For the UK economy, where international trade plays such a big role, additional Brexit-related challenges are being faced, and because digitalisation plays into a number of key areas of UK strength – including its legal, technology, and finance sectors – the benefits stand to be particularly large and accrue widely across sectors, and government. Moreover, they will be especially accessible to medium and small enterprises (MSMEs), which in the UK account for about half of private sector revenue but, (pre-Brexit), just under a third of exports.

The benefits come in many forms. They derive not only from 'doing existing things better', but from the many opportunities that arise from the new activities, markets, and combinations of goods and services that are created and evolve alongside digitalised trade – with its richer and more secure data; increased transparency; reduced risk, and other attributes. The benefits include:

1. Reduced time-delays and other costs of trade

The biggest proportion of overall trade costs for goods is transport, at around 37%. Information and transaction costs account for a further 20%, logistics (cargo loading, storage, and port services) 11%, and trade policy barriers also 11%. For services, information and transactions account for 30%; followed by transport, 17%; trade policy barriers, 15%; and logistics, also 11%. *(See fig. 6)*.

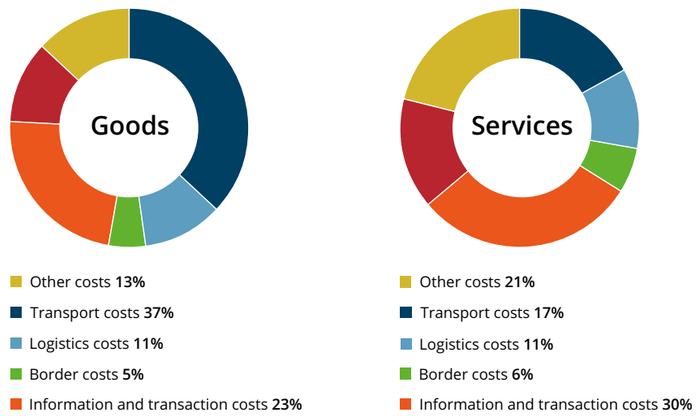
Border costs that stem from time delays typically account for 5% to 6% of overall trade costs, for both goods and services. And given that such figures do not include other administrative costs related to customs compliance, they stand to be underestimates.

Just-in-time (JIT) inventory management and lean retailing in particular have magnified the impacts of supply chain delays. Delivery disruption, particularly of intermediate inputs, reduces trade and exports, can compromise entire production processes, and at the level of the firm can be terminal.

- According to estimates in a WTO report, every additional day in transit is equivalent to an ad valorem tariff of anywhere between 0.6% and 2.3%.
- Impacts from time delays are particularly pronounced for newer buyers, and for trade with countries that are harder to reach.

Scope for digitalisation and technology to streamline procedures, processes, and reduce time delays and other supply-chain frictions including paper documentation, and the need for physical border checks, is significant.

Figure 6: Trade cost breakdown for goods and services



Source: World Trade Organisation (WTO) and Llewellyn Consulting

2. Reduced carbon footprints and improved sustainability

Efficiency optimisation however goes further than reducing supply chain costs – it also in and of itself reduces carbon footprints. Further use of technology e.g. to track carbon emissions across supply chains at a consignment or product level, facilitates the calculation of Scope 3 emissions (those not controlled by the reporting firm, but within its supply chain). This in turn makes accurate carbon labelling more feasible. It would also make it easier to meet the requirements associated with carbon border taxes were these to be implemented.

- Freight forwarders and carriers are thereby able to compare the environmental performance of carriers at a trade-lane, or even consignment, level.
- Innovative solutions, such as the behavioural-science-based platform offered by Signol, reduce pollution and fuel waste and cut operating costs: tests involving 335 Virgin Atlantic captains saved over $6 million in fuel costs and 24,000 tonnes of CO_2 emissions in just 8 months – "the lowest-ever measured carbon abatement cost."

Across so many documents, the potential positive impacts of using electronic trade documents – including significant financial and efficiency gains, and environmental benefits – should not be underestimated.

3. Lower barriers of entry

The new digital tools enable firms to overcome barriers to growth, by facilitating payments, enabling collaboration, and reducing the need for investment in fixed assets e.g. through the use of cloud-based and other services, such as those that overcome language-related difficulties, whether in form-filling or other contractual matters.

4. Economies of scale

The tools also enable firms to bring products and services to a larger digitally-connected global consumer base. The enhanced speed and greater ease of coordination of supply chains in turn enables a faster pace of trade, realising further economies of scale.

5. New combinations of goods and services and servitisation

Digitalisation and the ever-increasing range of internationally tradable services to which it gives rise continues to change the nature of, and blur distinctions between, goods and services and modes of delivery. It also makes possible new combinations.

