

**Innovating Trade in the Digital Era:  
Empowering UK Manufacturers with advanced Trade  
and Customs Technologies and strategic role of Trade  
Facilitation Tools**

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**Authors: Sylwia Nowak MSc and Dr Rebecca Wilde  
WMG, University of Warwick**



## FOREWORD

This is a welcome and timely report. The trading system has, for too long, operated on laws dating back to the 1800's with many of the same, largely unchanged paper-based processes. The result is a costly, complex and inefficient system that is unfit for what we need for the future, which is a data-driven ecosystem. This is particularly important for small companies and economies who are disproportionately impacted by unnecessary bureaucracy and red tape. It is time to modernise the way we do international business and trade and ensure the ecosystem is fit for purpose for the 21<sup>st</sup> century and modern, digital era.

The 2017 WTO Trade Facilitation Agreement played an important role in establishing a global programme of digitalising customs and borders. Today, UNESCAP estimate that 70% of the world's customs infrastructure operates in digital form. Electronic certificates of origin, phytosanitary certificates, ATA Carnets and proliferation of single trade windows are all good examples of the progress that has been made. However, this has not resulted in a paperless trading system as envisioned. Even in the EU, only 1-2% of trade documents are handled in digital form and few, if any, single trade windows and border systems interoperate with each other. Financial transactions, insurance and shipping documents are still, largely handled on paper.

This is changing with the advent of modern laws and rules, such as Singapore's Electronic Transactions Act, the UK's Electronic Trade Documents Act and US Uniform Commercial Code. These have enabled 80-90% of trade transactions to be digitalised, including 80% of bills of lading and 60% of global trade finance. Today, companies can transact in one hour and trade transaction costs and border processing times cut by 80%. The 2024 WTO Ecommerce Agreement is the first major upgrade of global legal infrastructure since 1992, setting a trajectory for 80% of world trade to be transacted in digital form. These are all major breakthroughs

However, there is much to do to remove paper and antiquated processes once and for all. In a digital environment finance, payments, compliance and the physical shipment of goods all operate in one data-driven environment. This enables companies to improve liquidity, unlock trapped cash in supply chains, access finance in new and better ways as well as remove inefficiencies and benefit from greater transparency in their global supply chains.

This creates an exciting opportunity to re-think borders and the concept of single trade windows, to break down traditional silos and establish modern trade ecosystems where data flows across platforms, systems and jurisdictions in standardised data formats. However, this is not a given and will require more research and evidence gathering. Trade suffers from the complexity of stakeholders involved but working together, supported by universities and student research, we can breakthrough the inertia to change and ensure that future generations benefit from a cheaper, faster, simpler, more sustainable trading system. This report provides important lessons to learn and provides an important step towards a better way of trading.

**Chris Southworth**

Secretary General, ICC United Kingdom

## Disclaimer

### Acknowledgement of the policy change

Since the completion of this research, there has been a significant change in the UK government policy. On the 5th of November 2024, the Exchequer Secretary to the Treasury announced the pause of the UK Single Trade Window (STW) delivery for 2025 and 2026. The next update will be provided as part of the Spending Review report in Spring 2025.

This paper should be read within the broader context of advancing interoperability, enhancing trade information flows, and fostering digital trade ecosystems. Its findings and recommendations remain highly relevant in addressing the challenges faced by UK manufacturers and their supply chain actors. The research serves as a guide to navigating the evolving digital trade landscape, emphasising flexible and realistic solutions that can improve connectivity across diverse systems, platforms, or jurisdictions.

Additionally, this research aligns with the strategic direction of ICC United Kingdom, highlighting a path toward an interoperable digital economy. It underscores the importance of initiatives such as the government Ecosystem of Trust and Border Demonstrators, as well as the collaborative efforts of FCDO, DBT, and ICC United Kingdom on the Electronic Trade Document Act pilots, which promote interoperable data and supply chains.

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# Chapter I

## Research Question and Objectives

### 1.0 Introduction

When United Kingdom officially left the EU single market on 31st of December 2020 at 23.00 GMT [BBC, Brexit], prior to this date, many businesses were left with uncertainty until the deal - Free Trade Agreement (Trade Cooperation Agreement) - was reached on 24th of December 2020. Research and studies conducted pre and post Brexit, have yielded various conclusions: regarding the relationship between trade disintegration and politics with the example of Czechoslovakia [Sousa and Lamotte, 2007]), and regarding UK regional dependence of trade with the EU [Los et.al., 2017]. Furthermore, some studies suggested that leaving the EU will lead to trade impediments and loss of market access despite the UK FTA's in place [Bailey and Budd, 2017] [Hur and Park, 2012], not mentioning business uncertainty, higher costs and negative long-term effects on trade flows [Steinberg, 2019]. Due to import and export formalities introduced on goods moving between the UK and EU, it is more critical to remove the trade barriers and ease customs operations for various supply chain actors, to facilitate quick movements and border transparency, without compromising the national security. With high inflation rates and higher living costs post pandemic and Brexit [Mattinson et al., 2024], it is even more important to remove additional trade costs to minimise the impact on consumers, therefore the trade facilitation is in the best interest of the businesses and the whole society.

By providing the education around the right tools, strategies and practical solutions, the traders, freight forwarders, customs intermediaries and software providers can create successful synergies, that will benefit all parties. Faster customs clearances and goods movements as well as reduced costs, administrative burdens, and delivery delays, may lead to increased business productivity and attract more foreign investments thanks to trade facilitation and removal of non-trade barriers [Hill and Hult, 2019]. It is crucial for the businesses to know how to take advantage of the existing and future facilitations such as UK Single Trade Window and how to practically adapt the technology to fit its trade flows and operations. However, as concluded from the literature review, poll and interviews conducted in this research, without clear guidelines and practical case studies, some companies may hesitate to try to implement new strategies and solutions due to various consequences of doing it wrong, such as delivery delays leading to production stoppages or food waste, or civil penalties due to wrong declaration filings. Moreover, depending on the complexity of the supply chains, the IT capacities of businesses or budget limitations, introduction of new strategies may prove very challenging. It is therefore critical that each business conducts risk and cost assessments and considers its supply chain operations and evaluates existing capacities. Furthermore, remaining competitive in the market, continuously expanding, and increasing the working capital and future investment opportunities are all integral parts of trading and trade is digitally evolving. It is for this and other mentioned reasons, that traders and supply chain actors should evolve together with the trade and take advantage of its technological developments.

The aim of this research is to explore and address the trade and customs technologies, that align with the strategic framework of the UK Single Trade Window, which can drive innovation and empower UK manufacturers and the supply chain in the digital era, by emphasizing their application in enhancing EU/UK road freight movements post - Brexit. To answer the research question, this thesis will explore the following related questions and areas of interest:

1. What challenges and business solutions exist for EU/UK road freight movements post - Brexit in the context of trade and customs technologies?
2. What are the current trade and customs technologies that exist within strategic frameworks as business solutions?
3. What are the latest developments in customs and trade technologies that third parties in supply chains can leverage?
4. How does the Single Trade Window enhance the end – to - end operations of businesses?
5. How stakeholders perceive the Single Trade Window as a strategic tool for UK manufacturers?

Effective management of trade operations and technological evolution is crucial to maintain competitiveness in the market [Reeves and Candelon, 2022], however limited knowledge of trade facilitation tools and challenges around increased import/export processes may significantly impact the adaption of new technologies. Since the majority of the academic literature on technological solutions is customs rather than business orientated and cooperation with businesses is mentioned but not comprehensively explored in them [WCO IT Guide for Executives, 2018] [Kafando, 2020] [Kyoto Convention] [WCO SAFE, 2021], this research focuses on usage and incorporation of various trade and customs technologies, ranging from traditional ASN and EDI systems to innovative solutions such as Single Trade Windows, AI/ML platforms and blockchain - aiming to minimise and/or mitigate negative impacts experienced by SME’s and larger enterprises. The following objectives have been derived to guide this exploration and to provide a structured approach to understand its benefits, practical applications and challenges:

- Bridging the literature gap with an in-depth review of trade and customs technological and strategic solutions and direct advantages for UK Traders and its supply chain actors in practice
- Data collection and critical analysis of the post Brexit challenges in EU/UK road freight movements with recommendations on practical, technical solutions
- Data collection and critical analysis of expert views on strategic importance and utilisation of the UK STW for trade facilitation and practical enhancement of end – to – end operations of goods movement
- Comprehensive exploration and assessment of current trade and customs technologies within strategic frameworks including Single Trade Window for the UK Manufacturers and it’s supply chains (Logistics providers, customs brokers, customs software providers, exporters, importers).
- Recommendations for further research and bridging the educational gap within trade and customs technology

#### Academic literature gap

Numerous financial consultancy firms offer technology driven trade and customs tools and strategies for traders. However, such solutions are tailor made for particular customer’s operations and are very expensive, making them less accessible to SME’s or larger companies with tight budgets. The majority of the academic research and literature concentrates on the following key areas:

Framework / Legislation	Area
Revised Kyoto Convention [UN, 2008] WTO Trade Facilitation Agreement [wto.org] WCO SAFE Framework [WCO SAFE, 2021]	Trade facilitation from a global (country to country) perspective including interoperability
WCO ‘IT guide for Executives’ [WCO IT Guide for Executives, 2018]	Technology in customs and trade from the viewpoint of governments and authorities
Modern Law on Electronic Transferable Records (MLETR) [UN MLETR, 2017] UK Electronic Trade Documents Act (ETDA) [ETDA, 2023]	The adaptation of laws and regulations at the global and/or national level

UN Recommendation 33 [UN/CEFACT Recommendation 33]	Strategies for single trade windows, focusing on synergies between border agencies and intra-governmental or port systems rather than strategies directly connecting customs to businesses (importers / exporters / some forwarders)
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Despite the various technological solutions that are designed to facilitate trade, there is still a significant gap in research regarding how businesses can use them in practice and tailor their existing IT capacities or solutions to integrate with STW and other systems. A lot of businesses lack necessary customs knowledge, IT capacity, resources or funding to fully leverage the benefits from the trade facilitation measures. There is no specific academic research to address these barriers and explore what are the potential customs and trade technological solutions targeting EU-UK road freight movements, that can be practical, accessed at very low costs and tackle various actors within the supply chain. This research aims to bridge these gaps by addressing the following questions – What are the customs and trade technological solutions available and how UK businesses and their supply chains can utilise them to fully benefit from advancements and trade facilitations?

#### Expected outcomes of the research and methodology

The methodology used in this dissertation constitutes primary and secondary data collection including poll and interviews with various business representatives, industry leaders and customs professionals, as well as available research and academic literature.

The aim of this research is to develop a set of guidelines for the effective implementation of the customs and trade technologies in business operations and the development of a comprehensive framework around Single Trade Window utilisation. This research aims to bridge the recognised gap in existing literature<sup>1</sup> that is orientated around frameworks and perspectives targeting governments, border agencies and customs authorities, which lacks adequate and practical business applications. This research provides applied application of customs and trade technologies, and actionable insights for improving border movements and leverages Single Trade Window to further facilitate trade and empower UK Manufacturers and supply chains. The study is expected to contribute to the body of knowledge on digital innovation in trade and to highlight the challenges UK traders are facing, with specific emphasis on the SME sector.

Whilst current developments in trade finance (and electronic transactions) and Electronic Bills of Lading are utilised in sea & air freight movements as driven by the latest legislative frameworks<sup>2</sup>, this dissertation focuses on road freight and trade between the UK and the EU.

### 1.1 Brexit implications

Whilst the challenges following Brexit are multi-dimensional and substantial, this dissertation aims to explore potential strategies to progress, cut costs and time and boost operational efficiency, focusing on movements between the EU and UK. Although the accurate measurement of long-term effects remains ongoing, researchers equipped with the most recent statistical data post Brexit have conducted studies. These studies revealed decline in Great Britain’s export figures [Du et al., 2023] from the EU as well as the rest of the world, as per data trends shown below in Figure 1:

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<sup>1</sup> Literature review sections: 2.4; 2.5; 2.6; 2.7 and 2.8

<sup>2</sup> Such as UK’s Electronic Trade Documents Act (EDTA) and Model Law on Electronic Transferable Records (MLETR)

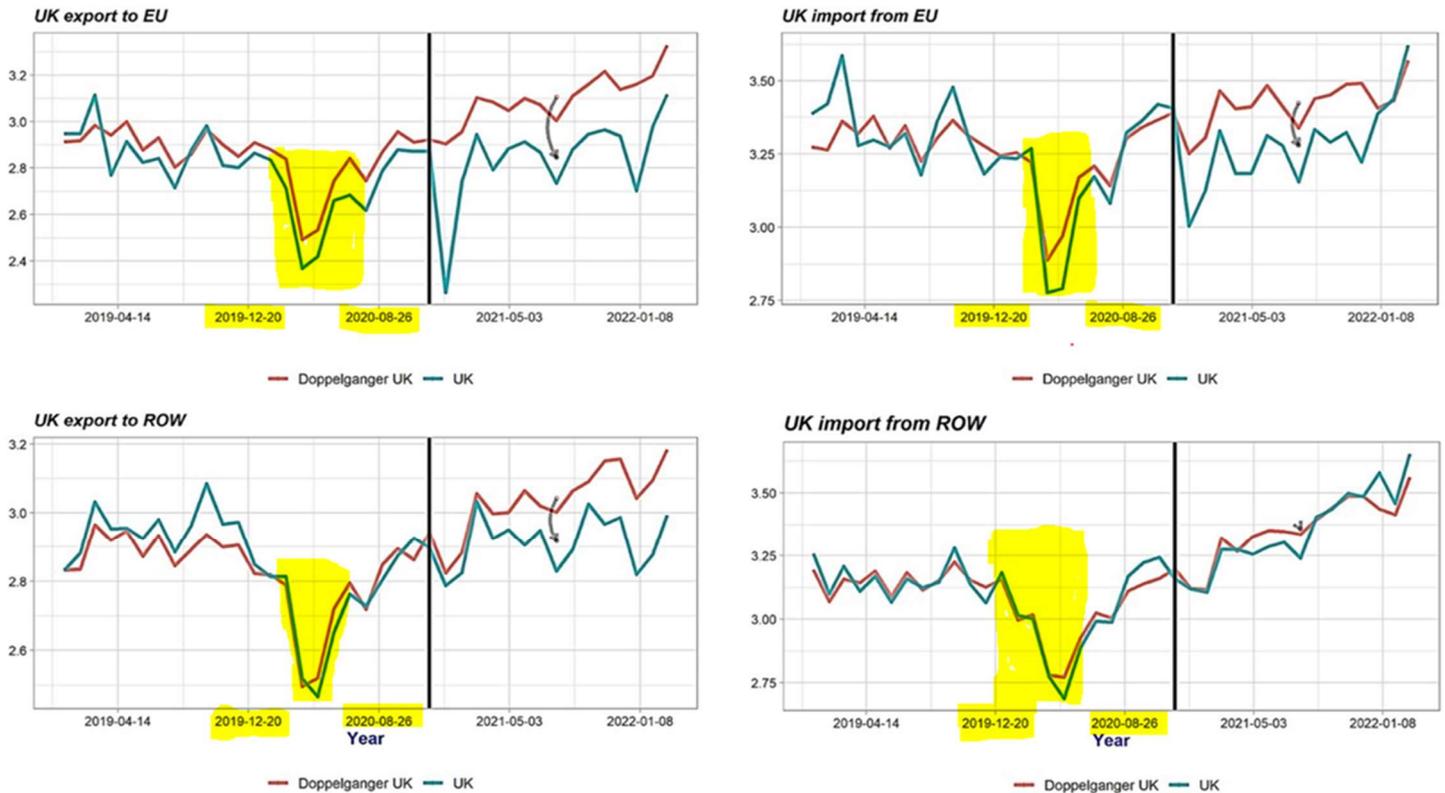


Figure 1. – ‘Impact of Brexit on the UK trade: synthetic difference – in – difference’ and ‘Gold (HS7108) is excluded’ [Du et al., 2023]

Rapid decrease is clearly visible for the period between 2019-12-20 and 2020-08-26 (decrease is highlighted in amber) for both UK exports to EU and UK exports to ROW<sup>3</sup> and this is when Great Britain left the EU customs union. These figures show the negative and direct impact that Brexit had on Great Britain’s trade.

Other studies record the fall in UK imports from the EU by 25% since the Free Trade Agreement came into place (TCA – Trade Cooperation Agreement) [Freeman et al., 2022], some refer to the outcomes from such changes in supply chains (resourcing countries) - the trade diversion [Gutierrez et al., 2021], and highlight the welfare standards reductions as a consequence of reduced fiscal transfers and trade [Dhingra, Swati, et al.2017] – that’s because of decreased trade volumes which impact businesses and then society as a result. Further analysis go deeper and split sectors and GB regions, such as the manufacturing sector in the Midlands, that shows Brexit especially negatively impacted manufacturing SME’s that seek trade facilitations and cost reductions for exports [Bailey et al., 2023]. Other studies suggest that the automotive industry in West Midlands suffered from reduced sales and trade disruptions due to Brexit, Covid-19 and semi-conductor shortages [Quamar et al., 2022] and statistics are backed by the Society of Motor Manufacturers and Traders (SMMT) data (gathered on a regular basis) [SMMTa,2021]. According to SMMT UK Automotive Trade Report 2023, the GB automotive sector constitutes around 12% of all goods manufactured in Great Britain [SMMTb,2023]; therefore, the Brexit impact on this industry alone is very significant, as predicted by the National Institute Economic Review [Bailey and Propris, 2020].

<sup>3</sup> ROW – Rest of World

Similar to the automotive, the UK aerospace industry accounts for approx. 11% of total GB exports according to Automated Dependent Surveillance Group (ADS) [ADS, 2019 & 2022]. The Brexit and UK government's desire to move away from the European Union's regulatory framework, according to Financial Times [Peggy, FT, 2020] will decrease the GB exports due to extra costs and complexities. The same factors were identified in other sectors such as textile and clothing - according to various studies and independent data gathering [Casadei & Iammarino, 2021], Textile also faces challenges with market uncertainties, increased raw material costs, decreased orders and skilled labour shortages. The Casadei and Iammarino report also highlights the challenges around rules of origin agreed in the TCA (Trade Cooperation Agreement) between the UK and the EU reduction in the purchasing power of UK customers, higher product prices and stockpiling as shown in Diagram 2.0.

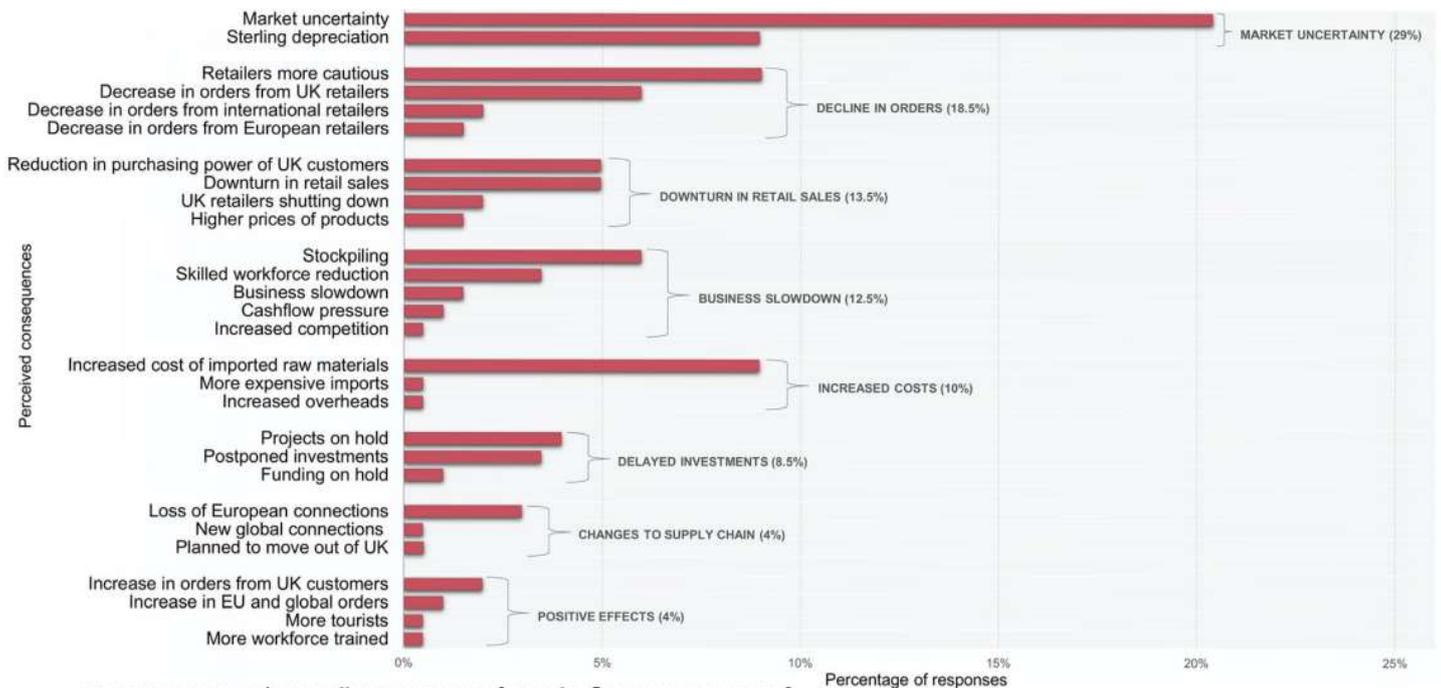
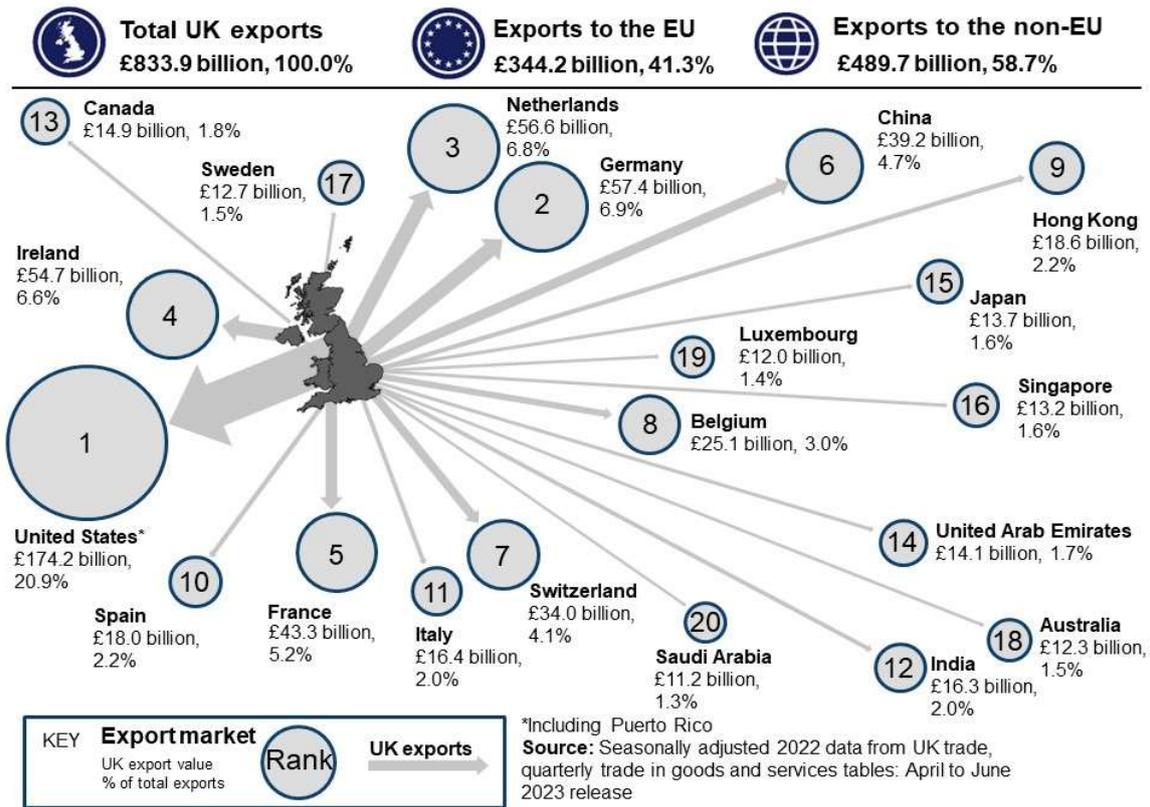


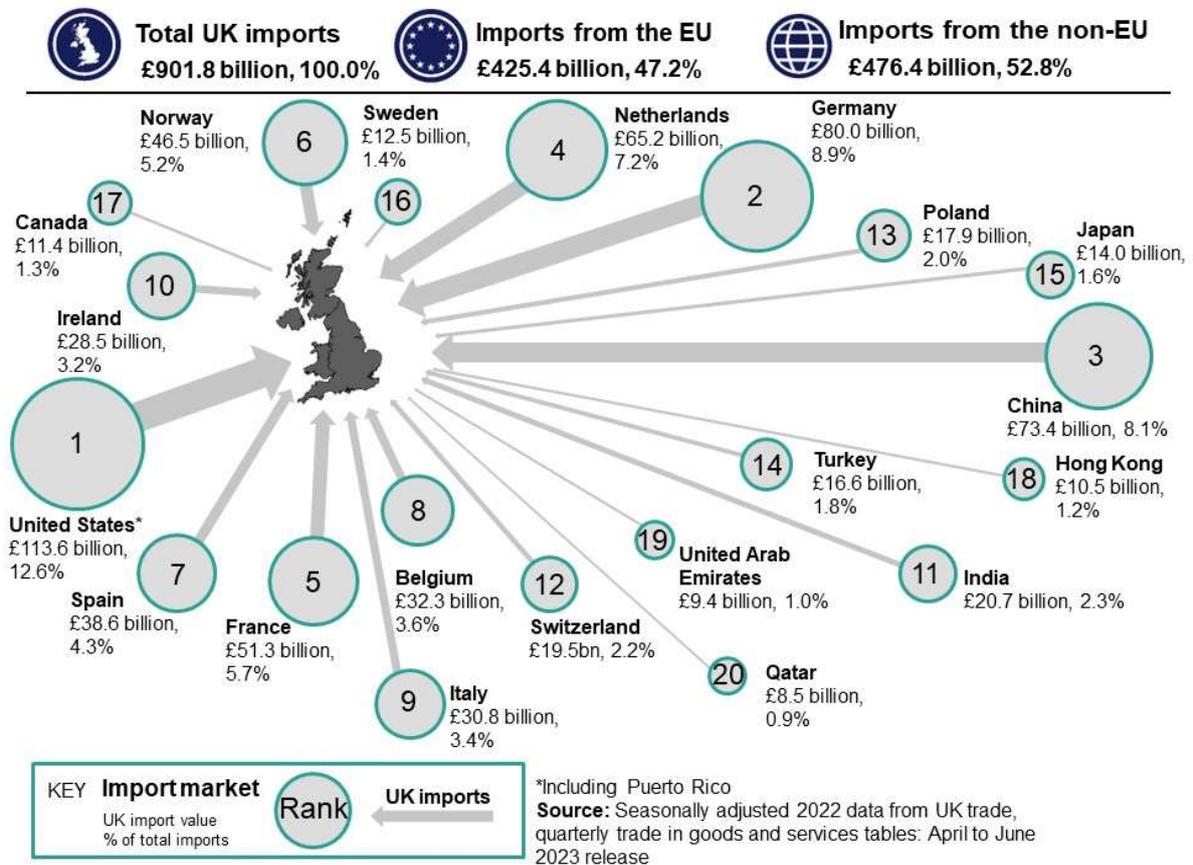
Diagram 2.0 Textiles Intelligence Report [Casadei & Iammarino, 2021]

Diagram 2.0 reflects the impact of Brexit on the textile and clothing industry pointing out the 'Market uncertainty' (ranked highest) and then the Sterling depreciation (Reuters and Economics Observatory also published articles about British Pound Sterling fluctuations [Reuters Sterling options] [Economics Observatory Brexit]), retailers being more cautious and increased cost of imported materials (which could be related to material not meeting product rules of origin under TCA).

From the examined studies and research, it is evident, that UK manufacturers have been facing challenges since Brexit. In the context of trade between the EU and UK, according to government official statistics (Office for National Statistics) and independent journals, EU is UK's biggest trade block partner accounting for £344.2 billion which constitutes 41.3% of the UK's exports in goods and services in 2022 [ONSa, 2023] [Fitri, 2022] as evidenced in Graphs 3.0 and 4.0 below. On the import side, comparing the import statistics from 2021 in Figures 5.0 shows some interesting new trends in UK imports in 2021 - changes in single trading partners. As shown in Figure 5.0, China has replaced Germany as UK's single trading partner for Import market and this trend was also noticed by media [BBC News, 2021] [Euronews, 2021]. However, going back to 2022 data Graphs 3.0 and 4.0, Germany overtook China again in 2022 with £ 80.0 billion worth of imports as opposed to China's £ 73.4 billion [ONSb, 2023] - these statistics further evidence the presence of trade diversion as referred earlier in the study conducted by Gutierrez [Gutierrez et al., 2021].