- A 'good' produced by 3D or 4D printing may cross a border as a design service, becoming a 'good' only at the moment of production.
- Advances in smart-phone and app capabilities have led to 'dematerialisation', reducing carbon emissions and bringing broader sustainability benefits.
- App-based solutions, such as offered by Signol, which marry behavioural-science with improved fuel efficiency techniques, are changing behaviour.
- Increased profiling data has enabled B2C marketing for trade (e.g. through targeted advertising) to become more cost-efficient and effective.

Currently around half of traded services are digitally enabled, compared with 15% of traded goods. These figures stand to have increased further post COVID-19.

6. Wider and improved supply of finance and insurance

Digitalisation significantly reduces the time taken to complete a transaction or deal. It also makes it possible to look electronically into supply chains, in principle along their entire length, thereby reducing risk both for buyers and for suppliers, including of finance and insurance.

Inadequate access both to suitable insurance and finance, including trade finance, have been significant growth barriers, particularly for MSMEs.

7. Greater resilience to the impacts of shocks

Delays and disruption to the supply of goods, including essentials such as food and medical equipment, caused by COVID-19-related restrictions on movement and human-to-human contact, spotlighted the vulnerabilities of current supply chains. Increases in digitalisation, automation, and other technologies that reduce reliance on human-to-human contact reduce such structural vulnerabilities.

8. Reduced theft, fraud, and tax evasion

Cargo and shipment tracking systems help to prevent theft and 'diversion' of goods, a particular concern of many developing countries. Regulations, such as those that exempt tax and excise duties on exports, often lead traders to divert goods designated for foreign markets into domestic markets, and fraudulently claim tax benefits.

- Adding tracking systems for goods shipments increases both efficiency (through reduced turn-around times) and government tax revenues.
- Digital solutions, such as Atamai Freight, provide end-to-end visibility across supply chains in real time, enabling secure consignments while in transit and helping to smooth the progress of goods across borders.

Tax evasion and avoidance more broadly, which in the EU has been estimated to be as much as €1 tr per year by the European Commission, is rendered markedly more difficult by digitalisation. (For more on the benefits for trade from further digitalisation in the area of taxation, see WU Global Tax Policy Center).

The benefits of digitalisation

9. Growth in coverage and visibility of supply chains

A digitalised supply chain can in principle extend all the way from the very first stages of raw material extraction and input, through the various stages of processing and transport, to the final retail outlet and consumer.

The more that the overall supply chain, including bought-in goods and services, is integrated, the greater is the potential for advances in many areas, including importantly meeting Environmental, Social, and Governance (ESG) objectives. These include: opening up financing and insurance opportunities; facilitating pre-border checking, including through accuracy of certificates of origin, etc.; reducing fraud and counterfeiting and enabling traceability; and encouraging responsible sourcing, including with unique, product-level, marking identifiers.

- Jaguar Land Rover's (JLR) recently announced partnering with traceability provider Circulor uses GPS, biometrics, QR codes, and a 'digital twin' to track and verify their leather in real time and through every step in the supply chain.

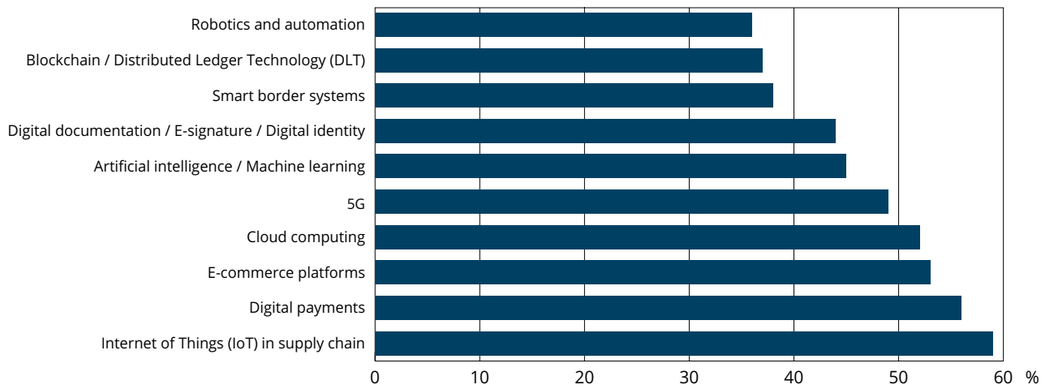
THE KEY ENABLING TECHNOLOGIES

Digitalisation's progress, including in international trade, relies on the progressive harnessing of key enabling technologies. The most transformative for trade, as listed by the WEF, are the Internet of Things (IoT), digital payments, e-commerce platforms, cloud computing, and 5G, followed by AI and machine learning, digital documentation and smart border systems, DLTs, and automation. Some examples:

- AI-enabled solutions, in combination with other technologies, such as real-time itinerary mapping and driver aids, cargo and shipment tracking, and robotisation are significantly reducing transport and logistics costs, and making systems more secure.
  - AI-enabled smart robots that automate warehousing, trailer and container unloading, and packing reduce storage costs and speed up distribution to customers; AI-enabled flexible warehousing and logistics platforms, such as offered by UK-based Trident, permit efficient matching of suppliers of unused warehouse space to demand; AI-enabled customs and compliance solutions, such as from Phlo Systems which automate end-to-end customs and compliance requirements for international trade, replacing manual paper-based operations, and reduce data entry costs by around 80%.
- DLTs create all-but-immutable supply chain records; trustable transparency of origin; and more seamless transitions with fewer manual interventions. Trade documentation platforms, stand to significantly reduce the costs of paper documentation, which in the shipping industry account for some 20% of administrative overheads, and globally cost businesses over £100 bn per year.
- Accurate real-time information enables customs declarations and ships' manifests to be available before goods or services arrive, facilitating prior-to-arrival authorisation, and timely cargo removal. Overall labour input is also reduced, cutting turnaround times.

Digital Catapult's Digital Future Global Index, which ranks countries' capabilities over range of technologies, puts the UK as best placed in Europe to take advantage of the technologies impacting global businesses over the decade, ranking behind only the US and China globally. Despite this, however, the UK ranks only 16th for digital infrastructure and underpinning capabilities – including availability of supercomputers, 5G, and internet speeds.

Figure 7: The 10 most transformative technologies for trade



Source: World Economic Forum

The benefits of digitalisation

CONCLUSION. There is considerable scope to reduce the costs of trade through digitalisation and technology-based solutions. Inefficiencies and delays are expensive, and volumes so great that even small savings per transaction translate into large absolute gains, from lower supply-chain costs to reduced carbon footprints and increased sustainability.

The benefits stem far further, however – from lower barriers of entry and wider supply of finance, to greater supply chain visibility, reductions in theft and fraud, and fewer physical checks. UK firms are well placed to take advantage of the enabling technologies that underpin the digitalisation of trade, but UK digital infrastructure needs improvement.

RECOMMENDATIONS (BUSINESS) :

» Be informed and act strategically

- Adopt a mind-set that faces the challenges head-on, and embraces the opportunities of digitalisation.
- Become fully informed on all relevant dimensions of digitalisation, including laws and regulations, technologies, and detailed industry-specific information.
- Join trade bodies and groups of companies with aligned interests to exchange information.
- Seek out the training, skills development, technical assistance, and other support services that are available.
- Take strategic-level decisions and set board-level priorities.

RECOMMENDATIONS (GOVERNMENT):

» Improve UK digital infrastructure

- Determine what digital infrastructure and underpinning capabilities the country needs, devise a plan, and implement.
- Continue modernising the government sector with extensive joined-up e-services.

The size of the prize for the UK

The UK digital sector is already large − in terms of the number of people it employs, the volume of data transmitted digitally, and the value of these data – many of which have market value, and many more of which have commercial value. Importantly, average wages in the digital sector are around 50% higher than the UK average. Moreover, the digital sector and data flows are growing fast, having profound transformation effects on economies and societies.

Data flows in general may well have raised world GDP by around 3% over what would have resulted in a world without any data flows, thereby currently contributing around $2.6 tr to world GDP.

Digitalisation of trade will help to sustain this momentum. It will also help in realising a number of associated areas of government policy, including importantly the government's 12-point export strategy, and the 'Made in the UK, Sold to the World' campaign which aims, through a number of support services including the Export Support Service (ESS), to increase UK exports of goods and services by over 60%, to £1 tn.

Digitalisation of data used for trade stands to reduce expensive border delays significantly – by as much as 80% according to some estimates. Based on a more a conservative 70% reduction in border delays, and on USAID figures that the tariff-equivalent of the time taken to cross borders is some 4.2%, both for the EU and the UK, this implies a contribution to GDP in the order of 1%, some £25 bn, contribution to GDP. [Calculation: (70% * 4.2%) * (imports as a proportion of GDP) 0.33 = 0.97%].

This figure will be an underestimate – and quite possibly significantly so – of the likely impact of the digitalisation of trade on GDP, for at least three reasons.

- First, whereas border costs represent 5% to 6% of overall trade costs, information and transactions costs represent 25% to 30%, and some portion of these too is bound to be reduced by digitalisation.
- Second, important effects stand to flow from digitalising the entire export chain, and creating a complete digital trade 'ecosystem' by reforming laws to digitise trade documentation and aligning legal frameworks to the UNCITRAL Model Law on Electronic Transferrable Records (MLETR). If carried out by all the G7 countries in concert, it has been suggested that this could well add at least another percentage point − £25 bn − to UK GDP.
- Third, new products, services, and combinations – e.g. new banking, insurance, and legal services – will further increase GDP, both directly and indirectly, including via increased exports. These gains however are more difficult to quantify.

Thus the potential gains from the digitalisation of trade are of macroeconomic significance. Each 1% of additional UK GDP would:

- Create at least 150,000 net new jobs, and quite possibly more.
- Pay for almost half of the (£150 bn over three years) increase in departmental expenditure announced by the Chancellor of the Exchequer in the 2021 Autumn budget.

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