Graph 3.0 'Top 20 UK export markets for goods and services in 2022' [ONSa, 2023]



Graph 4.0 'Top 20 UK import markets for goods and services in 2022' [ONSb, 2023]

### Imports: top 5 trading partners

Country	Value (£ billion)	Change since April 2021 (%)
China	4.5	-4.4
Germany	4.4	-1.0
USA	3.7	2.7
Netherlands	2.3	6.9
Belgium	1.7	-5.4

Figure 5.0 'UK Imports: Top 5 trading partners, 2021' [UKTradeinfo, 2021]

Considering trade diversions, supply chain disruptions, reduced sales and business competitiveness caused by Brexit, UK Manufacturers require strategies and advanced solutions to minimise border disruptions and to go back to pre-Brexit trade levels. Currently there is an absence of academic exploration that addresses specific trade / customs EU/UK border movement issues and provides practical recommendations around specific technological solutions. To address specific issues, it will be necessary to gather accurate data around UK traders' experiences when moving goods through the UK-EU border and analyse it, to make targeted and practical recommendations.

## Chapter II

### Literature Review

#### 2.0 Introduction

Comprehensive literature review forms the foundation and is part of the good practices for substantial research and leads to productive work [Lather, 2009]. It is crucial to build the foundation for this research to provide further context and background information for the better understanding of complex customs regulatory instruments that are critical for ruling the customs and trade policies [Rijo, 2021] and building frameworks [WCO SAFE, 2021]. Furthermore, literature gap in practical business guidelines on utilising customs and trade technology and solutions, that addresses challenges faced upon UK and EU border crossings post Brexit has been identified. Additional data collection is essential to better understand the challenges and recommend targeted solutions, technological advancements and encourage trade facilitation tools utilisation. For these reasons, a poll with the industry actors and interviews with trade specialists have been conducted to bridge the gap and provide further foundational ground for this research.

#### 2.1 Qualitative data analysis - business solutions

1.0 Reflecting upon the responses of the poll on Duty Deferment and Postponed VAT accounting considerations, some UK traders can highly benefit from setting up its own Duty Deferment account for cost saving's (many Freight Forwarders charge extra for its deferment account utilisations) and for duty data information. Detailed data analysis can then lead to more sophisticated customs facilitations decisions such as adapting duty deferral measures under certain customs regimes [M2 Presswire, Duty Deferment, 2020]. Correct importer's duty deferment account management assumes correct Incoterms usage which is especially important when importer of records is liable for customs debt (exception is 'Delivery Duty Paid' Incoterm<sup>4</sup> [ICC, Incoterms<sup>®</sup> 2020] where duty and import VAT are the exporter's responsibility). In the UK, PVA<sup>5</sup> is available and used to defer payment of import VAT via PVA system (Freight Forwarder or Customs agent would have to be authorised via CDS<sup>6</sup> Financial Dashboard [gov.uk subscribe to CDS] by the GB Trader/importer in order to use PVA on import clearance) and then PVA statements can be downloaded via Government gateway [Rothenberg, 2021], or pay the Import VAT and retrieve it via standard VAT Return system [VAT return Gov.uk].

An analysis of the Poll's Participant 1<sup>26</sup> answer regarding the presence of trade documentation / trade information (e.g. transferred electronically) is backed up by 'Export-Import Theory, Practices, and Procedures' by Seyoum [Seyoum, 2013]. There are certain shipping documentations that should be presented for export / import clearance purposes; typically, these are: commercial/ invoices, delivery notes, CMR's and depending on the product – special certifications and/or licenses. Trade information presence and information correctness plays a key role in ensuring adherence to customs regulations, trade compliance, ensuring that the right amount of duty (if applicable) and import VAT are paid / deferred. Moreover, reliable information is crucial when taking advantage (paying NIL or reduced duty on imports) of Free Trade Agreements from the proof of origin perspective (e.g. presence of origin statements/invoice declarations in accordance with the TCA Rules of Origin [TCA Europa.EU, 2021]).

#### 2.2 Quantitative data Analysis

Traders can establish information flow processes (or improve them), ensure trouble-free and fast border crossings, improve on the quality of import/export declarations and still be very cost effective. This can be achieved with the help of customs software / trade technology already available. At the

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<sup>4</sup> Incoterms – Set of rules recognised globally defining responsibilities, risks and costs of exporters and importers when shipping goods, defined by the International Chamber of Commerce

<sup>5</sup> PVA – Postponed VAT Accounting

<sup>6</sup> CDS – Customs Declaration Service [CDS](#)

same time, businesses should start considering how to adapt to keep up with trade technology; for instance, take advantage of the UK's Single Trade Window. The concept of information flow can be taken care of from the individual element's perspective (for example the usage of Radio Frequency Identification for the network of customs clearance processes [Chaug-Ing, 2009]) or from a broader view (e.g. connecting the whole supply chain with the shipping data) e.g. using Blockchain technology [Gligor et al., 2002]. Various options will be thoroughly studied in the next chapters of this research. According to the WCO and WTO joint publication about advanced technologies in cross border trade (customs perspective) [WTO and WCO, 2022], the area of information flow and usage of customs and trade technology is becoming increasingly significant and is continuously evolving.

### 2.3 Border crossing delays and disruptions

In terms of the border crossing delays caused by system outages, in 2022 lorries carrying perishable goods were stuck for 2 days in congestion at Dover after IT customs system outaged and cancelled ferry crossings [FT Channel crossing delays, 2022]. Despite CDS deadline extensions, various system introductions and changes post Brexit caused uncertainty and road shipment delays amongst UK businesses [Financial Times digital platforms, 2022]. Still, some businesses pointed out that CDS was being introduced at the wrong time, too soon after the Brexit [Financial Times, 2018].

There are various factors that can lead to disruptions in border and/or customs operations, such as: direct shipping, information flow and bonded warehouse used in e-commerce [Baozhuang et al. 2021]; insufficient computer systems in place having to deal with increased number of declarations, administrative burdens and customs checks [Barker, FT, 2016]; extra certification requirements (e.g. Health certificates) and Sanitary and Phytosanitary on certain goods like animal origin and/or perishable goods [Whitworth, 2020]; cross border supply chain disruptions, changes in tariffs (e.g. quotas, anti-dumping) affecting the final price of goods [Krugman et al., 2018], technical barriers [Wei et al., 2023]; and cross-border e-commerce supply chain information sharing and its correlation with tax fluctuations / uncertainties [Zhang, 2022]. In the context of UK border disruptions, significant role played: computer systems not being ready, physical border infrastructure (to handle the customs inspections) not in place and customs staff shortages [Pickard and Foster, 2020].

### 2.4 Supporting studies

The UK Trade & Business Commission established in 2021, conducted a detailed study about new trading relationships and provided recommendations / solutions to the issues that were found [UK Trade & Business Commission, 2023]. The following three headings within the report were identified as the most applicable to this research.

'Improving the TCA' – The Commission recommended the creation of TCA improvements roadmap by EU and UK. Under 4.3 point on rules of origin, Commission recommended review of the rules of origin on electric vehicles (since the threshold for domestic content is increasing from Jan 2024 and both UK and EU car manufacturers are not ready to fulfil domestic content requirements [Reuters, Carey, 2023] and the extension of cumulation rules (Diagonal) with pan-Euro-Mediterranean FTA, to reduce the administrative burden of businesses. Moreover, guidance for point 4.5 promotes cross-border data exchanges and digital products and services guidelines – in line with EU and UK's Single Trade Window approach [European Commission] [UK STW]. Therefore connection (or interoperability) of both EU and UK systems is recommended to facilitate trade information flows.

'Leveraging the UK's existing global trade relations' – The Commission clearly indicates the need for the UK government to strengthen the relations with key trading partners (one of whom is the EU trade block [ONSa, 2023] [Fitri, 2022]), to communicate with individual EU members on developing partnerships on mutual interests (trade) and to develop further the existing UK FTA's. Better trade relationships with other countries will facilitate trade for the businesses by e.g. reducing barriers and opening market access further. As an example, this was just the case while UK was part of the EU since 1973.

‘An integrated government’ - Refers to a requirement on supporting (including financially) the SMEs, so these businesses can benefit from the trade opportunities. As Bailey’s studies revealed [Bailey et al., 2023], SME’s seek trade facilitations and cost reductions and special emphasis should be given to these businesses struggling with exports due to increased regulatory requirements (extra certification or packaging / labelling requirements) and customs clearance / administration costs. Points under paragraph 7.3 of the publication significantly relate to this study, because it deals with increasing the efficiency of customs and border processes by reducing costs and administrative challenges that many businesses incur. The Commission reflects on the Single Trade Window system, including imports and exports digitalisation, border agencies collaboration (in conjunction with UK’s STW initiative) and border/ports processes improvements. It recommends to reduce the border waiting times and administrative burdens (as identified in the Methodology section of this research).

Another example of a supporting study that promotes trade digitalisation is the Ecosystem of Trust, part of the UK Border Strategy 2025. This pilot, supported by various UK organisations such as the Institute of Export and International Trade and the International Chamber of Commerce UK, ran from October 2022 to March 2023 [Ecosystem of Trust, 2023]. The aim of the Ecosystem of Trust is to promote frictionless trade in the UK by utilising trade technology that enhances data security within supply chains, ultimately fostering improved trust between the government and border users. A report released in August 2023 highlights that the industry is not yet fully prepared to develop the technological infrastructure required to support the proposed border model, particularly in scaling machine-readable trade data formats. However, the pilot also demonstrated that supply chain data can meet at least 80% of customs’ minimum risking requirements and 60% of trade statistics needs. This led to faster border processes and underscored the potential for quick and effective collaboration between industry and government [Ecosystem of Trust Evaluation Report, 2023]. Nevertheless, system interoperability (B2C), which proved to be a challenge during the pilots, is expected to be further developed in the coming years as part of the UK STW phased implementation, following the recent adoption of the Electronic Trade Documents Act [ETDA, 2023] in the UK [WCO News, 2023].

## 2.5 Revised Kyoto Convention

The topic of technology usage within the trade has been a focus of some customs administrations going back to the first attempts of the establishment of the single trade window concept such as the 1982 introduction of the ‘Dakosy’ system in Germany to facilitate processes of three major German ports: Hamburg, Bremerhaven and Wilhelmshaven [IPCSA, DAKOSY]. Historically trade & customs technology have been referred to by various bodies and conventions worldwide. For instance, UNECE presented a single window roadmap in 2005 followed by ‘lessons learnt’ gathered from various economies around the globe [UNECE, 2005], or revised Kyoto Convention in 2008 [UN, 2008] (famous for its trade facilitation approach and for harmonizing and improving customs processes worldwide), in accordance with the Chapter 7 ‘*Application of information technology*’ - information technology is to be used to its maximum, to improve customs operations and become more cost effective. Chapter 7 also refers to moving away from paper-based processes. The General Annex Guidelines for this chapter explore specifics such as ‘*Lodging of supporting documents by electronic means*’ (3.18) which will facilitate customs clearances by businesses being able to upload e.g. health / veterinary certificates into customs system and ‘*Lodging of goods declaration by electronic means*’ (3.21) which will not only speed up the customs clearance processes for the traders, but also is in line with the UK’s Single Trade Window [STW gov.uk 2023] concept.

## 2.6 World Customs Organisation

In addition to the UNECE single window roadmap forum and Revised Kyoto Convention, the World Customs Organisation created and recently update the ‘SAFE Framework’ [WCO SAFE, 2021], the main goals of which are as follows:

- a) Facilitating trade and strengthening security of supply chains
- b) Global recognition of the AEO (Authorised Economic Operator) status

- c) Strengthening the customs roles and cooperations between themselves (customs to customs) and improving customs to businesses relations (faster clearances)
- d) Promoting electronic cargo information systems (for e.g. transit shipments) and usage of information and modern technology

Delving deeper into WCO’s approach to information technology, in 2018 it published an ‘IT guide for Executives’ [WCO IT Guide for Executives, 2018]. Although this publication is addressed to the senior executives of the customs administration, businesses should take a note of some of the important (to businesses) aspects. These aspects relate to more efficient customs clearances and standardisation of electronic declaration systems such as Single Trade Window or ASYCUDA. Improvements on any customs controls should not be omitted by traders, because streamlining customs processes results in faster border crossings for traders [Liang et al, 2021] leading to less supply chain disruptions and delays for traders. The ‘Digital Customs Maturity Model’ Diagram 6.0 shown below, lists benefits for businesses indicates (violet arrow), so although not comprehensively covered, some business considerations are addressed within the guidance. The benefits: ‘*Mobility, Visibility, Consistency and Predictability*’ are foundations for smooth trade processes, especially trade data and predictability [Schoenherr, 2015] in the context of customs inspections or shipment routes.

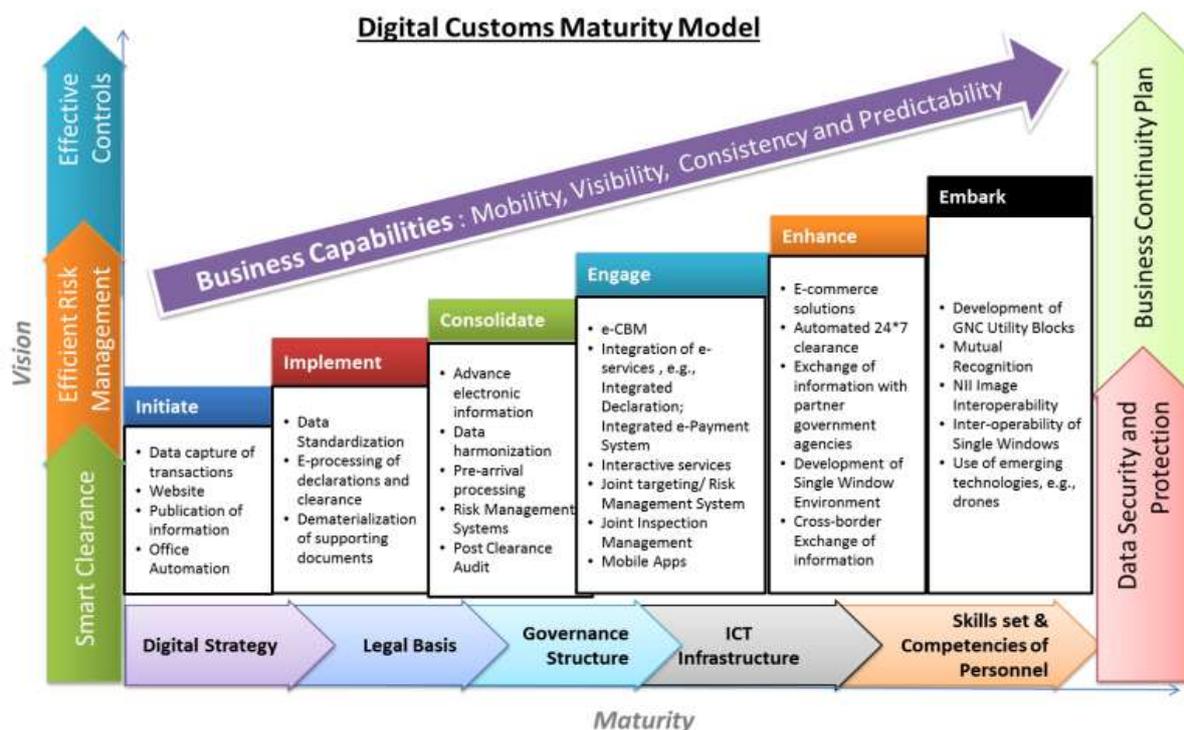


Diagram 6.0 ‘Digital Customs Maturity Model’ [52.0 WCO IT Guide for Executives, 2018]

## 2.7 Single Window Interoperability

This UN/CEFACT framework [UN/CEFACT Recommendation 36]), focuses on establishing the interoperability amongst various Single Trade Windows globally to communicate and exchange customs and trade data to further facilitate the trade. As per the Recommendation 36 introduction, this framework targets the interoperability between National Single Windows (bilaterally and/or regionally) and addresses the need for business involvement to understand and accommodate business needs. On the other hand, the framework’s objective is targeted at governments (‘Point C. Objectives of this Recommendation’, point 10) with the acknowledgement of business communities benefitting from this Recommendation (without details and/or examples of the processes). In contrast

to Recommendation 36, in the UN ESCAP<sup>7</sup> guide on Interoperability [ESCAP Interoperability, 2018], the section on business process analysis in Chapter 4 provides more detailed considerations from the business perspective referring to the ‘Buy-ship-pay’ model originally introduced by UN/CEFACT in 2003 [UN/CEFACT 2003]. This model however does not address the following:

- Complexities around various supply chains and its processes
- Customs special procedures
- Due diligence and/or auditing at the end of the supply chain process
- Any specific case studies or examples
- Technological solutions which could be utilised by the businesses

Whilst the latest version of the BRP (Business Requirements Specification) [UN/CEFACT BRS, 2019] although more detailed than the 2003 version, focuses on international purchases, defines various actors within the purchase and supply, and explains sale order contracts – its elements and interactions, still does not incorporate the above listed points and its purpose is to be a reference data model rather than a guidance for businesses to follow, which further highlights the need for bridging the gap in the literature. On the other hand, it is important to take a note that business data models are taken into account within the frameworks but are not comprehensively studied and business challenges are not addressed. Existing STW Interoperability frameworks are addressed to the governments and authorities to allow IT connections for import and export facilitations and the expressed need for businesses adaptation to interact with governmental programs does not comprehend for various operational strategies, does not refer to specific case studies and is not expressed at the technical level to allow importers and their suppliers to know how to practically implement the IT solutions.

## 2.8 Businesses – studies and independence

While different governing bodies and authorities are focusing on the implementation of technology for the improvement of trade and customs processes [WTO and WCO, 2022], businesses should seek their own solutions that will suit their processes and operations. These can be quite complex, because of the following reasons: complexity of the supply chains [Ali-Yrkko et. al., 2011], its synergies [Blyde, 2014], the actual product’s production processes (product country of origin and valuation determinations for complex elements like car components or sub-assemblies [Bossche et al., 2017]), timing of the information (in terms of receipt) and quality of it – which would be essential for e.g. customs clearance or licensing purposes, and data correctness determinations.

There are several IT solutions that are available and can be used effectively and in conjunction with customs technology and processes. For example, due to ongoing API’s (Application Programming Interfaces) improvements [Haoran et al., 2017], more technologies can be connected to each other on a large-scale diversity [Mendez et al., 2013]. However, not many businesses especially SME’s might have the financial possibilities or capacity to a) sufficiently build on the IT infrastructure to: take advantage of innovative technology to a significant extent [Adam and Alarifi, 2021] and b) have efficient and strong financial position and human resources [Madrid-Guijarro et al., 2009].

As a counterargument, there are more studies looking into other aspects of embracing the innovation as follows:

Topic	Literature
Innovating via: <i>‘Shaping right international organizational structures and adopting appropriate leadership styles’</i>	[Chang and Hughes, 2012]
Justifying the actual need for innovation for (especially new) businesses in order to survive	[Cefis and Marsili, 2006]

<sup>7</sup> ESCAP – Economic and Social Commission for Asia and the Pacific

Examining how strategic roles each business plays in the whole supply chain, from SME's, Tier 1 & 2 suppliers, service providers, logistics, distributors to end users (customers) explaining why efficiency and innovation are key to successful supply chain strategy	[Hong and Jeong, 2006]
Providing examples of how grocery/retail SME's should use technology and information strategically in order to connect with the supply chain more effectively to create closer relationships	[Strategic Direction, 2023]

Furthermore, cloud-based solutions could be considered to avoid costly IT infrastructure. One of the advantages that SME's have over the large organisations is that these are less bureaucratic [Forber & Milliken, 1999]: for example, approvals for a new project does not have to go via various hierarchy levels like it is usually the case with the larger organisations.

## 2.9 AI Technology including IoT and Blockchain

First, it is important to distinguish between Generative AI and traditional (Machine Learning) AI and underline to which technology this research refers. There are instances where Generative AI is used in the solutions that are studied here (such as Natural Language Processing); however, the focus remains on Traditional (Machine Learning) AI technology. In the context of this research, traditional AI - Machine learning algorithms - are used for: pattern predictions, image processing, structured data analysis, forecasting, and streamlining processes. Whereas Generative AI is more used for content creation (texts, images, music, videos), conversational search or summarization of text, and personalisation, and it can work with larger language models [Drew, 2023] [Prabhu, 2023] [Castillo, 2023].

A study on IoT used by customs conducted by E. Varese, M C Cesarani and M. Wojnarowska, which focuses on the customs authorities/ government level, explores various technological tools applied by customs authorities during Covid-19 and refers to WTO and WCO frameworks on trade facilitation, and the AEO and UNCTAD reports [Varese et al., 2022]. This study defines what the IoT tools are, highlights the importance of quick border crossings (usage of technology and AEO<sup>8</sup>) and acknowledges the challenges (insufficient knowledge, high costs, privacy issues and lack of clear strategy). A different approach is taken by the study conduct by K. Witkowski [Witkowski, 2017] listing IoT tools / technologies (focusing on Industry 4.0 and Big Data) used by companies, with some references to global economies; and this research is focused on logistics and supply chain management (as opposed to customs technology or Single Trade Window).

Similar to IoT, Blockchain technology is also used within the supply chains. They are known for using the 'Ledgers' which are the digital record keeping system. All ledger characteristics shifts the Blockchain technology to a high level of supply chain transparency [Francisco and Swanson, 2018] because the processes are not centralised and allow end-to-end links. Additionally, Blockchain is also used alongside or integrated with the IoT and smart contracts and according to many studies, is promising transparency enhancement, traceability excellence, efficiency and security of information within the supply chain [Moosavi et al., 2021].

## 2.10 Global legislations and Single Trade Windows

According to 'Digital disruption: artificial intelligence and international trade policy' [Jones, 2023] governments around the world already are looking into ways to use the AI/ML and develop regulations to take advantage of technological innovations. Some examples are: UK recently enforced (September 2023) the Electronic Trade Document Act [ETDA, 2023] and introduced Single Trade Window [STW gov.uk 2023] as part of UK Border Strategy 2025 [2025 UK Border Strategy]; EU plans on following the STW approach [European Commission] by following the examples of countries such as Singapore

<sup>8</sup> AEO – Authorised Economic Operator [WCO AEO]

[TradeNet and NTP], New Zealand [TSW], Australia [ICS], Canada [Single Window Initiative], Pakistan [PSW], USA [ACE] and Sweden [MSW].

The ‘linearised gravity model’ research (sampling 176 countries between 1995-2017) that studies the impact of Single Windows on the trade conducted by various countries has noted the correlation between STW and trade by an increase of approx. 37% on the country’s export performance [Martinez-Zarzoso and Chelala, 2020]. Another study, published in 2017 during the 9th meeting of the COMCEC trade working group, shows the significant reduction in time in customs clearances and border crossings since the introduction of Single Trade Windows in certain countries. The Figure 7.0 [COMCEC, 2017] shows the massive time reductions (in red) in certain border/ customs activities by the countries listed on the right hand-side since STW was incorporated:

	From	Reduction	To		
Border Crossing	180	<b>-160 min</b>	20 min		Azerbaijan
Documents collecting time	4 days	<b>-3 days</b>	1 day		Senegal
Cargo turnaround time	39 days	<b>-33 days</b>	6 days		Benin
	4 days	<b>- 2 days</b>	2 days		Malaysia
Customs clearance	6 days	<b>-357 hrs</b>	3 hours		Cameroon
Number of Documents	3-35	<b>- 2 to 34</b>	1		Singapore

Figure 7.0 COMCEC [COMCEC, 2017]

Similar to the benefits explored in the COMCEC study and as illustrated in Figure 7.0 COMCEC, reduction of document processing errors, more efficient and faster clearances, and cost savings are also amongst the overall benefits of STW and virtual trade gateways utilisation [Mcmaster and Nowak, 2007].

However, it is important to note that the implementation of Single Trade Window is a difficult task - according to Charles Sturt University’s research, as not only must the various governmental bodies coordinate well (and have the ‘whole government’ approach), but with new technology comes new challenges such as keeping up with various new legislations (such as verifications of electronic signatures or documents) [Charles Sturt University, 2022].

Single Trade Windows also do evolve over time, as seen in the example of Australia’s Single Trade Window originally developed in 2005 as Integrated Cargo System (ICS). It was later discovered that the system did not fully reach international standards; therefore, in 2017 the Australian Government established a special committee (IDCSW) to design and deliver a new Single Trade Window system [Widdowson et al., 2019]. As another example, the successful and consistent upgrades of the Singaporean Single Trade Window, TradeNet, led to the system being one of the most efficient Single Trade Window systems in the world, and Figure 8.0 below shows the developments taking place over a period of 18 years [ESCAP, 2010]:

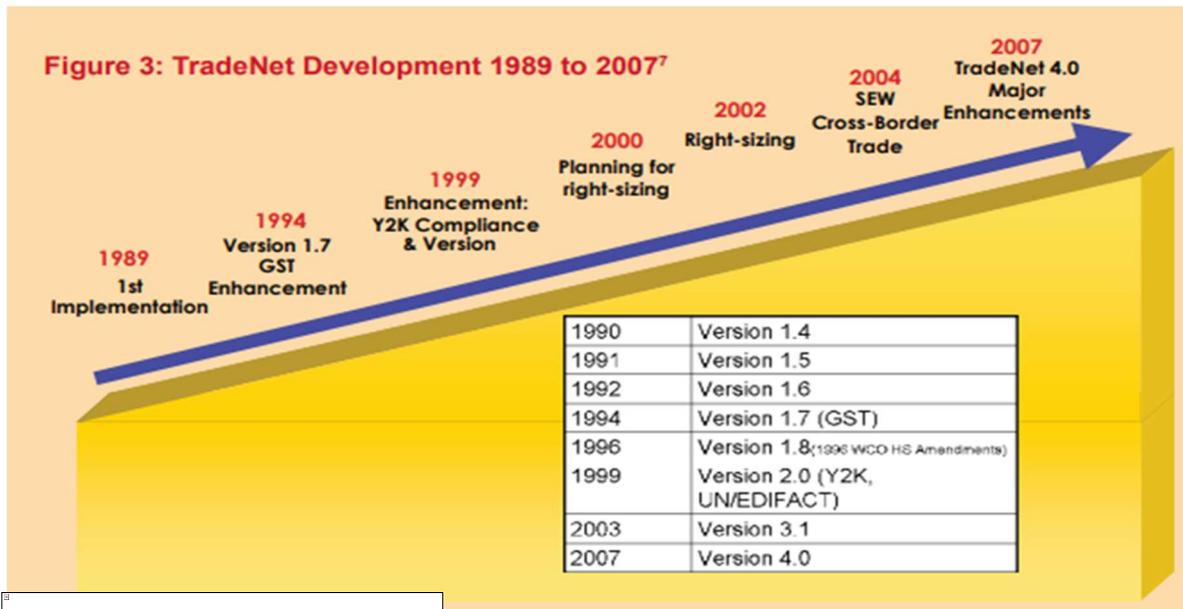


Figure 8.0 shows how TradeNet developed between 1989 – 2007 (The current TradeNet version is 4.1 [TradeNet 4.1]) and each release added specific developments, which is also a sign of continuous adaptability to the trade environment.

Going back to the foundations however, United Nations Economic Commission for Europe (UNECE) [UNECE, 2003] has started the work on single window initiatives in 2003, but it was not until 2005 that it established and published the guidelines on Single Trade Window - Recommendation 33 (UN/CEFACT) and the newest edition available was published in 2020 [UN/CEFACT Recommendation 33]. The main goal of the Single Trade Window in accordance with the Recommendation 33, is the establishment of a single entry of channel/ lodgement of a standardised import/export/transit (data elements) information and documentation, submitted once and shared amongst various governmental bodies. The concept is shown in Figure 9.0 below:

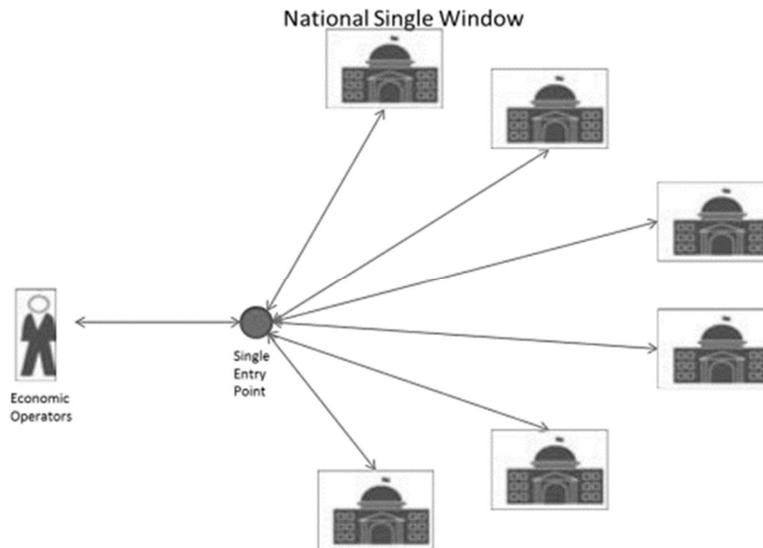


Figure 9.0 UN/CEFACT Recommendation 33 – 2020 Edition

In relation to the Single Trade Window as a topic - there were several publications made by UN (such as: Establishing a Legal Framework for an International Trade Single Window Recommendation No 35, or Single Window Interoperability Recommendation No. 36 [UN/CEFACT Recommendation 36]), WCO (Single Window Data Harmonization Guidelines – WCO Data Model, or WCO Single Window Compendium ‘On How to build a Single Window Environment’ [WCO SWE]) or WTO (case studies such as WTO Trade Facilitation Committee ‘Single Window Implementation in Brazil’, or ‘Single Window for foreign trade (VUCE) Case study – Colombia’ [wto.org]).

Single Trade Windows facilitating a country’s import and export activities as a concept is not new. As previously alluded to in Chapter 2 Introduction, Single Trade Windows are already shaping the trade in various countries, such as: Germany<sup>16</sup>, Singapore, New Zealand, Australia, Canada, USA, Pakistan and Sweden, as well as not previously mentioned: Finland, Guatemala, Hong Kong, Mauritius, Malaysia, Senegal and so on [UN/CEFACT Case studies].

## Chapter III

### Methodology

#### 3.0 Introduction

Integrating mixed research methods can lead to innovative approaches in research methodology, encourage complex thinking and facilitate creation of creative research designs [Sage,2023]. Methodological approach being used for this research is a combination of two methods – Poll, that collected both quantitative and qualitative data and semi-structured Interviews (qualitative only). Within this strategic data layering, where research methods complement, in-depth interviews are motivated by and built upon the findings of the poll, which serves as a foundational tool to set the scene for the exploration of customs and trade technologies in accordance with the research questions 1-4. Poll sets the macro by posing as a bigger picture, which the Interview method narrows down to the micro level, which is the Single Trade Window that is widely explored within the Interviews (and covered in Chapter 5). Building upon the macro level understanding of specific challenges encountered by businesses, the two outcomes are:

- To address the identified challenges, technological recommendations are drafted and examined in Chapter 4 of this research
- To further reflect on the challenges and enhance strategic approach, detailed interviews in the micro level delve deeper into the broad STW topic, facilitating critical analysis

Both methods provide insightful data on traders and its supply chain actors including operational challenges post Brexit and are used as a foundation for the recommended solutions and strategies. Ultimately, data jointly collected from both Poll and Interviews, further explores specific areas of trade and customs technologies and aim to address all the research questions<sup>8</sup>. Furthermore, data could be further enriched with a greater sample size by presenting the Poll to wider participants and targeting more trade industry professionals for more Interviews. On the other hand, in each instance each data collection provided enough feedback to reflect upon and all responses are very meaningful to the study despite the small size [De Beuckelaer et al., 2012]. In comparison to Interviews, Poll is introduced via web - social media platform to a wider and more diverse audience consisting of various industry professionals. Interviews however specifically targeted professionals with work experience in trade and customs for more subject specific and in-depth analysis of the Single Trade Window topic, and therefore consist only of qualitative data. In the case of Poll analysis, more industry specific (traders and trade/ customs professionals) approach could have been drawn that facilitated discussion around more specific technologies and solutions. Combining the methods provided insightful data addressing specific challenges encountered by the businesses and further helped explore the Single Trade Window acting as one of the main trade facilitators aiming to respond to the majority of needs of the traders. Data gathered and analysed from the two methods together form a comprehensive foundation for this research.

#### 3.A Poll - Data collection and analysis on border crossing issues:

##### 3.A.1 Data collection

Poll as a data collection method has been chosen for this study due to its several benefits – low cost and time effective (rapid data collection), allows collection of data on specific topic and quick analysis of data. Alternative data collection methods such as focus groups were also considered but not chosen, due to the focus of the research being around practical recommendations. Data collection on the challenges faced by businesses needed to be conducted time effectively and focus groups would not have been suitable for this specific purpose. The methodological approach being used for the Poll is a mix of quantitative and qualitative data. Referring to the Appendix A, for the quantitative data set purposes, a standardised Poll was presented via a LinkedIn post to the LinkedIn community (participants were presented with the same single question and same set of possible answers) to

facilitate answers being analysed statistically [Addington-Hall, 2011]. Response: *'Other – please comment or PM me'* in the Appendix A is open-ended and this is how the qualitative part of data was gathered and more in-depth information could be obtained [Weller et al., 2018]. For the purposes of this research, Poll data was collected via the LinkedIn platform, for the following reasons:

- a) LinkedIn is a professional and job-related social media platform that involves industry professionals and work-colleagues whereas other social platforms such as Facebook or Twitter are less industry and job/ professionally orientated.
- b) LinkedIn offers a lot of updates and publications [Hands, 2013] on customs and trade compliance especially when joining interest groups such as *Global Customs & Trade Forum, The Logistics, Supply Chain and Logistics Management, Automotive Industry Professionals, The UK Customs Network, and International Freight Forwarding.*
- c) The reach (B2B and B2C) and response speed are far greater as opposed to mail, personal or telephone surveys [Evans and Mathur, 2005]
- d) Improves on participant diversity including the ethnic minorities [Joseph et al., 2013] [Wilkerson et al., 2014]

Various studies would significantly benefit from Business-to-Business (B2B) and face-to-face questionnaires/interviews as a data collection method in the context of building trust and for improved engagement with participants [Peters and Fletcher, 1995]. As a counterargument, social media platforms such as LinkedIn are becoming increasingly popular for the purpose of building company relationships via networking and creating brand reputation [Sundstrom et al., 2021], therefore trust still can be built with the followers via online engagements such as publishing industry specific relevant content or updates.

A poll was created consisting of one question with the choice of 3 closed and 1 open answers and posted on the LinkedIn platform to reach international trade industry professionals. In response to the research question<sup>8</sup>, the poll question was:

*'In the context of road freight import/ export between the UK and EU, can you please indicate the primary challenge your business encounters:'*

3 closed and 1 open answers, that LinkedIn community/ network could vote on were:

- 1. *'System outages (Ferry/CDS/GVMS<sup>9</sup>)'*
- 2. *'Customs inspections/ audits'*
- 3. *'Inefficient information flow'*
- 4. *'Other -please comment or pm me'*

The options provided were based on industrial experience in Engineering and Automotive manufacturing sectors as well as literature review in the context of various shipping and border disruptions<sup>15</sup>. Based on these collective studies and industrial experiences, three possible answers were drafted to get more insight into the challenges around technology/ systems (system outages), correctness and speed of the shipping data needed for import clearances (information flow) and customs checks that increased in frequency since increased import/ export activities post Brexit (customs audits). Moreover, to highlight the significance of trade complexities around EU/ UK trade post Brexit, an open-ended answer *'Other'* accommodates any extra data that can enrich the research even further by receiving views around aspects not directly specified/ covered.

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<sup>9</sup> GVMS – Goods Vehicle Movement Service [GVMS](#)

### 3.A.2 Poll results

Quantitative data for answers 1-3 were gathered as follows: 'Inefficient information flow' answer rated highest - 39% with 'Customs inspections/ audits' coming up second - 36% and the 'System outages (Ferry/CDS/GVMS)' received 14% of the votes. 'Other -please comment or pm me' which falls under qualitative data, received 11%. The aspect of inefficient information flow relates to the shipping/ trade information that travels from the exporter via various third parties such as freight forwarders, customs brokers, customs authorities/ border agencies, and warehouses, to the importer of record. In the context of this research, 'Inefficient' means information inaccuracy and/ slow speed of shipping information receipt by various parties and/or systems, to ultimately conduct an import clearance. The 'customs audits' which (understandably) increased the number of inspections due to higher volumes of imports/ exports to/ from the UK and the new legislative regulations, also include documentary/ border checks due to being presented incorrect shipping information, and issues around capacity and inspection speed of the border agencies. In the context of this research, 'System outages' means any technical/ IT related issues with Ferry operator systems, GVMS, CDS, Community Service Provider systems and similar, which cause errors and delays in customs clearances, transit processes and border crossings.

The total number of respondents was 30, therefore the sample size is still relatively small in comparison to the number of LinkedIn connections of over 1000; however the number of active members is unknown. Extra caution must be taken when interpreting responses. On the other hand, the analysis of the data collected is used in conjunction with existing literature on challenges since Brexit and addresses specific issues with border movements. Moreover, the purpose of this poll was to get a deeper insight into specific factors impacting UK based businesses since Brexit and since responses do refer to specific challenges, the depth of responses compensates for the small respondents number. Answer 4 is open ended and the following 5 responses were received:

Participant 1	Shipper and consignee's preparedness regarding essential shipment information and readiness for imports/ exports between UK and EU, which shows no improvements since Brexit. Especially around import clearance instructions at the destination. Problems around discrepancies in shipping paperwork including invoices, missing data such as statement of origin and other basic elements.
Participant 2	Missing out on various existing benefits leading to inefficiencies, for example not taking full advantage of importer of record set ups around deferment account, VAT and Duty incentives and postponement or lack of correct pre and post clearance instructions/ set-ups which are crucial.
Participant 3	The most crucial aspect is an inefficient information flow.
Participant 4	Shipment delays, longer waiting times due to documentary checks.
Participant 5	The biggest challenges are customs inspections, which are not very consistent and can cause sudden issues.

Two answers above however should be assigned to the quantitative part retrospectively, as responses of Participants 3 and 5 refer to 'Inefficient information flow' (Answer 3) and 'Customs inspections/ audits' (Answer 2). Therefore, although initially treated as qualitative data, it is correct to analyse these answers from a quantitative perspective due to their statistical significance [Sarvimaki, 2017].

The remaining Participants pointed out specific trader challenges, which are: Quality and accuracy of the information on the shipping paperwork (Participant 1); Border/ customs clearance preparedness and 'fiscal set-ups' (Participant 2); Delivery delays caused by the paperwork checks (Participant 4 response can be reflected upon from either customs documentary inspections and/or accuracy of the shipping paperwork's perspective). These responses are highly significant to this study, because they

address the complexities around import/ export processes since UK left the EU single market and justify the need for trade facilitations and utilisation of trade and customs technology.

As per adjustment in quantitative part (Participant 3 and 5 answer allocations<sup>25</sup>) new scores are as follows:

<b>Poll Answer:</b>	<b>Number of respondents</b>	<b>%</b>
System outages(Ferry/CDS/GVMS)	4 respondents	13%
Customs inspections/ audits	11 respondents	37%
Inefficient information flow	12 respondents	40%
Other -please comment or pm me	3 respondents	10%
<b>TOTAL:</b>	<b>30 respondents</b>	<b>100%</b>

Reflecting further upon the number of respondents, it is not uncommon for smaller sample size to be used within supply chain management research and still obtain insightful data and meaningful input [De Beuckelaer et al., 2012]. Whilst the study is supported by available academic literature where possible, answers should be carefully analysed due to not representing the wider participant views. The quality of responses and comprehensive respondent insights however, provide sufficient details on the specific trader challenges since Brexit that this study is focused on. Additionally, this poll can also be treated as a preliminary investigation that can prompt more comprehensive future research in the area of UK border challenges.

In relation to the practical technological solutions that can be utilised by the UK manufacturers to tackle the challenges with border crossings as identified, it is also important to consider the extensiveness of the trade/ customs technology topic. As a result, due care and attention must be given to sufficiently understand and explore each solution, and these must be practical and tackle real-life challenges with the UK road freight border crossings.

### 3.A.3 Qualitative and Quantitative data analysis

The open-ended responses refer to the import/ export challenges around: shipping documentation data quality, paperwork due diligence checks, fiscal set-ups and border crossing preparedness. Some best practices around fiscal set-ups can be recommended to the traders to minimise or mitigate these challenges, such as setting up a company duty deferment account to manage the costs and ensuring data visibility as well as considerations to use Postponed VAT accounting available in the UK.

The Participant 1 open-ended answer pointing out the issues around commercial invoice data accuracy, import clearance considerations and preparedness, justifies the need for tools that will identify and verify correct shipping data<sup>35</sup>. Participant 1 highlights issues with incorrect (commercial/ for customs purposes) invoices used for import clearance purposes. This response comes under one of the research questions which concerns with the methods or tools that can be utilised to mitigate the issue with delayed import clearances and import declaration errors<sup>8</sup>.

Some other best practices that relate to concerns found during qualitative data analysis involve considerations such as:

- a) Determination of import clearance strategy (e.g. selecting one preferred or various customs brokers for various shipping routes),
- b) Utilisation of customs special procedures (such as Customs Freight Simplified Procedures (CFSP)/ Simplified Customs Declaration Procedures (SCDP) or Entry Into Declarant Records (EIDR) [Simplified Declarations gov.uk])

c) Self declaration considerations (via own or third-party customs software) or outsourcing to customs intermediaries/ forwarders

Moreover, getting all and right information upfront speeds up the border crossings as import clearance can be pre-logged, which minimises the possibility of stoppages at the border. Depending on the company set-ups and agreements with freight forwarders, UK importers should also consider choosing the best importation option – for example as mentioned above: a) goods pre-logged (with full or simplified import declaration depending on any customs authorisations in place) or b) goods being admitted to the bonded/ customs warehouse (traders could also consider connecting to the warehouse management software, if possible, for stock and/ or trade information transfer).

From the Quantitative/ statistical data perspective, the highest percentage of the votes were given to 'Inefficient information flow' (40%), which could be caused by factors such as stakeholders not communicating effectively and efficiently within the supply chain and/ or due to technological limitations preventing the shipping information from being transferred from the exporter via customs agent/ freight forwarder to the importer. Operational implications caused by inefficient information flow can lead to severe delivery delays in import clearances (for example due to shipping information not arriving on time for an import clearance) and can disrupt the whole supply chain [Katsaliaki et al., 2022]. Legal implications must also be considered, especially when the importer is utilising some customs special procedures when import processes are still being fulfilled at a later date, like for example under SCDP<sup>10</sup> (former CFSP) where Final Supplementary Declarations [FSD gov.uk] are raised, followed by supplementary declarations, or under IPR/OPR authorisation where Bill of Discharge must be reported to HMRC on a quarterly basis (depending on authorisation). Importers and exporters can control the quality of the information and its flow<sup>35</sup> and take advantage of existing trade facilitations, such as Single Trade Windows<sup>47</sup>. Various tools to minimise and/ or mitigate the impacts are comprehensively explored in the Chapters 4 and 5.

In relation to 'Customs inspections/ audits' rated the second highest (37%), the issues with the customs audits could be caused by previous importer/ exporter errors in customs clearances prompting more frequent checks or random customs audits. Customs documentary and/ or physical inspections cannot be avoided as being randomly selected [Inland Preclearance checks gov.uk, 2022]. They are inevitable and often out of the trader's control. On the contrary, the importer/ exporter can provide the needed information and communicate effectively to speed up the audit process [Peterson, 2007] and pay attention to the trade data and customs inspections mentioned within the WCO IT Guide<sup>17</sup>. However, the response highlights a problem with various UK border agencies, partially resulting from the infrastructure and staff shortages issues<sup>15</sup> – all leading to delays in customs inspections.

Reflecting on Answer 1 - 'System outages', a small number of respondents (13%) were impacted by the systems not working correctly, which most likely leads to some (if not severe) delays with the border crossings. Since GVMS is used by various UK based ports/ border crossings and is compulsory to use by the majority at the time of this research<sup>11</sup>, any GVMS outages pose a big threat especially for those traders moving perishable goods<sup>15</sup>. As an example, from the perspective of the automotive and/ or Freight Forwarder's industries, on imports to the GB via Eurotunnel, the forwarder must generate GMR out of GVMS using MRN number from the import declaration (raised on CDS)<sup>12</sup>. In case the GVMS is not working due to IT errors, goods technically cannot enter the GB, and if CDS did not correctly accept/ clear the declaration, GVMS will not generate the GMR number and customs agents

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<sup>10</sup> SCDP – Simplified Customs Declaration Procedure [SCDP HMRC](#)

<sup>11</sup> GVMS current list of ports using the system can be found here: <https://www.gov.uk/guidance/list-of-ports-using-the-goods-vehicle-movement-service> (January 2024 update)

<sup>12</sup> GMR – Goods Movement Reference – guidance on requirements can be found here: <https://www.gov.uk/guidance/get-a-goods-movement-reference> (January 2024 update)

sometimes must 'manually arrive' the entries, so that correct records can be stored in CDS and GVMS. Participants voting for 'System outages' could have experienced a similar scenario.

### 3. A.4 Conclusion

In response to the trader challenges as identified and explored, the UK's Single Trade Window [STW gov.uk 2023] is examined within the next (in-depth Interviews) section and then discussed in Chapter 5. UK STW acts as a further trade facilitation that can address many of the challenges identified:

- A) Inefficient information flow
- B) Sudden and lengthy customs inspections
- C) Shipment information quality
- D) Shipping paperwork due diligence/ checks

For that reason, data from the Poll has been essential for the formulation of Interview questions to critically examine if STW is the right tool that can be considered and practically utilised by the businesses in addition to the other recommended solutions (Chapter 4).

## 3.B Interviews - Data collection and analysis on STW

### 3.B.1 Data collection

Semi-structured interviews are a common method for data collection in qualitative research [Kallio et al., 2016] [DiCicco-Bloom & Crabtree, 2006]. The focus group however was also considered as a research method, for its thorough focus on a particular subject [Mariampolski, 1991] and could have been used to explore the STW topic. On the other hand, individual and anonymous Interviews approach provided more openness amongst the interviewees who drew examples from own work experiences and such answers facilitated critical analysis (participants not feeling judged or criticised by others). Interviews are mundane and memorable as well as unique and universal at the same time [Mann, 2016] and an interviewee may be selected as a representative of an industry which is common within the research in organisational studies, management and business [Rowley, 2012].

To address the challenges identified in the Poll<sup>28</sup> and conduct a critical analysis on the topic of STW, several customs, trade and industry professionals were interviewed, to further reflect on the experiences and various perspectives of professionals familiar with the STW concept. Although the sample size can be considered small, because only 10 professionals participated in the interviews, similar to the Poll, the comprehensive answers are very meaningful to the study [De Beuckelaer et al., 2012] and facilitate further reflections and critical evaluation of many aspects of the practicalities of STW implementation. Subsequently, the incorporation of the interviews into this study aims at answering the research questions, addresses identified challenges from the Poll and greatly enriches the research by obtaining feedback from industry experts on the benefits for UK Manufacturers. Furthermore, it addresses the need for expansion of academic research around practical solutions and strategic utilisation of UK's STW by the UK businesses.

A set of questions was designed in line with the general literature<sup>14</sup> on the single trade windows utilised by customs and governments globally to obtain valuable expert insights. Questions are designed to cover all the negative and positive aspects of STW, address the research questions<sup>8</sup> and identified caveats<sup>28</sup>. the set of questions and its relevant links are as follows:

Question	Link
1. Are you aware of any single trade window systems globally?	Literature review 2.10 Global legislations and Single Trade Windows and links to Appendix B
2. Which party/organisation, in your opinion, takes the greatest advantage of the single trade window system?	Literature review: 2.4 Supporting studies; 2.5 Revised Kyoto Convention; 2.6 WCO; 2.10 Global legislations and STW; 5.3 Interoperability (first part)
3. Who, in your opinion, will benefit most from connecting to the UK's STW?	Chapter 5 Discussion
4. What impact will the UK Single Trade Window have on UK business operational efficiency?	Literature review: 2.10 Global legislations and Single Trade Windows and 5.6 Case studies
5. In your opinion, what are the main advantages and challenges of the UK's STW from a business perspective?	Chapter 5 Discussion
6. What functions of the UK STW are you aware of and think are the most beneficial from a business and customs perspective?	5.2 UK STW according to BTOM (various phases); 5.3 Interoperability; 5.4 Cebrerus and Safety & Security data; links to 5.5 STW, traders and supply chain connections
7. How important is the interoperability function of the STW?	2.10 Global legislations and Single Trade Windows and 5.3 Interoperability
8. What are the key considerations for businesses when starting to utilise the UK STW?	5.5 STW, traders and supply chain connections and 6.0 Conclusion
9. Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various STWs in various countries?	5.2 UK STW according to BTOM Phase 3 (Global interoperability) Conclusion

### 3.B.2 Data results

All interviewed participants provided valuable insights into the Single Trade Window topic based on their work experiences, that this research further reflects upon. Interviews conducted via Microsoft Teams, took between 13-30 minutes and were all recorded and transcribed after each meeting. Each participant was presented with an introduction to and the aims of this research, information leaflet and consent form, well in advance of the interview. In addition to that, interview questions<sup>13</sup> were also shared in advance and introductions informing about the interview were consistently advised at the beginning of each interview. The Appendix B contains the summarised responses to the 9 questions of all 10 Participants, transcripts can be found in Appendix C and Ethical clearance in Appendix D.

### 3.B.3 Analysis and remarks

For question number 1 it was important to establish the general awareness of the single trade window systems used globally, that UK STW could be compared to. All participants with only one exception were very aware of international STW systems and provided many examples. The majority of STWs

<sup>13</sup> All ethical considerations were addressed and adhered to.

referred to by the participants are described in Appendix E and are further analysed in Chapter 5<sup>47</sup>; however some countries such as Australia, New Zealand and Switzerland are not covered by the Appendix E. Therefore, participants' responses provided additional coverage of other STWs worldwide, which are also referred to<sup>47</sup> within the study to ensure the comprehensive coverage of the topic.

The majority (7 out of 10) of answers to the second question, in the first instance pointed towards governments/ customs authorities being the main beneficiary of the STW system as a general concept with secondary mentions to the businesses (with Participants 1 and 9 specifically referring to SMEs). The approach taken by trade professionals is in line with the literature<sup>14</sup> on STW primarily focused on governments and border agencies with business focus positioned as second, which may also be linked with the identified literature gap in this specific area. Participant 6 highlighted the crucial role of the participation of trade bodies and associations in the overall success of the UK STW.

The third question is of a similar nature to the previous question, but triggered different considerations by narrowing down the answers to the UK STW and examining any differences in the approach when considering the domestic (UK) system. 90% of the participants agreed that businesses and supply chain actors will be benefitting from the STW in conjunction with the government and its various departments, with 4 participants referring directly to the SMEs: Participant 1: (...) *'SMEs will benefit the most due to advantage of raising own self declarations leading to cost savings (...)'* and Participant 3 (...) *'main benefits for smaller businesses with less purchasing powers as opposed to larger businesses (...)'* with Participant 7 disagreeing: *'Although the aim is to provide benefits to small businesses, this might not be the case, but possibly medium sized businesses which will need different authorisations such as export health certificates, registrations with Port Health authorities on goods import which can be found within STW'(...)*. Additionally, Participant 5 mentioned women entrepreneurs alongside SMEs. The participants' consciousness on business impact further justifies the need for this research and its comprehensive exploration of the business implications of STWs.

Question number 4 focuses on the different aspects of the STW functionality impacting the operational side of UK businesses, so that reflections based on practical examples can be examined. 7 out of 10 Participants directly pointed out the benefits of one single, centralised platform, where information is fed once and shared with multiple governmental departments leading to faster customs clearances<sup>28</sup> causing less delays at the border. The majority of the respondents also highlighted the multiple filing concept<sup>28</sup> and self-declarations with some reflecting on the impacts on SMEs and freight forwarders (the way they operate)<sup>54</sup>, border transparency and cost reductions. Participants 6 and 9 critically addressed the need for correct implementation of the STW in order to achieve the success with Participant 5 pointing out the need for innovation to achieve this. Responses further emphasised the business operational impacts that STW will have and the vast majority agreed with its very positive impacts on streamlining the processes.

Question 5 has been broken down into two sections – challenges and advantages of the UK STW from the business perspective. Half of the Participants alluded to time and cost savings as the main benefits, with some reflecting on the reduction of bureaucracy and business operational improvements<sup>45</sup> because of a single platform/ system. Participants 3 and 10 pointed out some extra advantages such as reduction of physical paperwork<sup>30</sup> and Participants 2, 4 and 6 directly referred to faster clearances/ border movements. On the contrary, the biggest challenges that the respondents pointed towards are:

- Willingness of the businesses to change<sup>35</sup>
- Adoption of new technologies
- Investments in staff and IT (cost and risk assessments)
- Review of current business model and processes (traders, customs brokerage, freight forwarders and customs software companies)

Whilst reflections on the above bullet points are expressed in due course within this research<sup>34 47</sup>, it can be stated right away that many respondents addressed very valid concerns with Participants 5 and 6 also referring to businesses needing the connectivity and interpretation guidance of the STW. These findings further justify the need and aim of this research to provide practical solutions for various actors in the supply chain with various operational set-ups. Participant 7 broadly expressed concerns around CPS's/ inventory linked ports system connections (solution will depend on HMRC's approach which is currently unknown)<sup>8</sup> and civil penalties in case of incorrect declaration filings (referring to insufficient experience and knowledge). Both Participants 9 and 10 expressed the need for the businesses understanding<sup>8</sup> the responsibilities and the management of the whole process amongst the various departments/ staff within an organisation. To address these concerns, it is important to make recommendations around business risk assessment and defined processes as referred to during Interviews. Additionally, SMEs specifically were referred to as being at disadvantage due to the need for IT preparedness/ additional costs and lacking direct HMRC contacts as opposed to larger businesses (Participant's 2 and 10)<sup>18</sup>, while Participant 10 raised concerns regarding data collection and its usage.

Question 6 reflects from the business and customs perspective on the UK STW functionalities (as explained in UK BTOM). 5 out of the 10 respondents reflected back to the advantages from the question 5 highlighting benefits such as streamlining the processes<sup>45</sup>, bureaucracy reductions, improving border transparency, faster clearances<sup>28</sup>, effectiveness and predictability. 40% of Participants (2, 4, 6 and 9) referred to the centralised, single platform as one of the most common functionalities and general improvements on non-user experience with Participant 1 referring to shipment templates eliminating repetition<sup>45</sup> leading to time savings and error reductions. Additionally, Participants 5,7 and 9 reflect on the data sharing functionality for multiple users, which is further explored in Chapter 5<sup>48</sup>. Responses of Participants 4 and 5 also mention that the fifth stage of UK STW will enable creation of import declarations free of charge which will be beneficial, especially for SMEs. Participants 6,7 and 9 however reflect on concerns regarding system integrations and data security with the last Participant also reflecting on data collection but from a different perspective (trade flow facilitation). It is therefore crucial to address cybersecurity<sup>50</sup> in this research as this has been highlighted as an area of concern that should be further reflected upon.

Interoperability<sup>49</sup> aspects of the STW are explored in Question number 7, where 9 out of the 10 participants agreed it is a very crucial if not the most important facilitation of the STW in general, with Participants 1,2 and 10 specifically referring to global harmonisation and connectivity with the other STWs as well as businesses/ traders, and 10 additionally referring to end-to-end processes. One participant pointed out the current HMRC issues along with the interoperability issues in general, recalling previous experiences with early NCTS<sup>14</sup> system implementations. This feedback further evidences the need for further exploration of this topic<sup>49</sup>. It is important to note that Interoperability means country to country, or other jurisdiction's system connectivity and effective data sharing [UN/CEFACT Recommendation 36]<sup>22</sup> but should also be looked at from the private sector to governmental systems connectivity perspective.

Question no 8 represents the crucial analysis businesses make when considering connecting to the UK STW. Participant responses can be divided into 3 categories:

- Pre-implementation risk assessment and process analysis – Participants (1,2,4,8) emphasised the need for businesses to evaluate their operations and create/ adjust internal processes before initiating STW connections to fully assess system compatibility and define staff training needs.

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<sup>14</sup> NCTS – The New Computerised Transit System, currently going through a new update to offer new functionalities such as electronic transit declaration submissions [NCTS](#)

- Cost Analysis - As already identified in the interviews the STW will facilitate money and time savings due to increased operational effectiveness and faster border processes; however 5 out of 10 Participants (3,5,6,7 and 10) pointed out the necessary initial capital investments in time, staff training, IT infrastructure and considerations made around inhouse operations or outsourcing customs services which requires careful planning.
- Adaptability and related challenges – 6 out of 10 (1,2,4,6,7 and 8) discussed the costs, resources and business readiness, and highlighted these as the main challenges especially for the SMEs (Participants 3 and 10).

Additionally, 5 out of 10 Participants referred to own work experiences and/or made professional observations which are very important to further reflect upon in this study and pose as crucial considerations for UK manufacturers and their supply chains:

- Participant 1 reflected on practical considerations and recommended businesses to review and fix internal processes first and create a phased migration plan.
- Similarly, Participant 6 discussed internal business processes and challenges as well as the impact on freight forwarders' operations.
- Participant 7 critically discussed the lack of guidance and little experience with declaration filings potentially leading to declaration amendments and business conflicts between parcel operators and STW.
- Participant 8 highlighted the need for business preparedness and training, based on early challenges during Australia's STW implementation, that led to severe delays with cargo clearances in the beginning but resulted in 20 years of smooth operations.
- Participant 10 refers to data and software integration with STW, platform compatibility and upskilling of the UK Businesses. References are made to OEMs<sup>15</sup> such as JLR or Aston Martin benefiting from better resources and expertise as opposed to SMEs.

The final Question (Number 9) comprises the legal aspects and interoperability of the UK STW and examines the future potential of such agreements with other countries utilising the STWs and similar. All respondents agreed that UK Government should aim for such agreements and facilitations to improve trade with other countries and connect to global networks to form alliance with key trading partners. Links to WTO<sup>16</sup> global network aims and guidance are made by Participant 6 (critically discussed) and 8, which is also an important aspect to refer to in the research. Additionally, Participant 1 reflects on the complexity around data interoperability, similarly to Participant 7 referring to inter-system connectivity challenges (such as CSPs<sup>16</sup>/ port to STW systems) and Participant 3 discussing security risks such as ransomware. All three points are important to consider not only from interoperability but from the wider – STW perspective. Overall, the positive answers to this question lead to the conclusion that the UK Government should prioritise the interoperability function within the UK STW framework and secure legal foundations and agreements with UK's main trade partners with considerations to high quality system connectivity and data security.

All 10 interview Participants critically evaluated the STW topic, starting off with the global concept, finishing with the domestic adaptation in the UK. Responses provided by trade professionals raised a number of points that triggered further exploration of the topic, especially in relation to business system connections, business preparedness and cybersecurity. Participants also highlighted the need for practical business guidance, education and upskilling UK companies, which corresponds with the aims and objectives<sup>8</sup> of this research, especially around providing practical technological solutions in the context of customs and trade.

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<sup>15</sup> OEM – Original Equipment Manufacturer

<sup>16</sup> CSP – Community Service Provider

### 3.1 Conclusion

The interviews provided detailed insights into the STW topic, addressed the challenges found in the poll<sup>28</sup> and the research questions 4-5<sup>8</sup> as narrowed down to the micro level of the methodology. Jointly the poll and interviews were essential to provide a comprehensive foundation to address specific trader challenges to explore targeted solutions, as explored in the subsequent Chapters 4 and 5. Both the data collection methods were significant to add onto the existing body of literature and build the research foundation. As identified, data collection could be expanded by greater sample sizes for both poll and interviews, however given the quality of information extracted, for the purpose of this study, sufficient evidence on UK trader challenges was gathered and used for the recommendations of practical business solutions. Feedback and comments made by all the participants collectively as reflected upon in the analysis sections<sup>26 29</sup> are especially significant due to its topic validity, and reflects the real life impacts caused by various changes and developments in the UK trade and customs, since UK left the EU single market<sup>9</sup>. At the same time, the analysis of both the data collection methods addresses the necessity for further research, because the topic of customs and trade compliance is too broad to design recommendations fitting all business operations and/or models within the scope of a masters thesis.

## Chapter IV

### Discussion

#### AI, customs, and trade technology

##### 4.0 Introduction

As per global frameworks<sup>19</sup>, more governments around the world are working towards trade and customs digitalisation which are in line with WTO's Trade Facilitation Agreement [Trade Facilitation Agreement, 2017]. Another aim of the TFA is the establishment of business to government/ authorities relationships, striking for collaboration between governments introducing Single Trade Windows and the businesses that will be taking advantage of them. It is therefore critical that businesses will adapt to and integrate with these technological advancements and therefore must recognise and/or develop own IT solutions that will suit the business's needs and will cooperate well with other technologies (interoperability). Whether such solutions would be cloud based, or development of ERP solutions would be essential, it is important to note that the presence of the API's (Application Programming Interfaces) [2025 UK Border Strategy] will also allow third parties to interact with the UK STW (Phase 3 of the STW as advised in BTOM<sup>17</sup> August 2023). Nevertheless, in response to the research questions 2 and 3, the subsequent sub chapters will further explore technological solutions in line with the industry requirements identified in the poll<sup>28</sup>.

##### 4.1 Introduction to AI/ ML Foundation models

Datafication Engineering is an AI (Artificial Intelligence) and ML (Machine Learning) development, design and deployment [Goniwada, 2023] and presents vast data collection techniques and it offers more than data collection and analysis - it prepares the data, provides and selects the appropriate models for data extraction and constantly learns and evolves. AI and ML are becoming increasingly popular and evolving rapidly, however given the implementation effort needed, are not fully utilised by the SMEs [De Valentina et al., 2023] due to various limitations such as smaller budgets and/or lack of sufficient IT knowledge/ skills as alluded to earlier.

AI and ML have already found their use in various elements of the supply chain<sup>19</sup>. For example, ML is used in effective inventory management to create regression models (other than the classic ones) such as Single/ Double Explanatory Smoothing [Hyndman and Athanasopoulos, 2018]; Winters Triple Exponential Smoothing [Winters, 1960]) aiding in forecasting even complex (fluctuating) trends/orders and/or demands [Kim et al., 2022]; and within finance to tract fraudulent transactions [Baesens et al., 2015] supporting high levels of ethics, compliance and security.

There are ready AI/ML Platforms available offering cloud computing solutions, which already have built-in and ready-to-use AI/ML foundation models, for example the Amazon Forecast AWS [Cloud Computing and AWS, 2020] and IBM Watson (and developing Cognitive virtual assistant) [Sabharwal et al., 2020], which offer SaaS<sup>18</sup>, PaaS<sup>19</sup> and IaaS<sup>20</sup> solutions. PaaS allows other enterprises to use its platforms to build own software, which is suitable for businesses lacking foundation IT infrastructure or IT capacities. Moreover, as further explored in <sup>21</sup>LOM PMA [PMA\_2192736], foundation models such as Amazon Forecast AWS can be used for company inventory management, and in the context of imported products, visibility of certain trade data (such as volumes, supplier details, product references etc.) is also improved. In Amazon Forecast, customisation is possible when the user is

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<sup>17</sup> BTOM – Border Target Operating Model (in the UK)

<sup>18</sup> SaaS – Software as a Service

<sup>19</sup> PaaS - Platform as a Service

<sup>20</sup> IaaS – Infrastructure as a Service

<sup>21</sup> LOM PMA - Post Module Assessment for Logistics & Operations Management WM904-15 Warwick University

creating a dataset group, however the downside of using such a model is the reliance on user uploaded data (and its quality) to improve operations [Forbes Future of Demand, 2021].

#### 4.2 Business solutions

To find suitable solutions for the businesses, it is important to understand business internal processes, their supply chains and become aware of review and/or incorporate new technological solutions.

In the context of the research questions<sup>8</sup>, following the review of the literature, the identification of the caveats within the existing body of literature and Methodology analysis, questions that need to be asked are what are the right technology and processes that can support businesses with the following areas:

- Trade Information flow
- Shipping Data quality
- Usage of UK's Single Trade Window

Some businesses are more hesitant to adapt and/or take advantage of modernisation and technology due to administrative burdens and investment barriers [Jankowska et al., 2022]. Some studies suggest that business hesitation from engaging with certain technology comes from data security and risk probability evaluation concerns [Wang et al., 2023], with some highlighting the necessity for data security risk assessments [Mok, 2023]. Additionally, these points are also in line with the interview participants' reflections<sup>31</sup>. Therefore, to address these concerns, it is important to investigate data security<sup>50</sup> in this research further.

#### 4.3 Information flow solutions, Part A: Quality of trade data

There are various studies tackling the topic of inefficient information flow: Information flow improvements [Gligor et al., 2002]; challenges of certain sectors (e.g. Food Supply Chain) around transparency and inefficient information flow [Chandan et al., 2023]; improving and integrating business processes embracing electronic data exchanges to improve clothing supply chain [AU, K.F. and HO, D.C.K., 2002]. Drawing conclusions from the mentioned studies and from the industry, there are a number of ways and solutions to improve the information flow to facilitate border movements to and from the United Kingdom.

However, before delving deeper into this topic, first it is necessary to address the need for high quality and accurate 'data/information' that appears first about the product in the supply chain, because without it, goods may not reach their final destination despite traders following the right process. When exporter/ suppliers produce the shipping paperwork [Seth, 2015], details such as value of goods, quantities, product description, country of origin information, HTS/ Tariff codes, and invoice statement/ origin declarations are stated on the commercial/shipping/customs/proforma invoice. Without the majority of that information, goods cannot be customs/ import cleared [Trade.gov] and therefore be processed/traded/sold (released to free circulation or admitted to a specific customs procedure [gov.uk imports guidance]). The quality and accuracy of the following data (a-d) lead to fast import clearances and facilitate the application of the correct amount of import vat and duties (if applicable):

- a) Accurate product descriptions.
- b) Correct quantities/weights/items stated.
- c) Realistic/ correct values of goods stated (there is no such thing as items 'free of charge' as everything has some monetary value in the eyes of the customs).
- d) Information about the country of origin and HTS code (depending on the exporter-importer's agreement HTS codes might not necessarily be recommended to be stated on the paperwork if e.g. importer has own HTS database).

Furthermore, the accuracy of the invoice statement/ origin declaration text (that can be found in Free Trade Agreement Proof of origin section) is critical in order for the importer to legally claim preferential treatment, in addition to the EORI number and/or REX authorisation being verified. Accuracy in this specific area is very important from the perspective of preferential origin eligibility [Europa.eu REX], as well as correct HTS codes that attract the correct percentage of duty rate and lead to the goods being correctly valued in accordance with the 6 WTO valuation methods [WTO Customs Valuation].

Quite often, missing or inaccurate information causes goods being 'stuck at customs' [Carter, 2023] or cause discrepancies in import declarations<sup>25</sup> – with that, depending on the commercial agreement, if freight forwarder/ customs broker is an indirect representant of the importer, both parties: the shipper/ customs broker and importer, are jointly liable for any mistakes. In the case of direct representation the liability falls on the importer who might not necessarily have the visibility of data being entered into own import declarations [Global Customs Academy]. The more third parties within the supply chain the shipping information goes through, the more possibility of human errors. In order to ensure data accuracy, it is best to receive and verify shipping documents/ information well in advance.

However, due to the multiple, high volume, rapid goods movements and complex supply chains [Abbasi and Varga, 2022], data pre-checks can be very challenging. Moreover, such trade data checks usually require some level of customs expertise (e.g. validation of HTS/ Tariff codes, knowledge of CPC<sup>22</sup> or preferential origin rules, etc.) and full cooperation from the exporter/ supplier (e.g. non preferential and preferential origin determinations), which can be very time consuming. For various businesses such as SMEs lacking enough resources [Madrid-Guijarro et al., 2009], this poses a big challenge; therefore fast and effective solutions are needed.

#### 4.4 Information Flow solutions, Part B: Advanced Shipment Notice and Electronic Data Interchange

When shipping data is transferred via electronic transfer – from one system to another, or becomes available in a shared space (e.g. a shared platform [Catrinescu and Seward, 2016]), leaving customs clearance aside – such data would:

- 'Travel' quicker - importer would not have to wait for the documents to arrive with the driver or wait for emailed documents
- Become transparent and visible - giving more time and chance for information checks

Importer of record could request exporter/ supplier to enter the shipping data once, into the shared system. Or the importer could request an Advanced Shipment Notice (ASN) [Gartner Glossary] or Electronic Data Interchange (EDI) message [Leech et al., 2021] from the exporter to be transferred directly into the importer's system (alternatively to upload the information via a special web portal that interacts with the importer's system). ASN/ EDI messaging method is commonly used within retail and automotive industries [Hanna, 2023]. In the context of ASNs, if the imported product is not subject to extra requirements or controls (e.g. licenses, certificates) and the importer is raising self-declarations, receiving ASN into own customs software system with additional forwarder information (vehicle/ trailer registration, crossing route) would be highly efficient. Depending on the clearance model, either of the following methods could be applied:

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<sup>22</sup> CPC – Customs Procedure Code – informs about the customs regime goods enter to or leave from: [CPC](#)

- a) Declare goods before the vehicle reaches the EU/ UK border, using pre-lodgement method [gov.uk Pre-lodgement], as presented below in Figure 10:

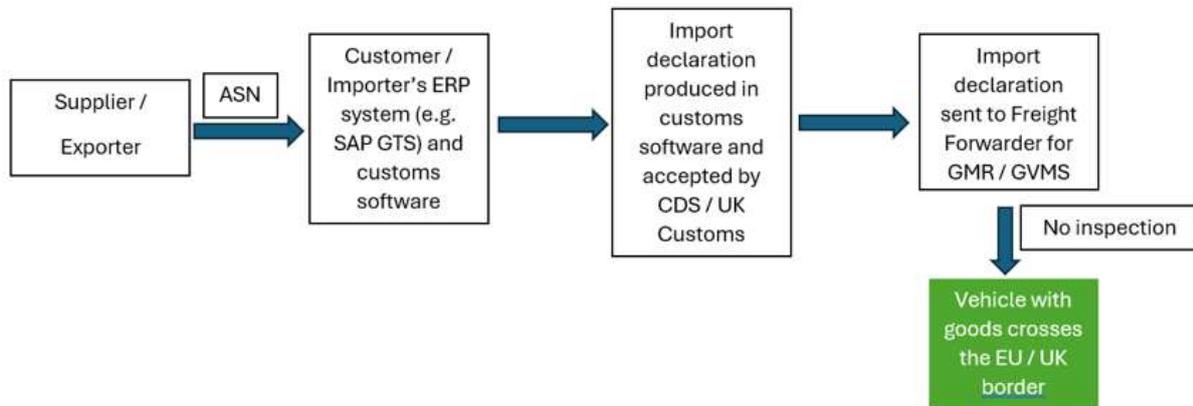


Figure 10.0 Pre-lodgement method

- b) Declare goods after border crossing by utilising customs declarations deferral authorisation (EIDR/ SCDP [gov.uk simplified declarations]) – in accordance with authorisation’s instructions (for example using Frontier/ SFD declaration) for vehicle crossing followed up by supplementary declaration. Figure 11.0 illustrates this example below:

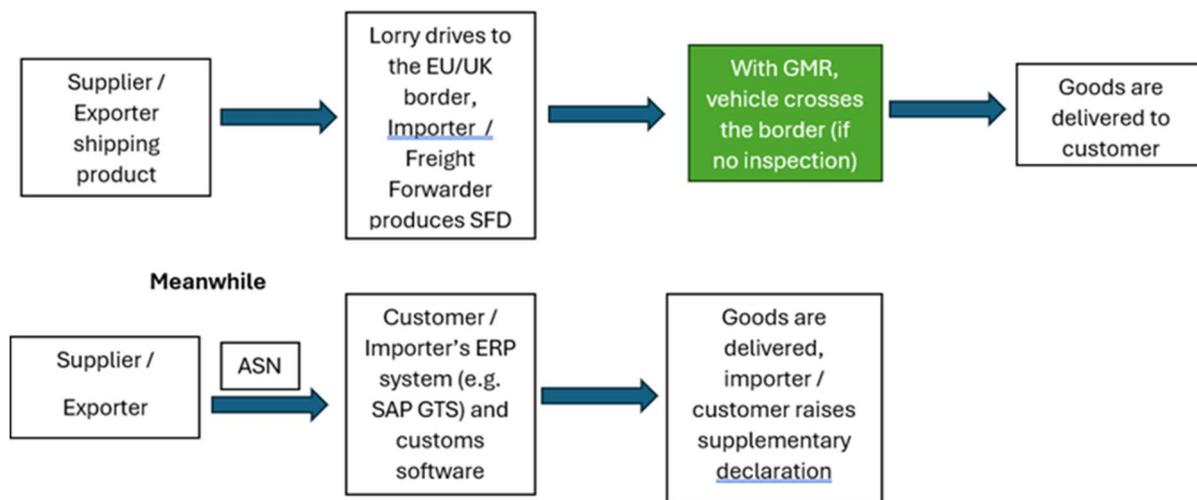


Figure 11.0 Supplementary Declaration method

The ASN system depends on set-ups and connections between supplier/ exporter and importer [Hanna, 2023]; however it may omit connections with other crucial third parties such as forwarders or customs agents, who are unable to directly add shipment data to the ASN. Despite that disadvantage, many importers prefer the ASN model which responds to the poll participant 3 comment on inefficient information flow<sup>25</sup>. For example, according to ‘Boscov’s Reading’ case study, since the importer started to rely on ASNs, its import processes transformed the business into: ‘a high-speed crossdocking facility’ improving not only the shipment speed but the efficiency of the company’s operations [Maloney, 2004].

Depending on the company’s needs, some importers decide to be excluded from the shipping information exchange and rely on the forwarder/ customs broker to clear the goods [Ataoglu, 2015]. A high number of forwarders and/or customs brokers have ready IT solutions to directly receive shipping data from importers or exporters (via EDI message or e-mails) and declare goods using own platforms or third party’s customs software – connected to CDS [Business West, 2022].

Exploring further the EDI messaging, there are several ‘messaging brokers’ to choose from who offer specific messaging patterns, architecture and performance, and it is important to choose the correct package to ensure that the customs software is integrated and is able to exchange information. For specific business needs, the most popular [Leech et al., 2021] are Apache ActiveMQ, RabbitMQ, Apache Kafka and IBM Message Queue, which all share a common language (Java, Python) which makes suitable choice for the development of enterprise applications [Raje, 2019]. With reference to Diagram 12.0 [Leech et al., 2021], EDI Messaging can be designed to integrate with systems such as SAP (as highlighted in the Diagram 12.0) – which is also designed to provide B2B/ EDI transfers to achieve better supply chain connections [PR Newswire, 2013].

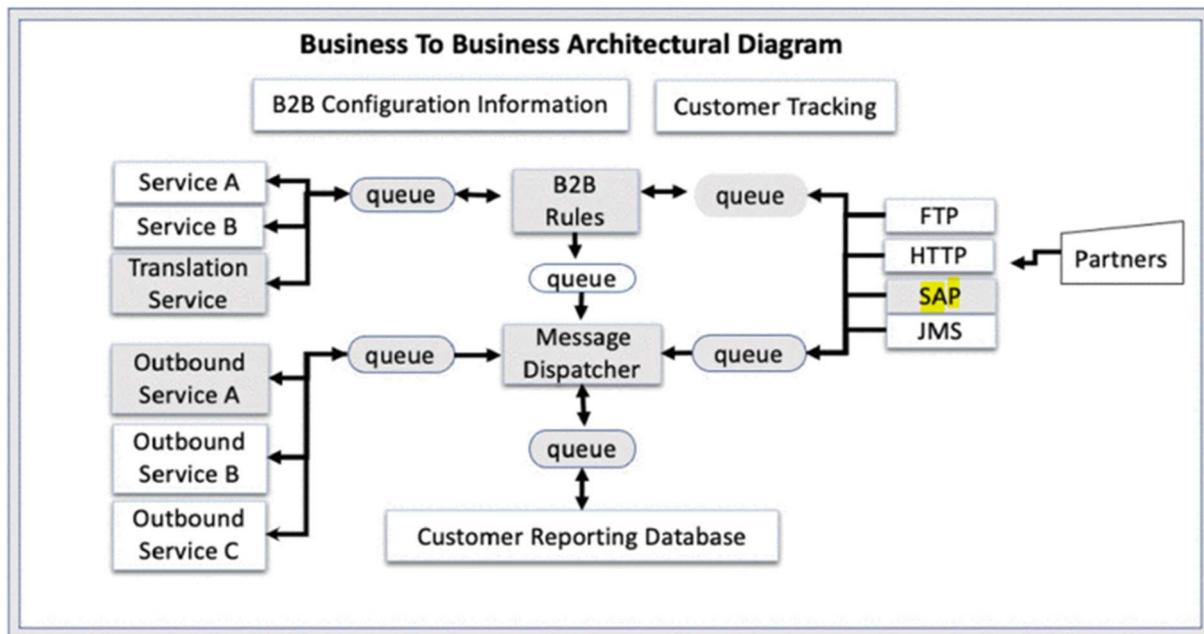


Diagram 12.0 'B2B Architectural Diagram' [89.1 Leech et al., 2021]

As per the example of the system connections above and in addition to EDI Messaging, from the practical perspective, whether the importer decides to go through customs intermediary or chooses to self-declare, whichever party is starting to search for the most suitable customs software programme, it is important to identify a developer based on what type of declarations can be raised on a specific developer's software. The reason for this is that some customs declaration programmes do not support CSP (Community System Providers) software [gov.uk CSP, 2022] and therefore declaration types can be limited (no possibility to raise e.g. SFD's/ Frontier declarations). As stated in the 'Customs Declarations end-to-end service guide' [Gov.uk guide], one of the other checks is to find out how a particular software connects to HMRC systems (e.g. via e-mail route or EDI messaging), because this information determines the technicalities/ specifics within the importer's badge, which should be applied for before utilising own/ third party customs software.

#### 4.5 AI Foundation models

Many large freight forwarders (utilising own customs declaration systems) face challenges around high volumes of shipping paperwork needed to be checked alongside declaring goods for various clients with departments of customs agents, manually typing declaration data [McKinsey & Company, 2022]. Under such circumstances, automation and innovation are highly desired – for example shipping documentation information extraction and directly fed into the declaration's system. In such case, AI can play a big role as a process improvement in data extraction and understanding [Reuters, 2024], and could be used in the context of customs/ shipping data extractions (from scanned/pdf document) and input (directly into the declaration system).

If a forwarder/ customs broker does not have its own IT capacity or it would be too expensive to create one, such business could consider using Platform as a Service solution (PaaS). PaaS provides ready AI foundation models<sup>34</sup> giving businesses the possibility to build its own solution(s) utilising IBM Watson Discovery [Sabharwal et al., 2020]. Such solution could also be implemented by an importer, which would be especially beneficial when handling large volumes of shipments and when self-declaring. It can also improve quality of shipment data and facilitate document checks<sup>28</sup>.

IBM Watson [IBM Watson] offers a wide range of AI foundation models, which can also be connected with one another. For example, Watson document conversion that can be connected to natural language understanding (analysing text to extract meta-data from content – using natural language classifier), so that the AI model can conduct data extraction from the shipping document and select & convert that data for the customs declaration [Russo-Spena et al., 2019].

The general concept of this solution is to either have one model of IBM Document Understanding and/or connect it with various algorithms such as:

- Optical Character Recognition (OCR) - aiming at high accuracy percentages [89.5 Sangiacomo et al., 2022]
- Natural Language Processing (NLP) - aiming at high understanding (of text) levels [89.6 Chowdhary, 2020]
- Machine Learning (ML)

In relation to certain limitations of this solution, forwarder/ customs broker might have to fill in certain gaps manually, to enrich/ add to the shipping data (e.g. truck plate number or freight costs, because this information might be missing in the commercial invoice). On the other hand, this gap could also be automated and extracted from the forwarder's ERP system or the information will need to be fed by other means. In such case, if the declaration software is separate from the Forwarder's database/ system, API's could make a connection between the systems and desired data could be transferred [Haoran et al., 2017]. Alternatively, certain data could be pre-populated (e.g. freight costs, if forwarder has a cost per pallet space), or depending on the frequency of trailer replacements, the registration plate could be extracted by the AI/system from the CMR document (if such information is recorded correctly) and crosschecking information from the export declaration (with confirmed port of destination information). Another solution would be using the information extracted from the cargo tracking devices [Alho et al., 2018] that could be connected to the forwarder's/ broker's declaration system. Moreover, if goods are imported under special customs regime, information about vehicle/ trailer's registration plate could be extracted from the SFD/ Frontier Declaration (for example when importing under SCDP authorisation) – several shipping paperwork can be used for extraction and declaration (commercial invoices, CMR, Bill of Lading, Frontier declarations, etc.). In general, OCR Technology has been used in document classification by forwarders before [Arvind, 2023] for various purposes such as direct customs declaration information input, however there are some disadvantages that must be noted. First, OCR could require much more effort for the algorithm training which makes the training costly and extensive, and secondly, it can generate many errors [Peng et al., 2022]. With continuous AI/ ML evolution this technology is being improved, but there are also other similar technologies that are worth attention. For instance, Visual Document Understanding (VDU) based Document Understanding Transformer called '*Donut*' that is free from OCR technology, achieves better results than traditional OCR technology, according to the model creators [Geewook et al., 2022].

In the context of filling the information gaps (other than incorporating tracking devices), electronic documents such as e-CMR's [Tianyu et al., 2017] could be incorporated and utilised, so that information can be transferred by other means (which is another reason as to why the Electronic Trade Documents Act in the UK [ETDA, 2023] plays a huge role in standardising electronic shipping documents).

Another challenge that forwarders/ customs brokers may face, while using the AI ready platforms and specifically OCR/VDU algorithms, is the difficulty to get the programmes to correctly read and extract data from various types and forms of shipping paperwork used by various clients. The more customers the forwarder has, the more exposure to different formats of the shipping paperwork. On the other hand, there are ways to improve document parsing<sup>23</sup>. Because AI/ML is constantly learning (ML = Machine learning), algorithms can be taught by a human Expert [Hattori et al., 2023], so that algorithms can better understand and extract desired data. Human intervention may be necessary to point out and map the data accordingly – for example navigating on a specific area on the document (e.g. commercial invoice) and then indicating/ naming what type of data this is (showing AI what is this, it is a form of interactive learning) [Baviskar et al., 2021]. A similar approach/ technology has already been used to map geographical locations using toponym extraction method (finding and extracting toponyms) and Toponym Disambiguation to analyse and allocate the data correctly [Habib and van Keulen, 2013]. Another solution to improve data accuracy could be initiations of the further NLP improvements and utilisation of various error correcting codes - such as Bidirectional Encoder Representation from Transformers (BERT) [Sida et al., 2022], Bose-Chaudhuri-Hocquenghem (BCH) [Wahbi et al., 2021] or Reed-Solomon code [Erl-Huei et al., 2013], (RS and BCH are also used in improvements of digital information transfers [Wahbi et al., 2021]). In addition to the above mentioned, there are several other techniques for programme improvements, such as using the few-shot learning<sup>24</sup> [Nan et al., 2021], using synthetic document generators to pre-train the models (e.g. Microsoft Synthetic Document Generator), and fine-tuning<sup>25</sup> [Fine-tuning OpenAI].

Going further, in the case of the unstructured or hard to read datasets<sup>35</sup>, AI algorithms can be programmed to clean up the data, remove glitches, impose order, filter out duplications or blank spaces. For example, Microsoft's Data Quality Services integrated with SQL Server, and Amazon AWS and its data classification services (e.g. SageMaker) which can be further connected to various databases [Wayner, 2023]. This solution could support structuring various shipping document formats (especially commercial invoices) used by various traders.

#### 4.6 Automatic HTS Classifications – further automation

Systems can be further automated to simplify the information flow<sup>45</sup> and ensure data correctness<sup>35</sup>, so that the right information is ready to be used at the time of import or export. When a business is new to HTS coding or needs to revise the HTS codes of its products, Tariff classification tool programmes could be utilised. An examples of such a tool: Mosaic Data Science company supported one of its North American trade consultancy customers to develop a Natural Language Processing model, that automated the process of HTS code classification, with the usage of various supervised ML (Machine learning) models, including the Universal Sentence Encoder, which significantly improved the automation of HTS coding and its speed [Mosaic, 2023] in comparison to that traditional methods (HTS coding one item at a time by description). Several freight forwarders (such as DHL Express and its MyGTS platform [DHL.com]) and customs software providers (such as Portorium [Portorium.com], Descartes CustomsInfo [Customsinfo.com]) already provide stand-alone software and/or have built-in solutions for HTS classifications and ECC classifications (needed for export control). Such solutions could be very useful when the trader is relatively new to importing/ exporting - used as a standalone solution or within the same customs declaration programme/ software (as an add-on option) – which can help find the right HTS by typing the product description. However, depending on the type of controls and product being classified, full reliance on the classification's program may not be the safest solution due to risk of severe consequences (civil and customs penalties) in case of incorrect classification on e.g. dual use/ controlled product (if exported without a license).

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<sup>23</sup> Document parsing is the process of extracting structured information from the document.

<sup>24</sup> Few-shot learning is a technique requiring smaller number of examples ('shots') to train the model

<sup>25</sup> Fine-Tuning is another model training technique, training on many or more examples

There are some limitations to this HTS automation that should be taken into consideration. One of the trade consultation businesses argues that teaching AI how to analyse the chapter notes and interpret exclusions when HTS coding would take years and with HTS codes changing every 5 years (or every year in some countries such as EU [Access2Market.com]), re-teaching AI models new additions would be required and in general HTS coding is more complex than using just the product's description [Allyn International], whereas WCO's authors Cliteur and Bertrand, 2023 discuss issues with accurate product descriptions and the approach is that this technology is a tool for the classification expert - to be used by and be supervised by an expert [Cliteur and Bertrand, 2023]. In addition to that, given some complex HTS classifying matters such as classifying products of multiple usage (e.g. printer with built in fax and scanner) [Neville, 2017], sometimes the product requires further information and analysis (e.g. reaching out to the supplier or looking at the product's drawings), therefore extra communications and effort would be required before establishing the correct HTS.

For HTS coding, many solutions use methods of classifying new items based on the historical data and allocating the 'confidence level' – explaining on what basis the product has been classified (same/similar description of other product, based on historical data or by some other means) and allocating the confidence level accordingly – which is a good way, giving an indication to the customs expert which HTS codes should be e.g. re-checked. With regards to the ECC/ ECCN classifications, many solutions have built in (according to jurisdiction) dual use and controlled items lists (Commerce Control List, EARs etc.) and can recommend the control type and/or allocate the EC number accordingly. Some software contain the export control compliance check throughout the shipment or at the order entry level, checking Restricted Party Screenings<sup>26</sup>, ECCNs and Licensing in place. For example, Oracle GTM (Global Trade Management) and their client Crane Aerospace, were able to save money and time using the GTM Cloud solution to screen the orders against mentioned export compliance elements [Oracle GTM].

However, there is lack of sufficient academic literature (exception is general information on governmental websites such as US International Trade Administration [trade.gov]), to better explore the ECC/ ECCN classification automation process. Interviews with customs software providers and/or exploring the case studies could bridge the literature gap in this area.

Some traders use their own classification system incorporated within the Enterprise Resource Planning systems (ERP) such as SAP GTS (SAP Global Trade Services) [Suseeladevi, 2015] [SAP Help Portal]. Own HTS database could be uploaded into the customs declarations software for automatic HTS completion (with HTS being assigned to a specific part number). HTS classification based on own (ERP) and/or AI/ ML technology is not a new concept and there are several different approaches to achieve the most suitable solution [Chandrasekhar, 2019]. Finding the right classification judgement depending on the product's complexity is crucial and its constant management is highly recommended for full compliance.

#### 4.7 Further automation – linking customs authorisations and preferential origin

Depending on supply chain base(s), shipment's flows, business's locations and trade facilitations offered by the various governments/countries, there are other areas where automation and innovation can be applied [Hillberry and Zhang, 2017].

When the trader is applying for a specific customs regime or authorisation, it is worth checking if customs software provider's technology can be utilised to work in conjunction with the authorisation, to simplify and digitalise the clearance or operations of the process. For example, IP (Inward Processing) and/or OP (Outward Processing) processes depending on the frequency of imports (and material used in manufacturing and export) can be very complex [Burleigh, 2001] and therefore can

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<sup>26</sup> RPS - Restricted Party Screenings – End user and Embargoes/Sanctions checks, sometimes also called Denied Party Screenings. Usually, such programmes have various lists uploaded such as OFAC or BIS and many more.

be desirable to be automated. In such instance, specific stand-alone (or connected to trader's ERP) system could produce the necessary records for Bill of discharge (BOD) purposes for IP/OP.

For businesses requiring temporary storages or customs/bonded warehouses, inventory system connections could be very useful (including customs special procedures such as Return Goods Relief authorisation, if regularly used), whether or not managed by the business itself or via third party. In case of SAP GTS system utilisation, system guidance/recommendations can be found in SAP GTS (SAP Global Trade Services) guide, where usage of duty drawbacks, FTZ (Foreign Trade Zones) or customs warehouse [Iyer and Galchhaniya, 2018] can be found. Moreover, SAP GTS could be connected to customs software provider's system where the whole process of recoding data (including but not limited to part number, description and equivalent country of origin or HTS code) and completion of customs declarations would be possible. HMRC also provides guidance on how to connect CHIEF and/or CDS to temporary storage facility (if approved) and inventory systems with a need for joining approved CSP (Community Service Providers) with an option of producing own system to link with CSP [gov.uk temporary storage]. Some companies offer the full package and ready solutions, such as Descartes – 'Customs Warehouse Management' or 'Duty management' for CFSP software ICE (Integrated Customs for Europe) [Descartes.com], Sequoia [Sequoia], SGS [SGS Customs] or MIC [MIC], which – depending on the business – can be a better solution in case of lack of IT capacities. Such software could also work in conjunction with existing ERP systems and offer further advancements (such as built in vessel's lists in case of sea freight, or automated HTS classifications), depending on particular capability and customer requirements.

Another example in relation to utilisation of free trade agreements, importer's product 'originating'<sup>18</sup> [Reuters, 2023] content percentage could be calculated automatically while incorporating correct LTSDs (Long Term Supplier Declarations). Systems such as Oracle [Oracle.com] or SAP GTS [SAP GTS] offer preferential origin calculation solutions, which can be very useful especially in case of lengthy and complex product BOMs (Bill of Materials). With automated origin calculation process, the whole supply chain can benefit: Tier 2 supplier can provide evidence of the product's originating content to Tier 1, which then uses verified origin component in their own product. This enables the OEM to confirm the origin of the final product through well documented evidence from both Tier 1 and 2 suppliers.

#### 4.8 Power BI and Data visualisation – MSS/CDS reports

Once UK traders register to the HMRC's MSS/CDS reports subscription service [gov.uk request CDS data], they gain valuable insight of all import and export entries made. Details include comprehensive shipment information, including but not limited to MRN numbers, item's weights, prices, duties/VAT paid, CPC codes, preference codes, country of origin and HTS codes. These reports capture all third parties, that have ever used the trader's VAT/EORI number for imports/exports. This provides good due diligence opportunities for document<sup>28</sup> and/or customs auditing and capturing non approved brokers clearing goods without importer's knowledge. Shipment information can also be further analysed for KPI purposes, duty saving opportunities and supply chain/logistics planning. Possibility of creating pivot tables and V-Lookups using MSS/CDS reports data due to Microsoft Excel format, can be a good way to extract, visualise and analyse trade data also for customs strategy planning. However, when focusing on elements such as: non approved/non recognised deferment accounts, unusual CPC and HTS codes, unexpected declaration types and document codes – foundation for comprehensive customs audit can be built (which may be compulsory for AEO<sup>27</sup> authorisation). Businesses should also seek other (technological) solutions to analyse and visualise data to have a better picture and gain a detailed understanding on own trade flow. Trade data is tangible therefore is easier to be visualised. There are a lot of tools that can support this data visualisation [Skender and Manevska, 2022], such as Power BI [Microsoft, Power BI]. At the same time, it is important to address

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<sup>27</sup> AEO – Authorised Economic Operator [AEO](#)

the requirement for human capital investments to conduct trainings, to enable effective utilisation of such tools.

Power BI is a reporting and analysing tool/technology created by Microsoft that is cloud based [Rad, 2023]. Power BI Desktop helps users to create reports and visualise the data via various ways such as diagrams, charts, and maps; it helps with KPI's presentations and is very useful when it comes to customs compliance. On the contrary, the comprehensiveness of needs could reveal that Power BI doesn't provide all the desired functionalities in comparison to other similar tools such as Tableau, which offers a broader range of functions [Tableau.com]. Assessment of requirements before purchasing the tool is therefore encouraged.

Users can upload the MSS/CDS report - excel spreadsheet into the Power BI and start with visualisations and the usage does not require any advanced IT skills. Once excel is uploaded, as per the example below, if the importer wants to visualise how much duties are paid on goods imported from a particular supplier/consignor, in the 'Visualisations' tab, by selecting the Pie chart, then moving 'Consignor' (from the far right 'Sheet1' elements) into a Legend and then moving 'Duty Paid' into Values (Then Sum of Duty Paid will appear in the box), Power BI will create a pie chart showing the actual sum and percentage of duty paid by each Consignor as per Diagram 13.0 below:

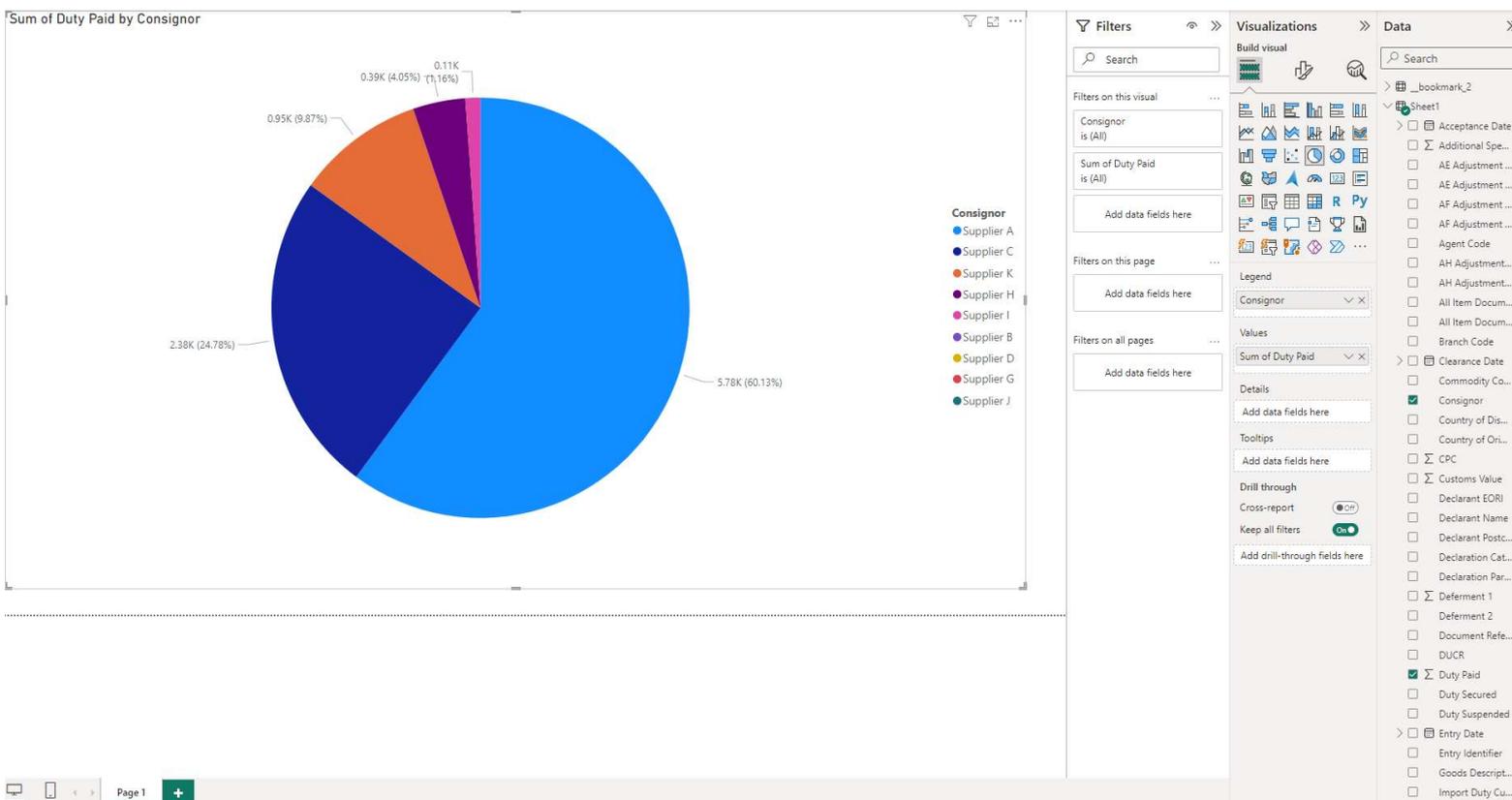


Diagram 13.0 Showing Pie chart generated by Power BI

Visualisation can be made accordingly to the trader’s needs; as a non-fiscal example: in the Diagram 14.0 showing the world map, the user can also visualise from where the imported items are, which could potentially help with finding the ‘Centre of Gravity’ and support shipping routes/distribution facility location improvements [ES9X5-10 TTM A6FT].

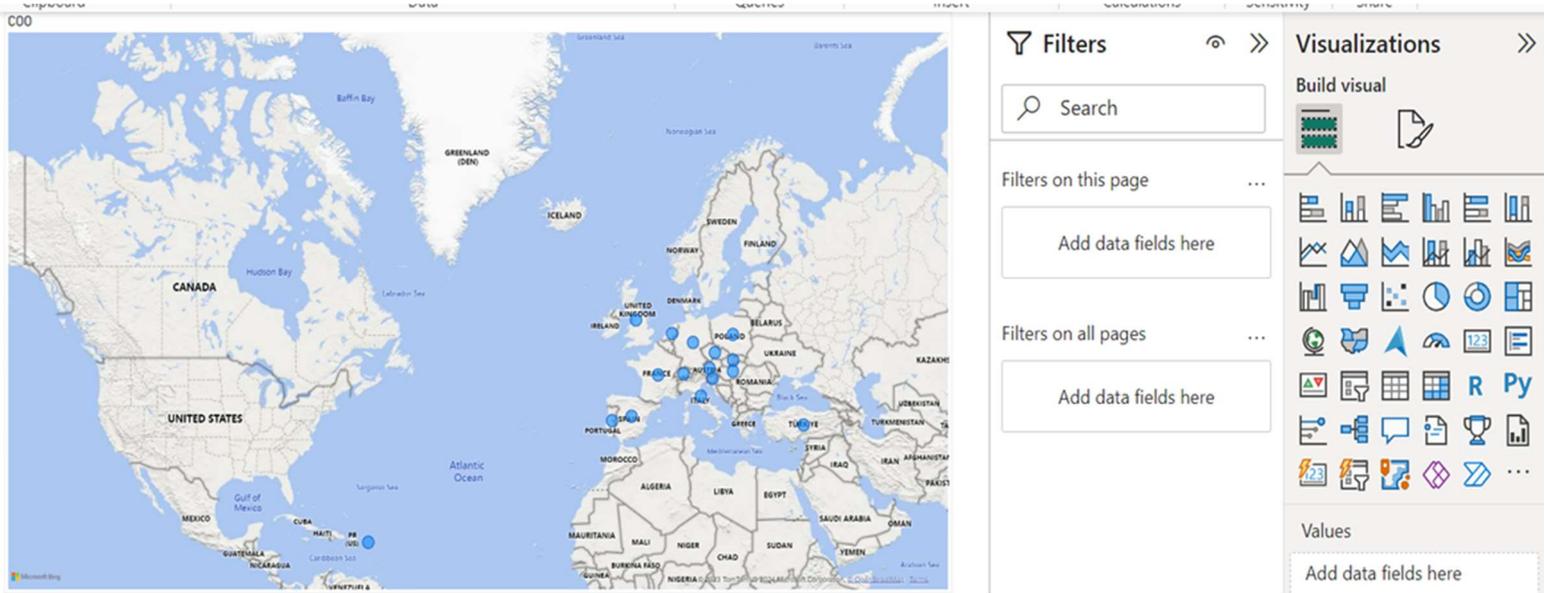


Diagram 14.0 Showing the World map and countries of despatch generated by Power BI

This can be achieved by selecting the map from Visualisations options and selecting/adding ‘country of despatch’ as represented by Diagram 14.0 above. Thanks to this option, the user can enhance the presentation of KPIs and facilitate more precise assessments around the 'Centre of Gravity', especially with the use of zoomed-in maps to examine key cities and transport networks in the surrounding areas.

#### 4.9 Internet of Things (IoT) in Trade

This solution responds to the inefficient information flow and can improve the quality of trade data transferred electronically<sup>27</sup>. In 2005, the Internet of Things (IOT) was officially presented to the world by ITU Internet Report [ITU, 2005] where concepts like interconnected devices, RFID<sup>28</sup> and smart computing were expanded more broadly. It is not however the first time when Internet of Things was referred to. Historically, Kevin Ashton at Procter and Gamble first used this term when exploring RFID in the supply chain in 1999 [IOT World today, 2016]. In the ‘Internet of Things from hype to reality’ [Rayaes and Salam, 2016] the authors define this term as: ‘*network of things, with device identification, embedded intelligence, and sensing and acting capabilities, connecting people and things over the Internet*’. From the context of supply chain and trade this definition provides a very good explanation of what the IoT really is. Quite often, the supply chain is only linked with RFID or container sensor technology, but IoT in trade is much more than that – it tracks and provides live shipping information, it connects various devices, is important from the inventory management and real-time tracking perspective, refers to Industries 4.0 and reverse logistics [Rejeb et al., 2020] and it should be associated with smooth trade information flow which is something that many UK traders would desire; hence, this concept is important to be mentioned for the purpose of this research. Supply chain management performance can also be improved by integrating RFID with IoT shared databases [Puica, 2023] and other benefits associated with such integration include strengthening collaborative relationships between partners and information quality improvements for better decision making

<sup>28</sup> RFID – Radio frequency identification

[Varriale et al., 2023]. As far as Customs operations are concerned, Internet of Things is used for various border crossing automations for example X-ray and scan analysis for consignment check-ups, RFID antennas and e-seals or automated license plate readers [WCO The role of Advanced technologies, 2022]. Referencing back to Chapter 2 - Literature Review – World Customs Organisation, it is important for customs administrations to use available technology because improvements in border crossings minimise border delays.

From the business perspective it is important to understand supply chain movements, possess end-to-end trade data visibility, have the ability to track consignments and plan the inventory accordingly [Somapa et al., 2018], hence relationships with freight forwarders utilising Internet of Things technology is worth considering. Assessment of own IT capabilities and interoperability with other parties can enable system integration for more efficient processes. As an example of IoT in practice, two food retailers in the UK: Asda and Sainsbury's, are using IoT sensors technology to track Returnable Packaging that circulates between the depots/supermarkets and suppliers [twinfm.com IoT, 2021] [Harksys.com]. IoT sensors are keeping track of the location of the packaging/empties. This technology facilitates shipment route planning, ensures constant deliveries of fresh products to the consumers and provides view of suppliers network having access to live shipping data [IT in the supply chain, 2020]'. Another example can be found in automotive industry – Volvo uses IoT cloud-based system to track car components and vehicle deliveries to its overseas suppliers; Nissan however uses IoT for smart warehouse management in UK Sunderland - based factory and connects it with other industrial plants [Digiteum, 2021]. Considerations around establishing or taking advantage of barcode/QR code scanning technology for chain traceability [Jianping et al., 2017] or to facilitate removal of the physical shipping paperwork by using the stickers instead of printed (numerous) copies of delivery notes/commercial invoices would be another option to choose and various couriers such as UPS [ups.com] and DHL [dhl.com] offer computer generated shipping labels.

Following practical examples from mentioned cases can lead to significant improvements in supply chain management and data visibility, therefore UK manufacturers should consider adopting Internet of Things for the company benefit.

#### 4.10 Blockchain Technology

Since Covid-19 Pandemic, blockchain-based technology started to become increasingly popular amongst supply chain actors as a way to simplify digital transactions and communication within the international trade [Ioannou, 2023]. It represents the broader concept of information flow<sup>45</sup> in supply chain from end to end<sup>15</sup>. Along with AI/ML (and various tools such as IoT, data visualisation and HTS automation incorporating AI) it is also one of the latest trade technology developments<sup>8</sup>.

Often associated with crypto-currency or Bitcoins, Blockchain technology<sup>19</sup> is a decentralised, distributed ledger technology that is used to record data and information [Quiniou, 2019] such as digital transactions. The main characteristics of this technology are 'ledgers', which:

- a) Are linked with each other allowing direct party – to – party transactions.
- b) Are not governed by a centralised system.
- c) Can record the history of transactions from the very start till the very end.

Referring to point c) above on transaction history recordings, a good and real-life example of Blockchain based technology used in tackling unethical and slavery practices using recorded transactions within the supply chain is Tony's Chocolonely®. This chocolate company created 'Beantracker' system based on Blockchain with its partner ChainPoint and ran the Blockchain pilot with Accenture to improve the traceability and develop the system, which serves as a good example to follow in the chocolate industry [Forbes, 2019].

Following the example of forming strategic partnerships between technology and major freight forwarders can lead to many improvements in Blockchain and other systems. For example, Maersk,

has partnered with IBM to create TradeLens Joint Venture, to tackle challenges around processing high volume of documents, to digitise supply chain processes and to track containers, thanks to registering various transactions using the Blockchain technology [Jensen et al., 2019]. This strategic partnership encouraged other forwarders to join platforms such as Ceva Logistics [Binns, 2018] and Shipwaves [Express Computer, 2020] and although the joint venture stopped its operations in Q1 2023 [Forbes, 2022], the concept sets a good example to follow [CargoX, 2023].

On the contrary, some sources suggest that the Blockchain technology does not ensure veracity or accuracy of the entered information, therefore could end up storing false information [Tianyu et al., 2017] with some pointing out common misconceptions regarding Blockchain's trust-free environment and trouble-free consumer adoption [Hawlitcshek et al., 2020]. Nevertheless, a significant number of Blockchain associations, journals and resources can be found around the world, which evidence the interest and promising potential of the Blockchain technology [JBBA, 2023] [MDPI] [Frontiers].

## Chapter V

### Discussion

#### Single Trade Window and final remarks

##### 5.0 Introduction

Chapter 4 subchapters from 4.3 to 4.11 comprehensively addressed the challenges found in the poll<sup>26</sup> and critically evaluated proposed technological solutions that can be implemented in practice by UK Manufacturers including SMEs and its supply chain actors (freight forwarders and Customs Intermediaries). As a result of the poll (setting up the macro level of methodology) and interviews (setting up the micro level), the outcome led to further investigation into the Single Trade Window concept. STW topic is very broad and had to be expanded in a whole Chapter of the research, so that UK Manufacturers and its third parties can fully benefit from the critical evaluation. Whilst comparisons and remarks are made against other STWs used globally (Appendix E, literature review and Interview Participant's discussions), this research provides solutions for the STW used in the United Kingdom and aims to answer number 4 and 5 of the research questions<sup>8</sup>.

##### 5.1 UK Single Trade Window

To compare and visualise various single trade windows globally, enclosed 'Appendix E: Global Examples of STW – Table' contains STW data extracted from the UN/CEFACT single window case studies [UN/CEFACT STW Case Studies]. The following information have been extracted and compared amongst 10 STWs: Hong Kong, Finland, Germany, Guatemala, Malaysia, Mauritius, Senegal, Singapore, USA and Sweden

Age	Technology	Services	Capabilities	Security	Extra features	Future plans
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The first similarity amongst all compared STWs is standard communication method. The majority of STWs use formats: FTP, EDIFACT, XML, and ANSI X12 - for system communications. This is an important feature, because it highlights the interoperability aspect that facilitates the trade for the businesses and allows system connections, leading to STW improved transparency and adaptability. With regards to the differences, it is noticeable that all countries prioritise data security on different levels with some prioritising the security over other countries, such as Senegal conducting legislative changes in order to tighten data security in 2006.

In the context of the STW supply chain connectivity and the available literature – with few exceptions (USA STW<sup>35</sup>, future UK and EU STWs) not much information can be found regarding particular existing STWs' future plans on supply chain connectivity. This can be because the supply chain connectivity as a function is a newly emerging area. Further studies<sup>29</sup> pertaining to each individual country's STW will have to be conducted in order to have a better picture of the future plans of particular individual STW capabilities.

On the contrary, systems do change rapidly as the world is technologically constantly evolving [Wolff, 2021], comparing STW data using a study published by UN/CEFACT<sup>47</sup> does not capture all the updates or the newest functionalities; therefore, each specific data should be individually researched for the most up-to-date extra functionality information. On the other hand, data presented in Appendix E is to provide a better understanding of the STW concept from a global perspective and its various functions and easements, such as security, technology visibility, services and capabilities. Although

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<sup>29</sup> Despite identified caveat within existing body of literature, this research focuses on extracting, analysing and providing practical guidance on STW connectivity by various supply chain actors, which supports the context, understanding and potential benchmarking of the supply chain connectivity topic.

not all data is available for some countries, a clear division between some features such as data security or services is visible, and may be resulting from various technological capabilities, advancements or country status (developed vs developing nations) that the Interview Participant 5 also alluded to<sup>79</sup>. For example, Malaysia and Singapore both provide the application/licensing and registration filing services as opposed to other countries in the Appendix E, or some limitations can be noted, such as German's Dakosy being limited to 3 port activities only. In addition to the Appendix E, various interview participants referred to specific STWs, listing their features and disadvantages, such as Egyptian STW imports and exports processes being less time consuming<sup>79</sup>, and missing correct registrations and time delays upon Argentina and Brazil STWs' introduction<sup>79</sup>. When narrowing down to the (UK) domestic STW and its future functionalities it is important to be aware of the other STWs used globally and their functions, to better compare and understand the potential business benefits and any limitations.

## 5.2 UK STW according to BTOM

In accordance with the UK's Border Target Operating Model<sup>74</sup>, the first release of the UK's Single Trade Window will take place in 2024 and the paper provides specific information on features upon each phased release. UK manufacturers should conduct a gap analysis<sup>30</sup> now, to prepare for the coming facilitations and build the customs strategy, because fast adaptability and operational readiness will provide cost savings to the businesses, which could not only improve the customs declaration experience, but will also lead to faster delivery times, less border crossing disruptions and will provide data visibility and tracking opportunities for improved logistics planning.

Table 15.0 below illustrates the Phase 1, 2 and 3 and options that will become available:

Phase 1	Phase 2	Phase 3
Submission of Import and Safety & Security declarations via STW	Reduced data set for import and S&S declarations, duplication removals where possible (for pre-arrival datasets)	Improved functionality for SPS exports, SPS imports of live animals, remaining non SPS declarations for CITES, Organics, marketing standards and unregulated fishing
Multiple users (trader and intermediary and/or users from the same company) collaboration on one submission and closing & re-usage of pre-submitted data	Submission of export declarations, import and export excise declarations, import and export transit declarations. Users also able to meet Sanitary and Phytosanitary (SPS) requirements	Consignment movement tracking on data provisions from commercial supply chain
Trade dashboard for status/summary of import and S&S declarations	Ability to apply for import & export licenses, authorisations and permits, responses to be received via STW	Global interoperability

Table 15.0 Sourced from UK BTOM: Indicative Single Trade Window year-on-year strategic releases, page 89

According to the Point 354 of the UK BTOM<sup>74</sup>, Phase 1 will be especially important for the SMEs who ship less volumes and/or infrequently as opposed to larger enterprises. This is because, SMEs will be able to submit declarations via STW without time pressure (not being involved in time critical shipments or risking financial losses due to production not operating), which is something that interview participants also identified<sup>30</sup>. In addition to that, the possibility of multiple users being able to collaborate on one import declaration submission will be hugely important from the customs

<sup>30</sup> For example, gap analysis methodology for small entities [Suteeca, 2020]

compliance perspective, because trade data can be enriched and verified by various actors within the supply chain. For example, exporter could send necessary shipping information into the UK STW for declaration purposes, then Freight Forwarder or importer could access the same entry and add vehicle reg plate (that crosses the border), or verify the unit prices or HTS code (especially if using own verified HTS codes). On the other hand, it is important to note that multiple user filing could pose questions regarding the accessibility and sensitive data visibility by particular users, therefore the assessment of involved users/parties should be considered, and decisions documented accordingly. Nevertheless, if for example an EU exporter is organisationally linked (e.g. 'sister company') to the UK importer, sharing shipment data can be safer as it stays within the same 'umbrella'/organisation. Furthermore, incorporating trusted Freight Forwarder can further simplify and enrich the shipment data (by adding Unique Consignment Reference, MRN number or latest trailer/vehicle registration number - which can be especially useful in the case of trailer changes) for declaration purposes. Additionally, the importer of record can verify various trade information, such as number of pallets/items being imported, which can address the issues around short-shipments and provide data verification for potential declaration amendment purposes (C2001/C18/voluntary disclosures [Gov.uk C2001]). Such collaborative filing function allowing multiple authorised users to add and verify trade/shipping data can improve on trade information correctness and minimise the amendment needs once goods are customs cleared. On the other hand, there is no evidence found in academic literature that such functionality would increase the compliance and due diligence of trade data, therefore more case studies on STWs offering similar functions would need to be conducted in the future.

Phase 2 will be very significant to the exporters, as STW will allow the export declarations to be raised via STW and this is especially significant to the Aerospace & Defence sector exporting military/controlled/dual use/ITAR goods under export licenses, because STW will enable the option to apply for export licenses (as well as import licenses, permits and authorisations). Phase 2 also will introduce further simplifications around reduced data sets for import and S&S declarations which will be very advantageous, because since the CDS introduction the number of additional and compulsory declaration data (e.g. such as Incoterms information or vehicle nationality and registration details) have increased as opposed to CHIEF declarations. On the other hand, there is no information available regarding what the reduced data elements will be, therefore it is hard to access how beneficial this function will be for the UK traders. The last release will provide further benefits such as traders being able to track consignment movements within the commercial supply chain, which optionally is envisaged to be interconnected to the various STWs worldwide, which is very important from logistics operations and strategy perspective as well as from the UK importer's side. One of the greatest functionalities of the STW during the 3<sup>rd</sup> stage will be the supply chain connectivity and global interoperability, as referred to by the Interview Participants 2<sup>85</sup> and 7<sup>85</sup> the most important function of the UK STW.

### 5.3 Interoperability

International interoperability function is captured within various global frameworks such as UNECE's STW Recommendation No. 36 [UN/CEFACT Recommendation 36]) and WTO Trade Facilitation Agreement<sup>17</sup>; however, the literature is generally focused on the perspective of the government and border agencies and their global interactions (such as exchanging trade data to facilitate exchange of information for import and export purposes). Arguably, from the business perspective, whilst the interoperability facilitates harmonisation of processes [Vogel et al, 2008], if the EU Single Window Environment for Customs connects to the UK's STW, potential simplification around EU/UK road freight's customs territory exit recognition process could be developed. Both systems being connected to each other could potentially recognise the road freight movements from one customs territory to another, by exchanging the export/import information. This would solve the problem of incorrectly recorded EU exports imported into the UK and therefore EU exporters/supplier's customs authorities would not seek extra proof of export evidence (and EU suppliers would not have to demand extra proof of delivery from the UK importers). However, there

is no written evidence at this stage suggesting what trade information will be exchanged between UK/EU STW systems with interoperability function only emerging as a concept. Therefore, more research on existing STW and interoperability with other countries should be done.

Connections, integrations and trade information exchanges between various STWs is a very desired concept that further facilitates trade [Tijan and Jovic et al., 2019]; however interoperability does not come without challenges. For example, EU is experiencing challenges around digitizing all public administration processes and services [Schmidt and Krimmer, 2022]. Furthermore, Pacific Alliance – which is an economic bloc consisting of Mexico, Colombia, Peru and Chile – has made some significant progress in facilitating trade amongst bloc countries by allowing exchange of online certifications such as phytosanitary certifications, promoting AEO mutual recognition and by ensuring interoperability among national single windows (that member countries enforced between 2006-2013) [VanGrasstek, 2019]. Pacific Alliance sets a good example to follow by other countries and for instance, Asia-Pacific Economic Cooperation conducted a study on single trade window's interoperability [APEC, 2018] where technical, legal and operational challenges were addressed. Drawing conclusions from APEC<sup>31</sup>, UK's Border Strategy [2025 UK Border Strategy] discusses the aims for collaborations between industry and UK government to set clear standards for private sector to build IT infrastructure based on API approach in order to secure interoperability standards as well as business-government systems. Such approach is significant at the UK Manufacturer's level, although further guidance for API capabilities and practical recommendations should be published and promoted to maximise business interactions and facilitate testing environments. However, the Interoperability in Single Trade Window as a concept mainly refers to system interactions and trade data exchanges and its fundamentals lie within Recommendation No 36 [UN/CEFACT, Recommendation No 36] and should be referred to when incorporating the interoperability function to the Single Trade Window.

#### 5.4 Cerberus and safety and security of data

Cerberus is an analytics system of the Home Office that is included in BTOM and is incorporated in the TOM System Map of the UK's BTOM as per the Diagram 15.0 below. Also referred to as 'The Data Futures' project [Home Office Cerberus programme, 2024], it has been developed in partnership with BAE Systems [TechTarget BAE Systems]. Cerberus is a part of the UK's STW and is essential for passengers' and traders' data security, protecting the UK from terrorist activities, organised crime groups and illegal drugs/weapons being smuggled, and conducts real time risk assessments and analyses border data.

Referring back to the concept of interoperability, Diagram 16.0 illustrates how various systems will be interacting with one another, such as GVMS with CDS, or 'SCV' Supply Chain Visibility Systems connected to Cerberus (also further explained in the industry news [Contify Aviation News, 2023] via APIs, which is an essential part of customs & trade digitalisation.

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<sup>31</sup> APEC – The Asia-Pacific Economic Cooperation

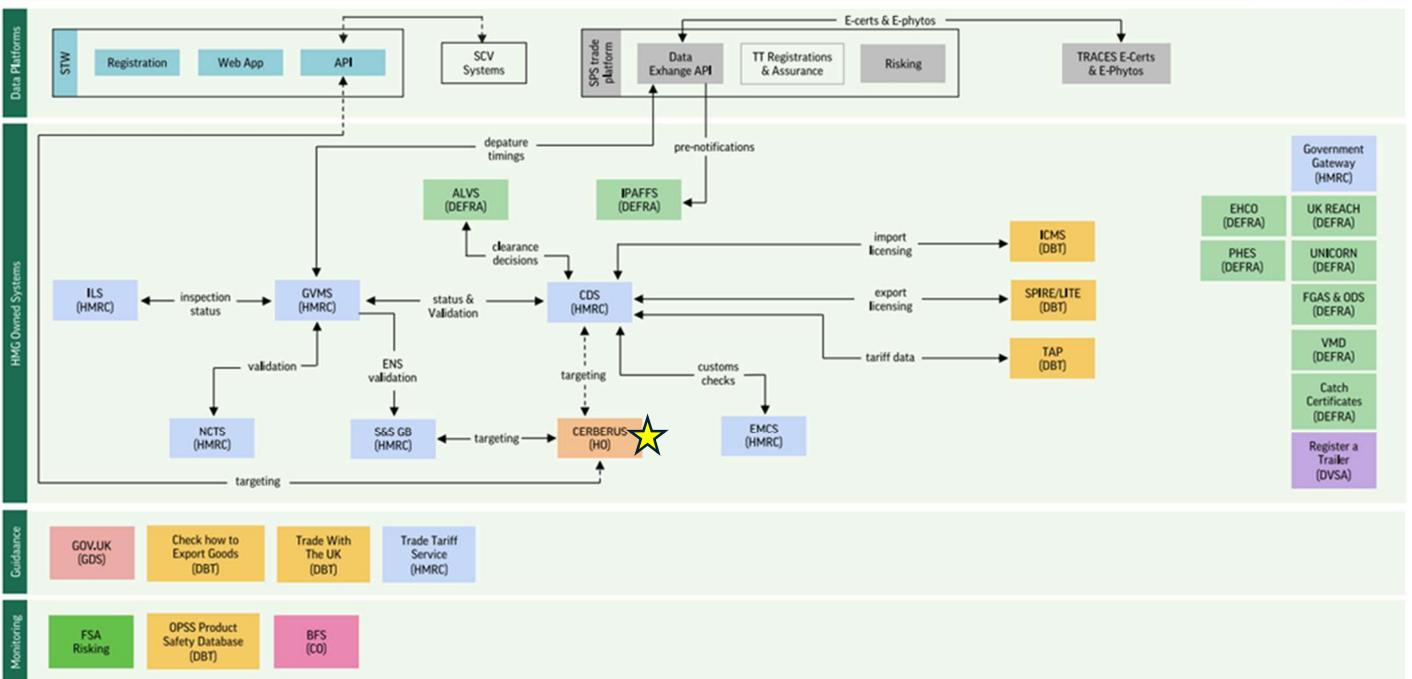


Diagram 16.0 TOM System Map, BTOM, Page 81, ‘Cerberus (HO) marked in orange square

Diagram 16.0 shows direct Cerberus connection with Safety and Security data (S&S GB) and CDS. Currently, the shipment data flows via GVMS to CDS and with the STW as per proposed model it will involve Cerberus for additional targeted safety and security screening. Drawing conclusion from the Diagram 16.0, system is rightly positioned between GVMS and CDS, because CDS containing shipping information needed for the import/export declarations will be able to better analyse and target the shipment to identify whether it would need a customs inspection and because of CDS-GVMS direct connection it can prompt GVMS to inform the Freight Forwarder/driver to stop for an inspection. This is also in line with ‘new model for Safety and Security’ of the BTOM [BTOM point 73] and another similar system called ‘Atlas’ currently utilised within the USA’s single trade window by the United States Customs and Border Protection [Axios, 2023] [Altana, 2023]. It is also important to note that such functionality depends on IT/ technical capabilities of connected systems which like with any IT system, could be prone to errors or system bugs [Saha et al., 2013].

Cerberus, just like its US counterpart (Atlas), will be connected to the SCV (Supply Chain Visibility) Systems. Connection will be made via the API and system will be ‘targeting’ directly to the CDS. From the UK trader’s perspective, it means that with phase 3 of the STW, where commercial supply chain will provide further visibility and consignment movements will be possible to be tracked via/in STW, Cerberus will be able to better analyse incoming goods and target consignments for physical customs inspections. This may lead to improvements in customs auditing by recognising and targeting risky movements, which can further lead to commercial goods not needing to be inspected frequently. Whilst this approach will form better border transparency and security, it is important to note that with supply chain connectivity and interoperability, trader’s sensitive shipping data will be shared amongst various customs jurisdictions. It is crucial for the governments to build trust and ensure high standards of data security. For example, the UK Government holds public consultations to openly discuss this topic with the private sector [STW Consultation, 2022] and globally WCO SAFE Framework<sup>16</sup> provides standards for electronic data exchanges within the STW environment.

## 5.5 STW, traders and supply chain connections

UK STW will contain the APIs<sup>32</sup> which are needed to enable connections with various IT systems and UK Government will work with software providers to ensure third party systems (such as those offering customs declarations solutions) will be able to correctly feed into (and from) the STW, similar to the case with CDS introduction. When UK Customs replaced CHIEF with CDS, TDR service [TDR.gov.uk] (as stated in Chapter 4 Introduction) has been established to enable software developers (SWDs) and Community Service Providers (CSPs) to work with UK customs to connect systems via APIs and create testing environment in accordance with 'Customs Declarations end-to-end service guide' [Gov.uk guide]. If business is using a customs software provider's system to raise import/export declarations (or using for other customs related activities), it is important to check the capabilities of the software provider to ensure access to HMRC's 'API documentation' as illustrated in Picture 17.0:

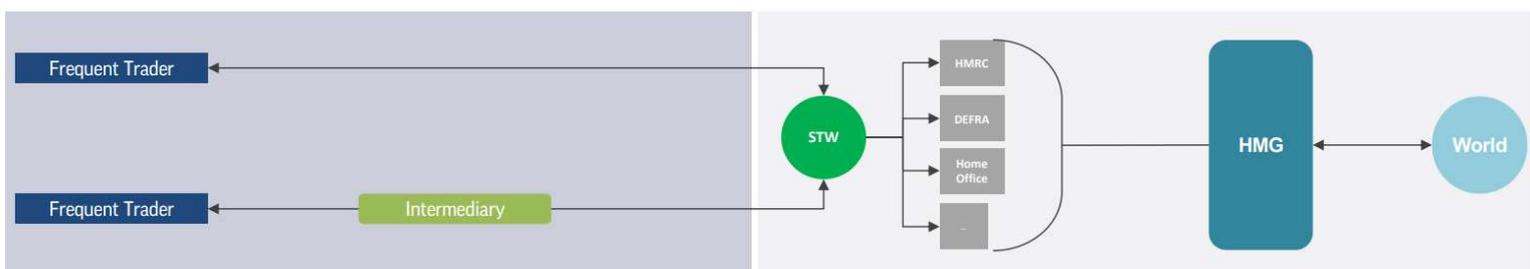
The screenshot shows the 'GOV.UK' logo and 'Developer Hub' in the top right. The main heading is 'Customs Declarations end-to-end service guide'. On the left is a navigation menu with items like 'Customs Declarations end-to-end service guide', 'Developer set-up', 'The Path to Production', 'Trade Test', 'Trader Dress Rehearsal', 'API subscription model', 'API access control', 'API versioning', 'API rate limiting', 'Related API documentation' (highlighted), 'Authentication', and 'Error handling best practices'. The main content area is titled 'Related API documentation' and contains a note: 'If you cannot access any of the following API documentation, please email [SDST](#) to check if your 'ApplicationId' needs to be [added to the allow list](#) for that API:'. Below this is a list of API options:

- [Customs Declarations API](#) - lets you submit, amend and cancel a customs declaration, and provides the ability to upload supporting documents and make arrival notifications
- [Customs Declarations Information API](#) - lets you query the status of submitted customs declarations
- [Pull Notifications API](#) - lets you "pull" business event notifications CDS has generated from requests submitted via the CDS APIs
- [Customs Inventory Linking Exports API](#) - lets you link export declarations with specific consignments (Consolidate, Movement & Query)
- [Customs Inventory Linking Imports API \(CSP only\)](#) - lets CSPs link import declarations with specific consignments
- [Bulk Data File List \(list of tariff codes\)](#) - lets you integrate tariff data into your customs software application, providing an initial start-up file, daily files and monthly consolidated files throughout the year.

Picture 17.0 API Documentation options listed in Gov.uk Customs Declarations end to end service guide

Knowledge of API options and customs software capabilities as shown in Picture 17.0 will support the user/customer in asking the right questions to the software developer and will ensure user/customer demands are in line with software capabilities. This will lead to a common understanding on what functions and options are available or what customs procedures the software can support, so that once the software is installed there are no lacking functionalities/data visibility/accuracy or misunderstandings between the user/customer and software developer.

On the contrary, although API functionality can be seen as one of the best benefits of the STW, Point 337 of the UK BTOM clarifies that traders will be able to interact with STW directly without any third parties such as customs agents or by using third parties customs declarations software. Diagram 18.0 below shows how such connections could look like in both scenarios:



<sup>32</sup> API – Application Programming Interfaces

Diagram 18.0 shows basic trader and trader & intermediary interactions with STW in phase 1, because further options will become available in the later phases, such as phase 3 adding supply chain connections. The reason why this is important from the UK Manufacturer’s perspective is that this functionality will further incorporate different actors within the supply chain, such as exporters/supplier. When importers/customers take collaborative approach with its suppliers/exporters, such relationship does not only strengthen the trust, but also drives innovation [Henke and Zhang, 2010] and such approach can lead to full benefits from the STW connection. This is because (depending on supplier relations and agreed terms) the UK Manufacturer could build a model where exporter/supplier could feed trade information data once and directly into UK STW via API or EDI Messaging, which would be similar to ASN (Advanced Shipping Notice) process (exporter sending ASN to importer’s IT system). Such action would facilitate paperless trade, as exporters would not have to print out shipping documents (such as delivery notes and commercial invoices), which additionally leads to environmental benefits by reducing greenhouse gas emissions if all trade documents are removed [Duval and Hardy, 2021]. The ASN based theory is visualised in Diagram 19.0 below:



Diagram 19.0 Showing possible Supply chain interaction with UK STW in phase 3

If suppliers would have the API/IT capabilities, instead of producing shipping documents, trade information (value of goods, HTS codes, origins, item descriptions, quantities) could be transferred just once to a single platform (in line with STW aim), whereas additional certifications (required for specific products) and additional shipping information could be fed by Freight Forwarder and importer (multiple users working on one clearance). This scenario would be most suitable for full loads; however it does not address more complex logistic processes such as groupage shipments containing various supplier’s/customer’s goods for various importers. In such case, possibly the depot or consolidation hub could gather the shipping data and transfer it to STW, however this would pose the requirement for exporters to transfer shipping data electronically to such depots/hubs. The model would work if all parties within the supply chain have IT possibilities to transfer shipping data electronically, or at least depots/hubs would look into ways to possibly utilise AI powered solutions such as OCR or VDU technology<sup>39</sup> to read and convert shipping data from commercial invoices into EDI messages to be then transferred to STW (or use own customs software to declare/pre-lodge goods). The more complex the logistic processes are, the more strategical considerations would have to be conducted by all supply chain actors [Perez Mesa and Galdeano-Gomez, 2015] to build the most efficient solution and system optimisations [Brandenburger and Nalebuff, 1996] to fully benefit from UK’s STW.

From the UK Manufacturers’ perspective (especially the SMEs) raising self-declarations on UK STW is a very important point to consider when planning the customs strategy for the future. This is not only because customs declarations can be done online directly by the importers/exporters themselves, but

also because customs and S&S declarations done via UK's STW will be free of charge (according to points 79 and 332 of the UK BTOM).

Since import declarations completed on UK STW is free of charge, by focusing on customs declarations compliance and trade compliance education, SMEs and other traders willing to interact with STW directly can save a lot of money (as opposed to spending money on customs agents raising declarations on trader's behalf or customs software subscriptions). If on average import declaration costs £35 (costs vary from £25 - £45 depending on the number of HTS codes/Line items) [Transporteca.com] and importer's customs agent raises 120 single import entries per month, the total costs paid to the customs agent would be £4,200 + VAT per month. The average cost for a single customs declarations training varies from £485 - £599 + VAT [Strong & Herd] [IOE&IT] and qualifications vary from e.g. Customs Introductory Levels costing £1192 to Advanced Levels e.g. Diplomas in Customs or International Trade costing £3550 [IOE&IT] (excluding any membership subscription fees). On the short and long-term depending on business needs, investment in people conducting customs declarations via UK STW would be more cost efficient and employees raising declarations can also conduct other customs related activities such as customs audits and/or KPI (Key Performance Indicators) reporting. On the contrary, trained staff would yet need to build confidence and attain work experience in customs declarations handling, which can be very complex<sup>31</sup> depending on the business customs operations, therefore although partial outsourcing could be considered, risk assessment should be conducted prior to decision making.

On the other hand, if importers raised self-declarations without using customs intermediaries or third-party customs software, this could pose some threat for customs brokers/customs software providers potentially losing customers. A competitive landscape is evolving due to technological advancement [Reeves and Candelon, 2022]; therefore such businesses should be cautious and build a new strategy, such as embracing differentiation and introducing new products. Being open for change and expanding services within company portfolio such as customs declarations trainings, educational services, 24/7 business trade support, etc. could be a good tactic. Ultimately UK Manufacturers will need to conduct an 'own or manage' analysis [Harrington, 1996] and assess what is more cost effective: using customs software, outsourcing customs declarations or clearing goods directly via UK ST. When analysing, it is important to consider the frequency and volumes of imports/exports (data visualisation tool could facilitate this task), where the products come from (is it a single source, how complex is the supply chain, are goods being consolidated and shipped via groupage, etc), whether there are any customs special procedures already in place or to be applied in the future, whether the company and its suppliers have sufficient capabilities to engage with IT data transfers (such as ASN's, EDI messaging) and whether the delivery time is a priority (perishable goods, JIT<sup>33</sup> delivery for 24/7 production as opposed to heavy machinery/equipment or high value goods).

Phase 1 of the BTOM on STW mentions APIs' ability for Rest of World's Safety and Security declarations via APIs (providing the other party's system will be updated to the UK's STW API's version) and in Phase 3 incorporation of the commercial supply chain data provisions (as previously alluded to, similar to ACE and Altana collaboration in the USA STW [Axios, 2023] [Altana, 2023]). This is especially important for future customs strategy considerations, because this option will open further possibilities for supplier interactions and automation, potentially feeding directly into the STW with an option for importers to access trade data in one single point for correction/information addition/data collection needs. In addition to that, according to the 2025 UK Border Strategy, the UK government plans to facilitate connectivity to STW not only by/for gateway ports and/or customs stations, but also by allowing software developers and technology businesses to connect to STW via APIs [2025 UK Border Strategy].

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<sup>33</sup> JIT – Just in Time

## 5.6 Case Studies

Integration between businesses and the Single Trade Window is very well presented by the Singapore's Single Trade Window case study – TradeNet [Singapore Customs TradeNet]. The study from 1997 by Teo, H.H., Tan, C.Y. and Wei, K.K. provided some interesting findings regarding the benefits of TradeNet such as increased productivity and competitiveness from the Trade Development Board's and businesses' perspective - benefitting private and public sectors [Teo et al, 1997]. The similarity of TradeNet to UK STW and other STW globally are Electronic Data Interchanges (EDIs) as shown in Appendix B. Similar to Teo, Tan and Wei, another study conducted by King and Konsynski in 1990 provided risk assessment and figures on increased volumes of documents processed electronically via TradeNet resulting from positive user adoption [King and Konsynski, 1990]. Whilst the study by Teo, Tan and Wei provides a more detailed business processes approach and addresses business networks, impacts on TDB<sup>34</sup> and overall benefits from IT advancements, the other study focuses more on assessing risk management and the actual execution of the project. Both studies however provide great examples of integration of various third parties with the government's (IT) trade system. Reflecting on the gap in literature around the business trade technology solutions and strategies, the closest study reflecting the importance of businesses adapting its processes around STW is by Teo, H.H., Tan, C.Y. and Wei, K.K. Similar to Singapore, single trade window increased logistics operations effectiveness in Indonesia and Vietnam. Research by Indira and Kusumasari [Indira and Kusumasari, 2020] recognised the supporting factors as legal framework, technological capabilities, and political backup; however the study focuses on governmental innovation aspects, collective benefits and cost reductions as opposed to technological and businesses' practical adaptations and challenges. An example of STW impact on customs and business operations can be found in Kenya, where since STW implementation in May 2014 [WTO TFA database], the study found that the shipping procedures, port operations and customs clearance in Mombasa Port all improved, further evidencing the positive impact of the STW concept [Kabui et al., 2019].

In response to the single trade window interviews conducted and reflecting on specific examples, two participants alluded to some challenges upon STW implementation in Argentina and Australia. Whilst some challenges with the Australian STW system were identified in literature (Integrated Cargo System connected to a limited number of border agencies, lack of sufficient funding and need for significant reforms) [Rigby Cooke, 2022] as alluded to by Participant 8 in the interview<sup>32</sup>, no academic literature or news were found referring to the challenges faced by the Argentinian single trade system. As evidenced however by the Australian STW case, it is necessary to draw conclusions and proceed with caution when implementing STW system in the UK to ensure no barriers or significant challenges are encountered. However the system will not become mandatory from the start and will be introduced in phases, allowing time for any improvements and error corrections (if any).

## 5.7 Concluding remarks and reflections for further research

To answer the research question, it was necessary to create sub-questions and clearly identify the project objectives. All project objectives were addressed, reflected upon and thoroughly discussed and critically evaluated, considering available literature, poll answers, interview responses, and various case studies with vast number of examples of existing and new technological solutions. Some proposed customs and trade technology recommendations are a mixture of historical and new solutions and combine various scenarios of its practical application by various actors within the supply chain. Although not every operational scenario could have been referred to due to complexities and existence of different import/export shipping and customs clearance models, poll and interviews outcomes navigated the areas of concerns and built the focus of this research. This research focuses on road freight challenges as identified by the poll and literature review, the UK Manufacturers are facing since UK left the European Union and bridges the literature gap in practical business guidelines on enhancing customs and trade technology and solutions. This is the first academic research in the

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<sup>34</sup> TBD - Trade Development Board

UK that comprehensively examines and recommends the strategic use of the UK Single Trade Window by the UK traders and its supply chain partners. Moreover, polls setting out the macro level and interview analysis constituting the narrowed research at the micro level, lead to extraction and comparison of global single trade windows (in conjunction with trade professionals' insights on STW and literature review). One of the key findings is the challenges around SMEs being at disadvantage due to lack of funds, resources and training accessibility as opposed to larger businesses. While conducting research it has been identified that the UK STW will tackle some of these challenges leading to:

- Potentially less challenging export declaration submissions
- Removal of data repetition and bureaucracy
- Money savings (free of charge import declaration submissions)

Some technological solutions propose ready AI platforms, cloud-based solutions or outsourcings that accommodate for lack of own IT capacities that might be suitable for some SMEs; however may pose some issues around overreliance on third party technology. Various models in different scenarios in conjunction with different customs special procedures utilisation have been illustrated and analysed to accommodate for identified main challenges and new concept – Trade Information flow, Shipping data quality and utilisation of UK's STW and also refer to very specific issues such as customs inspections and system outages. However, this research cannot accommodate for all business models and operational strategies due to supply chain complexities and various company set-ups. On the other hand, the study focuses on UK manufacturers as opposed to direct material importers (for domestic resale) with the largest exporting industries being aircraft and engine parts (£17.3 Billion), motor vehicles (£14.6 Billion) and pharmaceuticals (£13.2 Billion) [ONS, 2022].

The study also identified the need for conducting risk assessment and cost analysis, and creating new or re-drafting existing processes by the UK traders, to ensure operational effectiveness and readiness for new technological concepts. All derived objectives of the research have been met; however it must be noted that this study did not include other practical solutions such as paperless trade, rules of origin or customs auditing automation, and did not include all single trade windows that exist globally. Further research recommendations have been made in the areas of: trade data security, Blockchain technology and existence of further legal frameworks within the England and Wales law around interoperability agreements with other countries. Some further limitations that must be addressed are around lack of confirmed UK STW deadlines for Phase implementations, because UK STW is not just yet operable/accessible.

Another recommendation that can be drawn from this research is the need for support for SMEs from the UK government due to them being at a big disadvantage. Whilst the UK STW addresses many SME challenges, incentives such as free access to good quality trade and customs technology trainings and qualifications, and additional funding would hugely benefit the sector. The support would be in line with the current plan of the UK government for doubling the UK SME exports by 2030 [Lord Offord, 2023].

#### 5.8 Bridging the gap in Literature and Educational Programmes

There is very little academic research conducted just on the impact of digitalisation on international businesses in general [Vadana et al, 2019] and no academic literature was identified that discusses the challenges on EU/UK road freight border movements by UK Manufacturers and proposes practical technological solutions. There are however a lot of studies and researches conducted on technology in general that can have its practical application in customs and trade from business perspective and a vast number of global frameworks on trade digitalisation concept from the governmental/authorities' perspective. Additionally, several organisations and/or trade bodies in the UK provide case studies and focus specifically on maritime, sea-port operations, trade finance and legal frameworks, such as C4DTI [C4DTI.com], ICC United Kingdom [ICC United Kingdom] or Institute of Export & International

Trade [IOE&IT]. These bodies also support the UK government with various initiatives such as EDTA<sup>19</sup>, trade data/statistics collections, promote calls for evidence and promote trade digitalisation.

This research provides practical guidelines and recommendations to UK Manufacturers moving goods between EU and the UK via road and various actors within the supply chain, with considerations to various trade and customs technologies and Single Trade Window<sup>8</sup> direct connections. It bridges the gap in academic literature, because it focuses on UK manufacturers’ adaptation and encourages trade and customs technologies that can be utilised in the digital era. Furthermore, it sets fundamentals for further academical programmes to be built upon, to educate and drive border innovations, because there are no educational programmes that fully examine and evaluate how IoT, Blockchain and/or STW could be used by the stakeholders in practice. There is an increasing need for the educational sector to also keep up with the digital era and technological enhancements to drive innovation and creativity<sup>8</sup>.

For those reasons, educational establishments delivering degrees in International Trade (such as MSc in International Trade, Strategy and Operations at the Warwick University) and similar institutions, should consider creating and adding Customs and Trade Technology Module into their teaching programme that could cover the following topics:

Topic	Chapter / Sub-chapter
Internet of Things in shipping	4.9 Internet of Things (IoT) in Trade
Blockchain Technology used in trade (non-finance related)	4.10 Blockchain Technology
Single Trade Windows and Smart Borders	Chapter V Discussion: Single Trade Window and final remarks
Automatization of customs elements: HTS, Preferential Origin Calculations for FTAs, Customs special procedures (IPR/OPR/CFSP/CSE/Customs Warehousing), CBAM, AI/ML	4.6 Automatic HTS Classifications – further automation 4.7 Further automation – linking customs authorisations and preferential origin
Data Visualisation	4.8 Power BI and Data visualisation – MSS/CDS reports

Additionally, introduction to an AI model platform could teach future customs brokers to build own technological solutions to leverage trade data exchanges and/or create own customs declarations platforms that can be connected to the STW. There is a growing potential in trade and customs technologies and with the right educational programmes, improvements in trade facilitation and UK/EU border crossings can be achieved in practice on all levels (customs and businesses), but the moment should be seized right now.

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## Appendix A

### Poll

If you could support my research by answering this poll question that would be highly appreciated. BR

In the context of road freight import/export between the UK and EU, can you please indicate the primary challenge your business encounters:

You can see how people vote. [Learn more](#)

System outages(Ferry/CDS/GVMS)	14%
Customs inspections / audits	36%
Inefficient information flow <input checked="" type="checkbox"/>	39%
Other -please comment or pm me	11%

28 votes • Poll closed • [Remove vote](#)



4 comments • 6 reposts



## Appendix B

### Interview responses

Question	Summarised answers
<p>1. Are you aware of any single trade window systems globally?</p>	<p>Participant 1: Familiar with the concept as worked with Qatar and Pakistan's systems via customs broker and deals with UK STW from development's perspective for work purposes.</p> <p>Participant 2: Aware of few with an example of Nafisa in Egypt to streamline the processes and simplify imports / exports to (effectiveness and less time consuming).</p> <p>Participant 3: Aware of STW international adoption in approximately 41 countries, including the US, Switzerland, and Singapore. Pointing out a recognition of the global emphasis on implementing these systems to streamline trade processes.</p> <p>Participant 4: Aware of the concept and provides examples of US, New Zealand and UK.</p> <p>Participant 5: Knows many STW systems, mostly experienced with Kenya STW and some with Singapore, aware of US, leaving UK aside. Recognises different types of STW depending on status of the country (developed vs developing nations).</p> <p>Participant 6: Mostly familiar with UK STW as heard UK wanting to introduce it but highlights the slow progress in this regard.</p> <p>Participant 7: Extensively aware of various STW's due to previous work experience from the contexts of: managing import documents, operations of STW's in various countries, trade facilitations in case of missing correct registrations and time delays, - with an emphasis of Argentina and Brazil STW's.</p> <p>Participant 8: Aware of the concept and STW in Australia and New Zealand, many countries started to explore it.</p> <p>Participant 9: Aware of number of STW specifically within African countries and Switzerland.</p> <p>Participant 10: Affirmative, lists STW's in Singapore, New Zealand, USA and Sweden. Domestically aware of the current model in the GB under which Defra, Home Office and HMRC will be under one STW model and hub and spoke activities in other STW's.</p>
<p>2. Which party/organisation, in your opinion, takes the greatest advantage of the single trade window system?</p>	<p>Participant 1: Points out to the government first highlighting the centralised operations and connecting different governmental organisations. Secondly pointing out to SME's benefiting from customs brokers cost savings making the process also more efficient.</p> <p>Participant 2: Primarily national economies and many other parties benefitting from the STW due to improved transparency, reduced corruption and physical interaction to approve processes.</p> <p>Participant 3: All parties – Traders, customs, government – will benefit including paperless trade, eliminating bureaucracy and cutting down lead times for businesses.</p> <p>Participant 4: Customs and customs officers leading to job simplifications and all companies as well.</p>

	<p>Participant 5: Government and governmental agencies which should not only be the case and should be the industry, with good examples of Pakistan and Brazil benefiting both the governments and industries.</p> <p>Participant 6: Not many parties taking advantage as highlights the need for support from various trade associations and trade bodies including intergovernmental departments and that all parties should participate with particular emphasis on HMRC and UK STW.</p> <p>Participant 7: Refers first to inter-governmental departments as most advantageous, pointing out challenges under UK law due to business data sharing between departments. Positive about integrated systems and STW creating single system for the benefit of importers requiring approvals from various governmental departments.</p> <p>Participant 8: If implemented correctly, the industry will benefit (importers, exporters, forwarders, shipping and airline companies) which will have to communicate with customs. Australian customs started to look into modernisation of its STW and will also benefit as the job will get easier.</p> <p>Participant 9: Benefits mainly for SME's / smaller businesses.</p> <p>Participant 10: Advantage for various agents and third parties, greatest advantage for traders physically importing and exporting products especially perishable goods. Hopeful of trade barriers being removed as a consequence and removal of paperwork. Greatest advantage also for people on the ground, also dependent on the supply chain and type of product. Government also taking an advantage due to more integrated supply chains and encouraged foreign traders to trade with the UK. Facilitations around easier and faster entries / clearances which ultimately will provide a multiplied effect for the UK economy, as trade being a significant contributor to the GDP.</p>
<p>3. Who, in your opinion, will benefit most from connecting to the UK's STW?</p>	<p>Participant 1: SME's will benefit the most due to advantage of raising own self declarations leading to cost savings, but reflecting on early stages of the UK STW and it's practical functionalities during 5 years plan.</p> <p>Participant 2: Many parties will benefit: governments, traders and customs will benefit caused by faster, easier and more transparent trade as well as more predictable due to all elements recorded digitally.</p> <p>Participant 3: Similarly to the previous question, main benefits for smaller businesses with less purchasing powers as opposed to larger businesses reflecting on paperless trade as a result and need for cost assessments.</p> <p>Participant 4: All companies that trade and deal with customs will benefit pointing out to change in processes due to Brexit.</p> <p>Participant 5: Except from the government, potentially SME's and Women entrepreneurs, due to free to use possibility such as safety and security declarations and self service on customs.</p> <p>Participant 6: Freight forwarders, carriers, importers, exporters, intermediaries / agents when moving goods across the UK border, pointing out the real benefits will take time to be delivered due to lack of urgency and little communication between the HMRC and trade associations in relation to STW topic.</p> <p>Participant 7: Although the aim is to provide benefits to small businesses, this might not be the case, but possibly medium sized businesses which will need different authorisations such as export health certificates, registrations with Port Health authorities on goods</p>

	<p>import which can be found within STW. Also reflects on free customs declarations system that will facilitate processes comparing to TSS and Northern Ireland trade.</p> <p>Participant 8: Unable to fully respond due to lack of specific knowledge on UK STW.</p> <p>Participant 9: SME's and exporters benefitting more as opposed to importers as imports are more complex. SME's more inclined to use intermediaries for imports due to more complexities and more likely to run exports inhouse.</p> <p>Participant 10: Businesses and its supply chain partners and various governmental bodies. On industry level, automotive industry will benefit from connecting to STW due to the nature of the products imported/exported, significant amount of documentation and complexity of the supply chains. Brexit created significant barrier for EU-UK supply chain integrations, therefore automotive will significantly benefit as well as the agriculture industry. From government's perspective, improved transparency and removing red tape not necessarily from the legal perspective as control of standards and rules of origin considerations are still needed. Refers to paperwork and not everyone being fully digital, but must be pushing for trade digitisation and digitalisation. Simplifications around monitoring and engaging with trade activities between various countries such as with New Zealand and potential facilitations around Free trade agreement and accessing the market/trading block.</p>
<p>4. What impact will the UK Single Trade Window have on UK business operational efficiency?</p>	<p>Participant 1: STW is not a short term project and its necessary to evaluate short and long term benefits. For the short term the possibility of raising own declarations instead of outsourcing its creation, so operational efficiency comes with visibility. Must also address the lack of repetition of data, declaration elements reductions and reusing data / declaration drafts. Also reflects on the speed improvements and human error reductions with the emphasis on centralised services.</p> <p>Participant 2: Impact on small businesses with administrative burdens, less forms to be completed, less duplications and time savings in navigating within various government portals.</p> <p>Participant 3: Reflecting on own work experience, cutting down some bureaucracy with applying for licenses and one place for managing documents.</p> <p>Participant 4: Delivery delays reduction as faster clearance / border entries - For the automotive company importing parts from the EU that runs production lines almost all the time, cannot afford any delivery delays because of the risk of line stoppages which could brink financial penalties.</p> <p>Participant 5: Potentially big impact depending on UK STW funds being invested and its innovative outcome. Innovation not necessarily the priority, but to get customs into STW, however when include Defra, export license system and ecosystem of trust and interoperability elements, there will be huge benefits. Also reflects on multiple filing concept with an example to specific chemical business and its freight forwarder and its big impact. Additionally raises a point around trade compliance and reduced number of audits.</p> <p>Participant 6: Must be done correctly and cannot be one sided (UK authorities), refers to EU single trade window and UK traders' interactions emphasising freight movements between the UK and EU. Points out an impact and benefits from quicker customs clearances and providing information only once instead of keep exchanging it which will improve businesses efficiency. Reflects on importance of right legislations in place (EU and UK) and its interpretations by the traders.</p>

	<p>Participant 7: UK STW aims to streamline import and export processes to enhance operational efficiency and to improve communication between departments. STW may significantly impact logistics companies and the way these operate as becoming more independent on customs clearances (rather than rely on outsourcing these).</p> <p>Participant 8: Aware of the STW as a general concept, if STW is implemented it has an impact on operational efficiency and make a big difference in reducing the paper and faster customs clearances.</p> <p>Participant 9: Will streamline business operations especially within smaller teams with no access to trade compliance specialists/managers. If done correctly, will enhance operations.</p> <p>Participant 10: Positive impact. Currently inefficiencies exist when moving goods in and out of the UK, referring to some stoppages as customs for days which costs companies thousands of pounds with perishable sector being especially vulnerable. Increased operational efficiency by enabling smoother and faster process with less delays in the supply chain. Addresses the level of transparency in context of operational efficiency and overseas traders engaging with the UK businesses and market. Very crucial to standardise in line with other countries like New Zealand, US or Sweden.</p>
<p>5. In your opinion, what are the main advantages and challenges of the UK's STW from a business perspective?</p>	<p>Participant 1: Advantages – money savings, centralised platform, avoiding repetitions, reductions of data entry, less people required to work on declaration, automation allows people to focus on more important and valuable tasks.</p> <p>Challenges – open to culture of change, processes reviews, future planning and areas for improvements analysis which can be viewed as advantages too. STW is voluntary but at one point it will become compulsory so it's best to take this challenge and implement it earlier as STW develops with potential influence to government on how STW develops further.</p> <p>Participant 2: Advantages - Faster processing and less bureaucracy, lower costs, more security and opportunities for global collaboration.</p> <p>Challenges – Adoption of new system, questionable if small businesses can handle upgrades of new system technology, onboarding process – getting everyone on the same level, development of legislation to set out the clear map for everybody to be on comprehensive level.</p> <p>Participant 3: Advantages – going paperless and cutting down bureaucracy, lead times reductions especially important for Just In Time philosophy.</p> <p>Challenges – cost assessments (if it's worth it), staff training, IT investment.</p> <p>Participant 4: Advantages – Avoiding delays, reducing number of situations leading to delays and delivery stoppages at the border / ports, faster goods movements.</p> <p>Participant 5: Advantages – Understanding what STW will deliver and functionalities built in over time, impacts on existing business models especially within port community system CSP's, software industry, customs brokers community, free to use. Challenges – Existing business models potentially going under strain, traders having to cope with so many changes such as CDS or Windsor Framework.</p> <p>Participant 6: Advantages – Having to do things once within one particular system, increased efficiency in customs declaration completions by submitting one information once. Quicker customs clearances for agents and UK and international traders. Quicker</p>

processes instead of long delays as sometimes there is lack of UK/EU legislations understandings.

Challenges – Interpretations and understanding of STW rules by companies, traders, agents, hauliers and freight forwarders, as although written, understanding how does STW operate can be challenging and people may have interpret differently. Issues around policymakers (UK and EU) - people writing the pieces of legislation and information because they don't understand and work in the industry (affected by that legislation). Trade associations and traders being omitted by STW policymakers from supporting writing the legislation covered by STW.

Participant 7: Advantages – Bringing everything under one system that is visible and clear. Challenges – UK Importers and exporters submitting own declarations through STW will have impact on logistics industry (impact on revenue), opposite scenario when UK left the EU with the number of declarations raised/required. Governmental departments expecting traders to raise own declarations which was not a successful initiative during the EU exit. Companies still unaware of what information to legally provide or where to source the information. Concerns around building platforms to guide inexperienced companies how to raise customs declarations, how robust is that guide? Questions if authorities going to be lenient with companies in case of mistakes potentially incurring civil penalties? Concerns around government/authorities not providing sufficient information (very little bullet points and flow charts) to teach companies how to use STW and raise declarations which brings another challenges if small/medium sized businesses will have to employ staff to do it or decide the coverage. Points out Argentina STW as an example of delays in import declarations and questionable if STW will speed up that kind of customs clearance but time will show.

Challenges around inventory linked ports (CPS's) and STW not addressing handling of inventory at ports and airports and questions around CPC's handing over job that will be free of charge via STW and priority going to GVMS ports (EU exports), changing the way the freight industry is structured.

Participant 8: Advantages: Not referring specifically to the UK STW, but significant impact on business operations, if implemented correctly with industry input, not many challenges.

Challenges: Going through an implementation phase itself and implementing good quality single trade window system. Expensive system in general therefore funding may be challenging. Historically IT challenging providing first Australian STW as an example.

Participant 9: Advantages: Efficiency within the business, time and resources. Cost effective if done correctly.

Challenges: Issues around businesses understanding responsibilities also within each sector/departments, sufficient knowledge and understanding is crucial to be compliant with international trade.

Participant 10: Advantages: Transparency and facilitating paperless trade, less entry rejections.

Disadvantages: Data collection and usage, understanding the whole process by different personnel within a business. Struggle for the SME's as not having direct links or designated contact persons with HMRC or DEFRA and in case of issues when self declaring goods, as relying on STW being a single point of entry could cause potential failure of declaration process.

<p>6. What functions of the UK STW are you aware of and think are the most beneficial from a business and customs perspective?</p>	<p>Participant 1: Possibility of creating shipment templates - if designed correctly can save a lot of time, reduction of errors made and possibility to focus on other important things. If importing small portfolio of products – possibility to save the layout and copy and paste same information into declaration. Unsure about the introduction of this functionality, but potentially live chat option while submitting declaration and help through declaration submission. Due to a lot of changes with CDS system, people are still not entirely familiar with CDS, so support option would be of great benefit, especially for those not frequently raising declarations themselves.</p> <p>Participant 2: Removal of bureaucracy and job prioritisations, reliance on one platform instead of using various websites of will out various different forms to facilitate the trade. Transparency, effectiveness and predictability which are most beneficial points of STW.</p> <p>Participant 3: Not very familiar with the specific functions but will highlight the potential cost savings as one of the main benefits.</p> <p>Participant 4: For businesses sending information about import and export only once and to one place and will be able to make a declaration free of charge. The most important is time, declarations can be made any time during the day, sometimes the business must do it in the evening or even during the night.</p> <p>Participant 5: Regarding the functionalities, BETA testing is starting with small businesses using RORO ports importing standard goods from the EU only. Because of that, DEFRA and agencies handling export licenses or health certificates are not in strategic releases of the UK STW. It's specifically concerning SME's and free import (declarations). Export declarations will be at the next release, but releases may be put forward because of the link to CDS and considerations around API's for larger businesses wanting to put things through in bulk via SAP or similar systems. Initial focus is on small businesses, because of good public and social values, giving it free to use for SME's and women owned businesses.</p> <p>Participant 6: In practice to improve user experience by inputting information once into once particular system. Questions around will the user be able to meet the obligations by using any sorts of existing processes and systems that are linking to CDS and the potential link to the STW? From the business perspective, using STW will allow users to meet their import, export and transit obligations via road freight from the EU. There must be an awareness what the rules are when these are known and be able to interpret them accordingly and propose any changes if needed (traders and trade associations). Hopefully STW will simplify duplications within the system and reduce administrative burdens and it must be operatable soon, but I worry it will take years and months until fully operational.</p> <p>Participant 7: Different departments viewing and sharing same information linked to importer or exporter. Points out the first trials of freight forwarders moving away from their current customs software providers to connect to / adapt STW, which poses a challenge. Also refers to the trials around customs software providers working with STW questioning potential business benefits at the same time. Addressing the issues around negative financial impacts on those not using the system correctly which brings businesses being hesitant to use it. From customs perspective, main benefits for HMRC, DEFRA, port health authorities and other departments together checking and monitoring imported/exported goods, additionally border force will also be integrated into the STW.</p> <p>Participant 8: Question may be answered later / be re-visited due to participant's lack of access to own files as being on vacation.</p> <p>Participant 9: STW will link with transit / NCST and Defra, facilitating health / IPAFFS certification processes, useful from customs and traders perspective by inputting the</p>
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	<p>information which will be shared amongst different government departments. From custom’s perspective, link to CDS will still have to be present and this does not remove the need for software houses and traders will still need to be compliant. Key thing is data security especially for larger businesses which raises questions around internal / external user access to STW and its various parts. Handling all information in one place will facilitate more compliance and less confusion around multiple departmental processes.</p> <p>Participant 10: STW will encourage openness and transparency of product itself, as bringing everything together from rules of origin to places of production. Important not only from the agricultural but also pharmaceutical type of business perspective as not only facilitates import and export processes but also facilitates data collection on trade flow. Also, from business and customer’s perspective, understanding the products components and its origin, supply chains, VAT and excise duties processes, is very important.</p>
<p>7. How important is the interoperability function of the STW?</p>	<p>Participant 1: Extremely important function in a long run and the only thing that will ensure success of STW, without this function STW would be just a CDS declarations replacement software. It first must be operational with the governmental systems in the UK and connect with other STW globally to minimise input of data further and reduce number of errors like missing data fields of incorrect declarations.</p> <p>Participant 2: One of if not the most important part so various countries STW can communicate with each other, be interoperable and more harmonised way of trading. More accessible and standardised way for every business and customs agencies to verify shipping documentation.</p> <p>Participant 3: Potential is big, aligning various countries systems to enhance cooperations between these countries, which Brexit did not accommodate.</p> <p>Participant 4: Hugely important, because system will be processing, sending and exchanging information which will eliminate a lot of issues which can occur.</p> <p>Participant 5: Interoperability is essential or STW that must connect via government API’s. Connections must be possible for larger businesses to do bulk uploads possibly from SAP or Oracle or other big platforms.</p> <p>Participant 6: Interoperability has always been an issue with HMRC for over 10 years, CDS was introduced as needed to bring more robust system, concerns around taking years to implement new one recalling previous experiences with NCTS where a lot of problems and glitches with the system were found. With leaving the EU it’s important the NCTS works properly, it isn’t a flawed system but its implementation are driven by HMRC and other trade departments like DEFRA and all departmental systems must be aligned. At the moment CDS is not aligned with DEFRA and with introduction of new system should give particular trader the opportunity for speed and efficiency to enhance progress.</p> <p>Participant 7: Interoperability is essential and fully support the initiative despite some previous negative comments. Currently no interoperability within current systems therefore if structured correctly and tested it will become an extremely important function, although it will take time to build up across different disciplines, longer than 2027 deadline. This is the most important element of STW and must be done right.</p> <p>Participant 8: Critical aspect due to customs, police, environmental and quarantine agencies’ role and its departmental connections. Also important from trader’s perspective and to the whole system.</p> <p>Participant 9: Interoperability of the STW is very important.</p>

	<p>Participant 10: It is a key as everything must run smoothly, in the context of trade digitisation and digitalisation and the end to end process – before, during and after, as STW is not just a snapshot. It needs to fit in with the countries not currently using the STW. Interoperability will promote transparency and some consistency for businesses trading with countries currently utilising the STW, such as New Zealand, US and Sweden.</p>
<p>8. What are the key considerations for businesses when starting to utilise the UK STW?</p>	<p>Participant 1: Looking at business processes and analyse the improvements and potential benefits. Considerations around fixing internal processes first before STW implementation to maximise benefits of STW utilisation. Step by step mitigation plan rather than making decisions in rush in order to avoid disruptions within operations. Considerations around staff trainings on STW and submitting customs declarations. Companies should have fundamental processes such as on document archiving and operations support from compliance perspective.</p> <p>Participant 2: Like with new system and technology, understanding how it can improve operations compared to current way of conducting business. Once improvements are understood, starting to assess technological upgrades that must be considered based on the size of the company. Considerations around more accessible platforms, finding more ways to expand operations and access international markets.</p> <p>Participant 3: Most businesses will look at costs in terms of training and staff (if to hire more), it may also mean less people for the business in terms of cost savings, companies must evaluate advantages and disadvantages and if beneficial from costs perspective. In short term may need investment to receive benefits later. Must have forward thinking approach, but assess how much will it cost to build in the technology/IT systems. Ultimately the end result may be very beneficial from reducing lead times and paperless trade perspective. Must be very broad minded.</p> <p>Participant 4: When implementing different systems, it's always about how system will cope with new concepts and how quickly. Considerations around training and support, including Technical Support especially with the program as it's new in case of any technical issues.</p> <p>Participant 5: Businesses to see tangible benefits, especially those dealing with SPS goods, licenses or excise goods to provide information once that would greatly reduce declaration costs and certain customs resources. It will take longer for certain businesses as opposed for those dealing with standard goods like textiles which will see the benefits earlier. Cost reductions, simplicity in processes and higher trade compliance measures will be one of the benefits especially useful for larger businesses.</p> <p>Participant 6: Highlighting functionality, efficiency and ability to address internal business challenges around staff and additional costs implications when utilising STW. Concerns around justification of the investment to obtain tangible benefits with an emphasis of the system's impact on freight and logistics industry and its operations.</p> <p>Participant 7: What kind of guidance is available and will be followed to do the entries by traders or intermediaries and monitor and check the compliance without the need for declaration amendments which would be very time consuming. Additionally, a lot of businesses use parcel operators so considerations must be made in relation to continuing using same fast parcel operators alongside STW or changes to supply chain plans needs to be made. Cost analysis and decisions to be conducted whether or not to move to conventional methods of transport to utilise STW. Reflects on potential business conflicts if sticking with parcel operators or utilise STW with a need for planned integration. Point out the hesitation from parcel operators as already utilising STW like systems which are</p>

	<p>not connected to the governmental departments but receive pre-alerts of incoming goods from the export country into the system with a potential of developments of such systems.</p> <p>Participant 8: Very important for the businesses to prepare, take time and effort to learn the system and participate in any provided training activities by customs, to be able to start system straight away. Reflecting on first Australian STW introduction confusion amongst businesses was present for several months resulting in cargos being manually rather than automatically released which was embarrassing to department that attracted media criticism. Backlog of errors took months to resolve, then system running smoothly for the next 15-20 years.</p> <p>Participant 9: STW will streamline business processes, will facilitate money and time savings. Considerations around inhouse implementations versus outsourcing with customs intermediaries. In case of outsourcing, considerations around commercial sensitive information accessibility and how robust processes stand up to business activities.</p> <p>Participant 10: Key considerations around data and software in order to use the STW, various platforms and programs used by other STW's and about upskilling by UK businesses. Another considerations around accessibility, much easier for larger firms like JLR or Aston Martin due to greater mobilisation, own customs functions, dedicated supply chain and trade expert and awareness how to comply and use platforms related to STW. This is in contrast to SME's which are very underrepresented and will have challenge to upskill due to lack of sufficient personnel / resources. Discussions around training courses being offered but costs and accessibility to educational platforms is questionable, harder for the SME's staff to be released for some days to be trained on the software / on the STW platform – these are the key considerations.</p>
<p>9. Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various STWs with various countries?</p>	<p>Participant 1: Yes, reflecting on attended meetings with governmental agencies (Defra, HMRC, Border Force), problem with interoperability regarding data is that these are not regulated by free trade agreements, but by a different higher-level agreements. There is a call for evidence on EU/UK data adequacy which touches on data flows between UK and EU, hence why it is more complicated to implement as governments must ensure commercial data is being protected.</p> <p>Participant 2: Trade should be harmonised globally, no need for different jurisdictions of different ways of operating. There should be certain standards in place and interoperable system that can communicate data and value in a seamless manner to create united electronic platform.</p> <p>Participant 3: Considering where world is heading, yes it may provide a lot of benefits, world is getting smaller with new technologies online however government won't compromise the security, therefore it must have a plan to protect systems from ransomware. A lot must be decided upon before any commitments from either government, customs or traders, before implementing STW and businesses must be aware of that.</p> <p>Participant 4: Yes, because UK should stay in the trade network. For the UK to be on the same level as other countries there will be a lot of benefits, possibilities and opportunities because of that.</p> <p>Participant 5: Yes, the interoperability being introduced later in the phase will be significant, on contrary some UK's key trading partners do not utilise STW including EU which STW and customs reforms will take several years. With regards to US STW, IBM was involved in its implementation, but UK STW also shows potential as well as Singapore STW although level of trade with Singapore is not on the same level as with the EU. There are</p>

other successful single trade windows with an examples of Kenya, Egypt, Pakistan and India. Therefore interoperability will be key and should start with some UK's key trading partners considering not only commodities traded (e.g. aerospace) but quantity and frequency of an actual shipments. Interoperability is not only be linked with STW but also the port community systems especially government owned overseas, linked with customs platforms, so opportunities lay also within the national government customs platforms.

Participant 6: It is very important for the UK government, to improve trade with other countries, but concerns around WTO involvement especially around free trade agreements as countries must be aligned with WTO guidance especially if country utilises STW it must be aligned on both sides. Provides an example of AEO mutual recognition agreements on which little progress was made especially after UK left the EU, therefore its questionable if this will be the case with STW. Government should interact with people and various trade bodies to make a progress with STW.

Participant 7: Yes, although not all countries are on the same level and there are challenges around security too. Mercosur group has well integrated STW system and should act as an example of a great scheme. Other area for improvement could be the pre-alert system in STW so that importing countries could enter pre-alert information which border force and customs could verify before allowing goods to be admitted. Non inventory linked ports utilising GCMS could benefit from pre-alert system which has some gaps that needs fixing. It would be very useful for STW to be connected with e.g. French system and receive pre-notifications on incoming shipments. Inventory linked ports and CSP's will be challenged to integrate their inventory and port systems to facilitate full integration of the processes therefore this must be under HMRC's radar for successfully integrate STW with other countries.

Participant 8: Absolutely and in line with WTO global network aims, objective is to connect all STW's globally. In case of Australia – UK STW connection, facilitations around exporter's paperwork and UK customs pre-alerts and connecting imports and exports amongst countries with customs involvements. Importance on starting with networks between major trading partners with an example of New Zealand and Australia system connections.

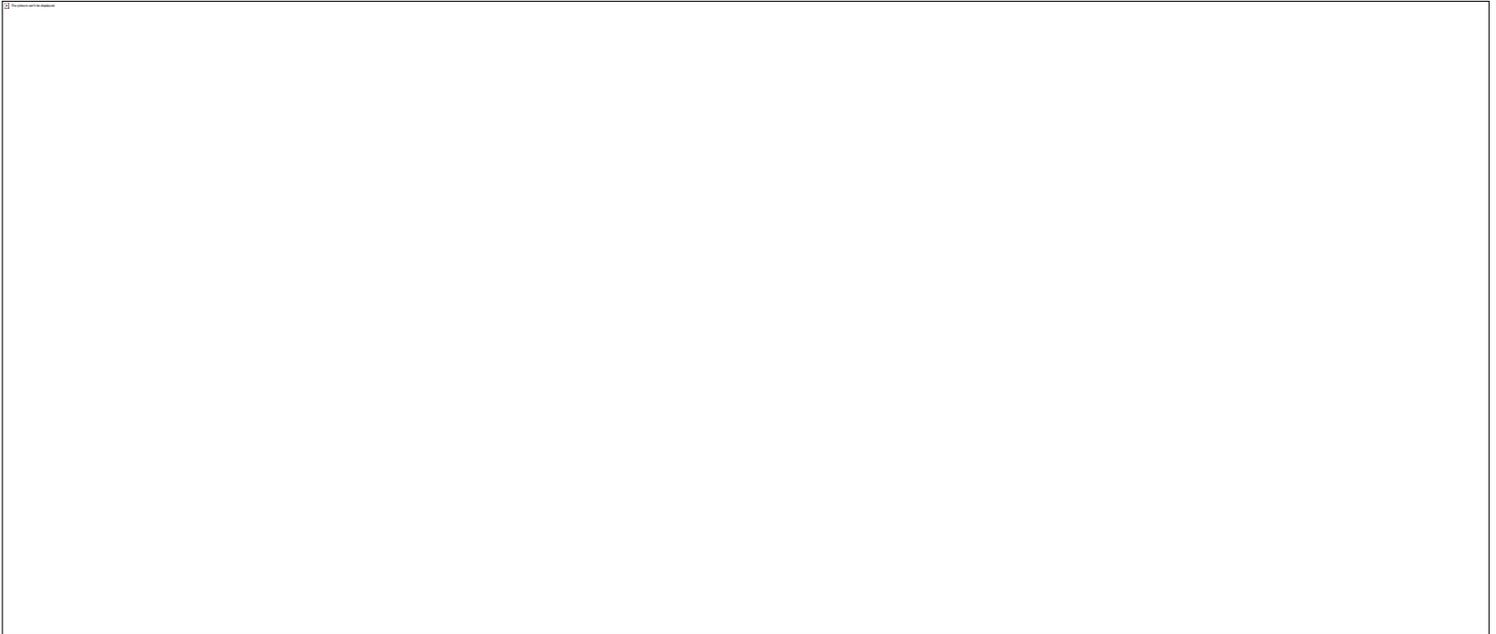
Participant 9: Definitely a good move to facilitate trade.

Participant 10: Very firm yes. Should look at these as free trade agreements and should be looking at trade facilitation and trade creation. This should reduce trade barriers as import/export operations can have its challenges and cause significant delays when stopped in customs at borders. Very important aspect when looking at free trade agreements between the UK and other countries.

## Appendix C

### Interview preparation and Transcripts

#### **Interview e-mail information and preparation prior to interviews:**



#### **Introduction and information before the start of each interview:**

'Hello and thank you so much for joining me today.

Just to quickly introduce myself my name is xxx, and I'm currently completing my dissertation at Warwick University called: 'Innovating Trade in the Digital Era: Empowering UK Manufacturers with Advanced Trade and Customs Technologies and the Strategic Role of the UK Single Trade Window.'

As explained in my e-mail, the focus of my research is to understand the impact and possibilities that digital innovations in trade, especially the UK Single Trade Window, bring to trade facilitation for the various actors within the supply chain.

I deeply appreciate your time and willingness to share your expertise with me. This interview will consist of 9 questions and should take approximately 15-20 minutes. A consent form has been shared with you in advance to ensure all ethical standards are upheld, and your responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes.

Before we dive into the questions, I would greatly appreciate it if you could give me a brief introduction about yourself, focusing on your experience and role within the trade compliance sector.

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Thank you, your insights are incredibly valuable to my study, and I'm looking forward to our discussion. Shall we begin?'

**Consent to participate in the research**

<u>Title of Research</u>	Innovating Trade in the Digital Era: Empowering UK Manufacturers with advanced Trade and Customs Technologies and strategic role of the UK Single Trade Window
<u>Name of Researcher</u>	<u>Student number: 2192736</u>
<u>Name of Academic Supervisor:</u>	<u>Dr Rebecca Wilde</u>

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.
3. I understand that data collected during the study, may be looked at by individuals from The University of Warwick, from regulatory, where it is relevant to my taking part in this study. I give permission for these individuals to have access to my data.
4. I hereby consent to audio and video recording during the study and understand that the recorded material will be used only for the data analysis.
5. I grant my consent to the use of (anonymized) verbatim quotations derived from my statements, understanding that my identity will be protected.
6. I am happy for my data to be used in future research.
7. I agree to take part in the above study.

Name of Participant:

Name of Person taking consent:

Date:

Date:

Signature:

Signature:

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\*Signed consent forms and interview recordings are available upon request.

**Transcripts:**

**Single Trade Window Interview – Student 2192736 and Participant 1 -20240322\_125948-Meeting Recording**

1:32

So hello and thank you so much for joining me today.

1:37

Just to quickly introduce myself, so my name is xxx and I'm currently completing my dissertation at Warwick University called Innovating Trade in the Digital Area, Empowering UK Manufacturers with advanced trade and customs technologies, and the strategic role of the UK Civil Trade Window.

1:58

So as explained in my e-mail, the focus of my research is to understand the impact or and possibilities that digital innovations in trade, especially the UK single trade window, bring to trade facilitation for the various actors within the supply chain.

2:17

So I deeply appreciate your time and willingness to share your expertise with me.

2:23

This interview will consist of nine questions and should take approximately 15 to 20 minutes and a consent form has been shared with you in advance to ensure all ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes.

2:46

So before we dive into the questions, I would greatly appreciate if you could give me a brief introduction about yourself and focusing on your experience and role within the trade compliance sector.

3:02

Yeah, sure.

3:03

So my name is xxx and I work at the xxx as xxx

3:12

In my past I started my career with a company called xxx in xxx where I used to work in advisory company that was advising and supporting operations for customs compliance purposes.

3:29

So I was a part of operations where I worked with various systems globally, mainly in Middle East but also Pakistan.

3:38

And then I worked with a company in automotive where that was producing manufacturing seats and parts for seats.

3:48

And there my role also involved lots of technological aspects because we were improving processes using disruptive technologies, implementing systems that enabled interoperability.

4:08

Thank you.

4:23

The question number one is, are you aware of any single trade Windows systems globally, right.

4:35

So when we talk about single windows, we have to define that they're the national ones that international single windows and they are slightly different.

4:44

So there are many single windows in in the world on different levels of development and different level of integration in the country.

4:57

So some already offer all the services for citizens and connect all the other systems as well and some of them don't.

5:07

So I am very familiar with Qatar single window with the Pakistani single window and that these are the ones that I worked with.

5:20

Not directly because I used a customs broker, but I was auditing entries that were going through the single window over there and now I am a part of the team that works well.

5:33

I'm the main person in this at the institute that works with everything related to single trade window within UK from the development perspective.

5:43

Thank you.

5:46

Question #2 Which party or organization in your opinion, takes the greatest advantage of the single trade window system?

5:59

So when you ask this question, are you asking about like companies or the government or yeah, various.

6:07

So there are a lot of, from the legislative perspective, there are mainly addressed to customs, to customs or to the governmental organisations.

6:22

Although having said that, there are various parties that will benefit from the single trade window in general.

6:31

So basically are you able to identify or in your opinion what are these organisations that will take the greatest advantage in general.

6:45

So I think in the long term it's the government itself that that benefits from implementation of single window for various reasons.

6:58

One of them being centralizing their own operations.

7:03

And as much as centralized, they can be better for them because they're able to connect different government organizations that work with on customs or any type of taxation and one software and one system and they're reporting.

7:22

So the data is very important nowadays and the data they collect and that they can analyse.

7:28

So to give you an example of something that was quite important, I don't know if you saw this article, but they brought up an article about exploitation of cars to Azerbaijan.

7:45

It has increased by 2000% since in implementation of export controls on Russia so single trade window and all centralization of those in reporting that's possible from single window gives the visit gives this visibility quite quickly and can be addressed.

8:11

So I would start from the government in the first place, in a long run of course, because once the system is implemented and all the systems are integrated into single trade window and into reporting for single trade window, that's super beneficial.

8:27

And the second are SMEs I believe because they would benefit from being able to log in and use all the assistance possible in single window and just submit their declaration.

8:40

So they don't have to overpay for customs broker that would charge them quite a sum because they have low values of declarations, so they would not get a good price right from the customs intermediary.

8:57

So they get they just they just do it by themselves basically within the single window.

9:07

Thank you.

9:09

Question #3, who in your opinion will benefit most connecting from the UK single trade window?

9:21

Suppose it's similar type of question to the one above.

9:25

However, the one above was more of on the global kind of international level, whereas the question #3 is focusing on the UK single trade window, but the UK one is again the SMEs because right now, so in the other countries sometimes you still have to use the broker, right?

9:45

So for example in I think it's in Qatar.

9:49

I'm not sure I'm making this up, but in some countries they are required to use a broker and you cannot declare it.

9:54

In UK the case is different and you can't.

9:57

You will be able to declare your customs declaration on your own, so you can just log in and do an imported export declaration.

10:05

You don't have to pay which is saving you money and it may not be a lot in a monthly scale, but in a year scale it grows to amount where the money can be put elsewhere.

10:18

So also if single trade window in UK because it's still in early stages, but if it will centralized all the sorts of information and chats for support from you know HMRC or if they will be able to view and see dashboards as well within their with their data they will be able to improve their compliance as well.

10:46

So that because of we still don't have a good overview of what single trade window in UK will be and how the functionalities will end up being in the five years plan, it's hard to say.

10:59

But from what it's shaping right now, I think it's safe to say that SMEs will be the one benefiting the most.

11:05

Thank you.

11:07

Question #4, what impact will the UK single trade window have on UK businesses operational efficiency?

12:24

So again, we have to look at the short term and long term benefits because that's the only way to look at it as single trade window is not a short term project and all the functionalities will be released over the course of X years, right.

12:42

So the short term is for sure this, this possibility of submitting the declarations on them by themselves, so they have operational efficiency comes with the visibility.

12:59

Yeah, because they don't have to wait for the documentation for declarations for all of that to come back.

13:06

That can be in house, doesn't have to be outsourced in the long term.

13:12

It will improve well in short term as well because that's one of the deliverables as well.

13:17

But it's the lack of repetition of the data because that's the main focus of single trade windows for now from the government.

13:26

And they are planning to reduce the amount of fields that you have to populate and also give you the ability to save that on like in form of drafts or templates that you can reuse.

13:42

So this improves the speed, reduces the human error possibility and yeah, kind of creates a centralization of all those services that you can actually you can get within the single trade window.

14:00

Thank you so much.

14:03

Question #5, in your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

14:15

I said the main advantages from using it will be of course the benefits that it's going to bring starting from savings that it's going to bring both in money and in time, then centralized centralization, it's, it doesn't sound like it's advantage but it is especially when you are writing process and procedures for your operations centralization is really, really beneficial and from business perspective advantages.

14:57

What else I can add, let me go to that in your previous response with regards to the avoiding the repetition as well.

15:09

On the top of that, yes, the reduction of data entry, but also it will require less people to work on a declaration.

15:20

So because you're saving time, you don't.

15:23

You don't need two people to do that because you can reduce that's to just one person.

15:27

And the if you're employing two people, it's not too well, all the automations are not there to make you fire people, but to actually allow them to focus on more important things, right.

15:38

So you reduce the FTE that are dedicated to submitting declarations because you allow them to shift and upscale and do something else that's more valuable.

15:53

And yeah, yeah, the challenge is, I think main challenge is the fact that they will have to be open to the culture of change.

16:03

They will have to look at their processes and procedures and how they do things and how they want to do things in the future.

16:13

They will have to analyse what has to change and what are the areas of improvement.

16:20

And so it is an advantage and a challenge at the same time.

16:24

Because the advantage of the situation is that you can change the way you work and make it better.

16:30

Where you would not do that if you were not forced by having to bring a single trade window on board, which at the beginning of course will be voluntary, It will not be mandatory, It will at some point become mandatory.

16:45

So if people take this challenge of implementing it early, they will be able to improve their operations as they go with the development of single trade window.

16:57

And it's going to be challenging as well because things are going to be changing during the development and they will have to amend their operations and supply chain in a way to collaborate with single trade window development.

17:12

But this will also give them an opportunity to, I don't know, maybe influence the government on how the single trade window is developing because the government is very open to this feedback.

17:27

Thank you.

17:29

We've got last four questions.

17:32

Question number six, what functions of the UK single trade window are you aware of, are you aware of and think are the most beneficial from a business and customs perspective?

17:48

So here we're talking about businesses as well as the customs for the force from that perspective, right.

18:01

So for me it's the possibility of creating those templates for your shipments.

18:07

I believe this is something that's going to be extremely beneficial.

18:13

I've seen this functionality in software that's used for submitting custom declaration and I worked with this and if it's designed properly it can.

18:27

It can save you a lot of time and minimize the errors that you're doing and allow you to just focus on important things.

18:40

Because if you are importing a small portfolio of products and you save those layouts, you don't have to copy paste the same info all the time to post it into the declaration.

18:51

But you can just choose the template, change the basic data or add it and then submit the declaration.

18:59

So, so that's extremely, extremely helpful for the businesses.

19:06

And then I'm not sure if this functionality is already confirmed, but actually getting a live support on your declaration through like a chat while you're submitting the declaration, that's second one and the third one is help and explanation when you're going through a declaration submission.

19:31

So we would have those low points that you can hover over and it will tell you what this field means because you know people had a lot of changes recently which was introduction of CDs and people are still not exactly familiar with CDs.

19:47

So those explanation and what does this data field means when you're creating that in single trade window would be, yeah, it would be extremely beneficial especially for people who don't submit declarations on daily basis, but they have to do it once a month, twice a month.

20:07

Thank you.

20:09

Question #7, how important is the interoperability function of the Single Trade Window?

20:19

That's extremely important.

20:21

That's in a long run, interoperability.

20:27

Interoperability is the only thing that will allow Single Trade Window to succeed, because if it won't have an interoperability with other governmental systems, it will just replace a software for submitting CDs declarations.

20:47

So in order to allow the users of single trade window to have full experience of what single window should be, it has to be interoperable on the first instance with the governmental system in UK and in the long run with systems other single windows abroad to minimize the input of data further and reduce the amount of you know errors or complications when submitting declaration like missing data fields or incorrect declarations.

21:30

Thank you.

21:31

But last two questions, question #8, what are the key considerations for businesses when starting to utilise this UK single trade window?

21:54

So again before implementing single trade window, they have to look at their business processes and analyse how they are improving their processes and know its benefit.

22:08

It's going to bring them internally the implementation or what they would have to fix internally first before implementing single trade window so that they maximize the benefit of utilizing single trade window.

22:25

They should plan them at migration as well step by step.

22:28

It should not be, you know, throwing yourself on a deep water and just saying we're using single trade window from tomorrow.

22:36

But to avoid disrupting the operations, they should, yeah, they should plan it.

22:42

They should train their staff from single trade window and how to submit custom declarations.

22:50

They should have process and procedures in the background about storing the documentation and how the communication goes and how they're going to support their operations with all that has to be created in the background from compliance perspective.

23:13

Thank you.

23:14

And we've got the last question.

23:17

Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows globally with various countries?

23:36

Yes.

23:37

So I've attended various meetings about single trade window where different representatives from the government were attending Defra, Borders, HMRC and sorry, Border Force.

23:58

And the problem with interoperability regarding the data, these are not regulated exactly by, you know, the free trade agreements.

24:12

They're regulated by different agreements on a bit higher level.

24:17

So if you have a look, there's a new consultation right now which elaborates on.

24:24

There's actually a call for evidence regarding EU, UK, EU data adequacy and it does touch to our level on data flows between for example, UK and the European Union.

24:41

So what we've been told back then is that there are different agreements that regulate the flow between the countries and internationally.

24:53

This is why it's a bit more complicated to implement.

24:56

However, it does not mean that they are not looking into this and to further facilitate that, but yeah, they have to ensure that everything is everybody's business is secure because it's commercial data that's very often is sensitive.

25:15

So they have to make sure that the data is used properly and is not abused and that the proper measures are in place so that interoperability can happen without exposing any party to damage to their business.

25:33

So that concludes our interview.

25:44

I would like to thank you very much for your time and for being able to take part into this research.

25:54

So all the entire you have shared with me, all the answers will be treated anonymously and as I alluded to in the beginning, they will.

26:05

The answers will be used purely for the research purposes.

26:10

But by all means, if you decide in the meantime that you would like to withdraw, you have a right to do so.

26:17

And yeah, so in case of any questions or any concerns, you do have my e-mail address.

26:26

And I would like to thank you for your time today and wish you a great day and a great weekend.

26:33

Sure.

26:33

Thank you for this opportunity.

26:40

Thank you.

### Single Trade Window Interview - Student 2192736 and Participant 2 - 20240322\_143138-Meeting Recording

0:12

Just to quickly introduce myself, my name is xxx and I'm currently completing my dissertation at work University.

0:20

My dissertation is called Innovating Trade in the Digital Era, empowering UK manufacturers with advanced trade and customs technologies, and the strategic role of the UK single trade window.

0:34

So as I explained in my e-mail, the focus of my research is to really understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, will bring to trade facilitation for the various actors within the supply chain.

0:53

So I deeply appreciate your time and willingness to share your expertise with me and this interview will consist of nine questions and should take approximately 15 to 20 minutes.

1:06

And the consent form has been shared with you in advance to ensure all ethical standards are upheld and your responses will be treated with utmost confidentiality and will be used exclusively for academic purposes.

1:23

Before we dive into the questions, I would greatly appreciate if you could give me a brief introduction about yourself and focusing on your experience and role within the trade compliance sector of course.

1:38

Well, thank you so much, for considering me to answer these nine questions.

1:44

But real briefly, my name is xxx, I am based out of xxx USA and I'm working on a solution primarily focused on the documentation layer of global trade.

1:56

We have created xxx, which digitalizes transferable and verifiable records within the global trade transaction, primarily focused in maritime.

2:08

So that's my role.

2:09

I've been diving deeper into the compliance aspect here in America and you know how we can facilitate, you know the digitalization of these trade documents, but that's my focus primarily right now on the documentation layer.

2:28

Thank you for your introduction.

2:41

Let me start with the first question.

2:46

Are you aware of any single trade window systems globally?

2:51

Yeah, to my knowledge there have been a few.

2:55

But I've mostly read about Nafisa which is a system in Egypt that it's like a single window system that facilitates trade.

3:11

It's it was launched out of Egypt's effort to streamline trade procedures and it simplify and its aim is to simplify import and export processes to make it more efficient and less time consuming for traders themselves.

3:28

Question #2, Which party or organization in your opinion takes the greatest advantage of this single trade window system?

3:40

So I personally think there are many parties that benefit from a system like this, but primarily being the national economy as a whole due to improved transparency and pretty much reduce the corruption and yeah, and yeah, corruption and the physical interaction needed to, you know, actually approve these processes.

4:08

Question #3, who in your opinion will benefit most from connecting to the UK single trade window?

4:18

So and the question #3 is around the single trade window that is being implemented in the United Kingdom.

4:28

So like I said on question #2, there's, I believe personally that there's many parties that would benefit.

4:34

But for this question I think it's governments, traders and customs, the benefit by making trade faster, easier, more transparent and of course more predictable because everything will be, you know, recorded and seamless digitally of course.

4:54

Question #4, what impact will the UK single trade window have on UK business operational efficiency?

5:05

Yeah, I think it can impact businesses, maybe small businesses with administrative burdens.

5:16

By that I mean there will be fewer forms to fill out, less need to duplicate, you know, data submission and less time spent, less time spent navigating through different governmental portals.

5:32

Also, you know faster custom clearance, which means they can move more rapidly through the supply chain, reducing the delays, for improving the reducing delays and improving reliability of the delivery schedules.

5:48

Thank you for your comprehensive answer.

5:54

Question #5.

In your opinion, what are the main advantages and challenges of the UK single trade window from a business perspective,

5:58

Yeah, so from a business perspective, I would say advantages include faster processing and less bureaucracy, lower costs and more security and opportunity for global collaboration.

6:20

Now the disadvantages come, you know, be from the adoption of new systems, whether if you're small business, you know, can handle the upgrade to this new system technology, whatever the case may be.

6:35

And obviously the onboarding process of, you know, making everybody get on the same level and developing and enabling legislation to, you know, set out the clear road map for everybody to be on comprehensive level, of course.

6:55

So we've got last four questions.

6:58

Question number six, what functions of the UK single trade window are you aware of and think are the most beneficial from a business and customs perspective?

7:11

So from a business and customs perspective, I feel like it's more beneficial when it comes to like I said earlier, the bureaucracy for businesses, they don't have to deal with, you know, people prioritizing other exporters' work.

7:29

Also having to having the benefit of just relying on this one platform where they don't have to go on three different websites or fill out five different forms to facilitate the trade.

7:44

So transparency, effectiveness and predictability are I would say the most beneficial points from a single trade window.

7:58

Question #7, how important is the interoperability function within the single trade window?

8:07

I think that's like probably one of, if not the most important part just because you know, ideally I personally feel like maybe not every country use 11 type of single trade window, but it would it would be, you know ideal if they can all communicate within each other and yeah, be some type of interoperable to have a more harmonized way of trading and you know, more accessible and standardized for every player to, you know participate and every, you know, corporation and like customs agency to, you know, verify the documents.

8:51

Question #8, what are the key considerations in your opinion for businesses when starting to utilize the UK single trade window?

9:03

Yeah, I feel like with any new system or technology, you know, understanding how it can improve operations compared to our current way of conducting business.

9:13

And you know, once you understand the improvements, you can also start to piece in the technological upgrades they might need to consider based on their size of the company and also more accessible platforms, find more ways to expand operations and access international markets.

9:33

You know, this is maybe one of the considerations that businesses could, you know, think of wonderful.

9:42

So we've got a last question.

9:44

Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows globally?

10:07

I personally think ideally it, it should be some type of fully harmonized trading globally where you know, there's no need for different jurisdictions to have different ways of operating.

10:20

There should be like certain standards in place, maybe, you know, follow UK law, but yeah, maybe not one system for every country, but it.

10:28

There should definitely be an interoperable system that can interchange data and value in a seamless manner to create a unified electronic platform.

10:49

In the meantime, if you have any questions or if you feel you would like to withdraw from the interview, you have the opportunity to do so at any time.

11:01

I will be all the responses will be anonymous and will be used exclusively for my research only and will be used by the university.

11:27

And thank you for your time.

### **Single Trade Window – Student 2192736 and Participant 3 - 20240322\_153358-Meeting Recording**

0:11

And just to quickly introduce myself, my name is xxx and I'm currently completing my dissertation at Warwick University.

0:19

My dissertation is called Innovating Trade in the Digital Era, empowering UK manufacturers with advanced trade and customs technologies, and the strategic role of the UK Single trade window.

0:33

As I explained in my e-mail, the focus of my research is to really understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, will bring to trade facilitation for the various actors within the supply chain.

0:59

This interview will consist of nine questions and should take approximately 15 to 20 minutes.

1:07

And the consent form has been shared with you in advance to ensure all ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes.

1:23

Just before we dive into the questions, I would greatly appreciate if you could give me a brief introduction about yourself, focusing on your experience and role within the trade compliance sector.

1:37

OK.

1:48

I have a background in trade which goes back, stretches back probably in excess of 20 years.

1:55

My main focus is on export controls, particularly dealing with dual use and military goods.

2:01

But I do have a wide understanding of trade compliance and the main, the main features of trade compliance IE you know Origin classification, evaluation etcetera.

2:13

I'm currently working for a company called xxx who are very well known in the trade industry.

2:27

So yes I have a good background and trade generally wonderful.

2:31

Thank you very much for your introduction and your insights are incredibly valuable to my studies.

2:39

So thank you once again and I'm looking forward to our discussion.

2:44

Yes, we, yes, please proceed.

2:48

So the question number one, are you aware of any single trade window systems globally?

2:57

I know, although I don't have a background in the single trade window per SE, I'm a bit behind on that, I have to confess.

3:07

So my answers will be dictated by that if you like, lack of knowledge.

3:11

But in answer to your direct question, I'm aware that this has already been rolled out.

3:16

I think it's something like 41 countries worldwide, including the US, I think Switzerland, Singapore, etcetera.

3:23

So I'm aware of the international, if you like focus on this by these different countries, but I don't have any detailed knowledge of the actual systems themselves, of course.

3:39

Question #2, Which party or organization in your opinion takes the greatest advantage of this single trade window system in general?

3:51

Just in general terms, I think looking at the details that I've looked at very briefly, I think to be honest with you, all parties will find benefits from the system, you know, traders, customs, government.

4:07

So I think they'll all benefit from it. These in theory, it looks a wonderful system in terms of you know, paperless trade for example.

4:18

We all want to move away from my guest bureaucracy of trade, particularly with the political situation in the world now with the Red Sea situation with the hold UPS there, this potentially has the ability to cut down on lead times etcetera for business.

4:33

So I would say all three in different ways.

4:39

Question #3, who in your opinion will benefit most connect from connecting to the UK single trade window.

4:50

Again, it's sort of linked to the first of the previous question to be honest with you.

4:54

But I can see potentially a benefit for example for smaller businesses who don't have the punch or the purchasing power with the big business.

5:05

So I can see that paperless trade in terms of cost will be an interesting thing.

5:12

So there would have to be some, some level of assessment done on cost, but I can see for smaller trade traders, it could have some really good benefits.

5:25

Question #4, what impact will the UK single trade window have on UK businesses from the operational efficiency perspective?

5:37

Yeah, I think that's really good question.

5:40

If I could probably lean on my experience with for example export controls, dealing with military and jewellery use goods.

5:50

I can see the potential there in cutting down some of the bureaucracy associated with applying for licences and just having if you like a one stop shop for managing the paperwork and the bureaucracy associated with applying for licensing etcetera, etcetera.

6:11

And as well as that of course anything that's paperwork, anything that saves on costs will be beneficial.

6:19

So that's coming from my background of export control specifically.

6:27

Next one, #5 in your opinion, what are the main advantages and challenges of the UK single trade window from a business perspective?

6:40

Again, we've already alluded to some of the advantages in terms of paperless cutting down in bureaucracy.

6:48

But again, we have to understand also that really in terms of lead times, it could have a real good advantage, great advantage because again because we're probably at the moment of paperwork overburdened, if I can put it like that, I can see lead times been reduced for companies which is so important these days, particularly in a just in time philosophy.

7:15

So I can see real advantages there.

7:17

There was the downside, potential downside that each company needs to do an assessment on the cost.

7:23

Is it worth it?

7:24

They'd need to look at the disadvantages and the disadvantages and they could be potentially cost potentially also training of staff.

7:34

I mean obviously that will be cost will be a cost to a business.

7:40

So they need to look at that in a broad view and really make a decision if, if this is really for them in terms of potentially also the investment in IT of course.

7:57

And we've got four last questions.

8:00

Question number six, what functions of the UK single trade window are you aware of and think are the most beneficial from a business and customs perspective?

8:12

Well, as I've already mentioned at the beginning, I'm not really au fait or familiar with the operation side of that.

8:20

So I would have to again just really sing from the hymn sheet about the potentials for cost savings generally.

8:30

But I don't want to go into specifics because I just don't have the knowledge, no problem at all.

8:35

And question #7, how important is the interoperability function of the single trade window?

8:44

I think again, that's one of the key aspects again, where the world is shrinking with the advancements of technology and so forth.

8:53

So I can see obviously, the potential of different countries probably aligning their systems and get cooperation between the different countries.

9:02

So I think that's vital.

9:04

I think we may have missed the trick with Brexit.

9:06

I think that probably will potentially have made it more difficult for UK traders.

9:14

But maybe this is 1 area that we can in some way ameliorate or lessen the connections between the different countries.

9:24

But I can certainly see that potential.

9:28

Thank you.

9:29

The question #8, what are the key considerations for businesses when starting to utilize the UK single trade window?

9:38

Yeah, again, most businesses will look at costs.

9:43

That's in terms of, as I said, training and staff.

9:46

Will there need to hire more people potentially?

9:50

Would it mean less people for the business in terms of saving costs?

9:54

So really businesses need to meet certainly at a high level to go through really what are the advantages and disadvantages?

10:05

And I think cost will be one of the primary things here, will it be beneficial from a cost perspective?

10:12

But obviously in the short term, it may need investment and then maybe one will see the benefits later down the line.

10:22

So they need to be very forward thinking in their approach to say, yes, it's going to cost us so much to build in the technology, the IT systems.

10:30

But ultimately in terms of lead times, in terms of paperless trade, etcetera, etcetera, it may in the end be very beneficial.

10:45

And we've got the last question.

10:48

Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows globally?

11:00

Well, in a way I've jumped ahead of myself though because I've sort of dealt with that, you know.

11:05

And again, I repeat that, yes, I think it would provide many, many benefits because that's the way the world is going.

11:13

Now as I said, getting the world is getting smaller with all these new technologies online, there are various things that government will not want to compromise security.

11:26

I think that's crucial, you know, and they need to have a plan.

11:31

And also the issue which is obviously very important as well these days, it's ransomware on their systems.

11:39

You know, is it leaving companies open to ransomware because of the technologies involved.

11:45

So a lot of these need to be ironed out before a commitment by either government, customs or traders, before jumping into the single trade window C, something I think that business should be very cognizant of wonderful.

12:05

So that was the last question.

12:08

So first of all, I would like to thank you Liam for your time and participation.

12:15

You will be able to withdraw from the study at the time you wish.

12:36

You've got my e-mail address and you know where to find me.

12:40

So if you, as I mentioned at the beginning, all the responses will be anonymous of course.

12:48

But yes, you have the right to withdraw from the study anytime you wish.

12:53

And yeah, on that note, I would like to thank you very much once again for your invaluable feedback and your responses that will really enrich my study.

### Single Trade Window Interview - Student 2192736 and Participant 4-20240328\_090151-Meeting Recording

0:02

So just before we start, just to quickly introduce myself, my name is xxx and I'm currently completing my dissertation at Warwick University.

0:12

My dissertation is called Innovating Trade in the Digital Era, Empowering UK manufacturers with advanced trade and customs technologies, and the strategic Role of the UK Civil Trade Window.

0:25

And so, as I explained in my e-mail and the focus of my research, is to understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, will bring to trade facilitation for the various actors within the supply chain.

0:43

I deeply appreciate your time and willingness to share your expertise with me.

0:49

This interview will consist of nine questions and should take approximately 15 to 20 minutes, and a consent form has been shared with you in advance to ensure all ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes.

1:10

Before we dive into the questions, I would greatly appreciate if you could give me a brief introduction about yourself and focusing on your experience and role within the trade compliance sector.

1:23

Right, so xxx, Director at the xxx, been involved in trading customs for a long time, probably 40 years or more.

1:35

Work for several businesses in trade in, in terms of the institute, my role is probably now focused heavily on digital trade, including a single trade window, what we refer to as the ecosystems of trust, trusted trade, I guess could be another term that's referred to.

1:56

And I'm also involved in several other roles including in the trader support service linked to Windsor framework for Northern Ireland.

2:07

Your insights are incredibly valuable to my study and I'm looking forward to our discussion.

2:13

So I'll start with the question number one, are you aware of any single trade window globally?

2:25

Yeah, aware of many, certainly a number of single trade windows.

2:32

Probably the one of the most experienced on is Kenya.

2:36

Leaving aside the UK and the developments here, some experience of Singapore.

2:41

But I would say that single trade windows have evolved and there is a clear difference between single trade window and a developed nation such as United States for example versus developing nations and also LDCs as well.

2:56

So probably almost three different types of single trade window depend on the status of the country.

3:03

Question #2 Which party or organization in your opinion takes the greatest advantage of the single trade window system?

3:14

I would argue that probably government themselves and the government agencies.

3:21

That shouldn't necessarily be the case.

3:23

It should be the industry.

3:25

I think maybe Pakistan and Brazil are Pakistan especially a good examples where a lot is being done for industry and not just for government.

3:40

Question #3, Who in your opinion will benefit most from connecting to the UK single trade window?

3:49

I think leaving aside government, the way it's developing in its early days is it maybe SMEs and women entrepreneurs because of the free to use capability for example of safety and security declarations and possibly self-serve on customs.

4:07

So that's the way it's developing in the early beta testing, but doesn't necessarily mean if you look forward 5-10 years that that will still be the case.

4:19

Question #4, what impact will this UK single trade window have on UK businesses operational efficiency in time and we are probably talking three to five years.

4:34

It could have a potentially a big impact depending on the amount of spend allocated towards the UK single trade window and the innovation that's introduced within it.

4:46

That is certainly in the initial releases.

4:48

Innovation isn't necessarily the priority.

4:53

The priority is very much get to customs onto single trade window, but once you get Defra, an export license in ecosystem of trust interoperability with overseas then you will see big benefits.

5:06

So if for example you use a company like GSK, they use Kuehne and Nagle a lot as a as a free 4P or probably a four PL.

5:17

And the concept there of multi filing between GSK and KN for licenses as an example say import licenses for drugs could have a big impact.

5:30

But also then there has to be trade compliance.

5:32

So if a single trade window can provide trade compliance, it will reduce the number of audits for GSK and have quite dramatic impact.

5:39

But that is going to take time multi filing but all the features of a single trade window are needed to really make that happen.

5:47

Otherwise the GSKS, the Azure's of this world are not going to see the immediate benefits and possibly might not engage.

5:59

Question #5, in your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

6:10

I think there's a couple.

6:11

One is, is, is the understanding of what the single trade window will deliver and again that that's probably going to take time as the functionality is built out.

6:21

The others is, is perhaps perceived impacts on existing business models especially the port community system CPCS, possibly software industry and possibly the customers broker community as well as free to use for example.

6:40

So that is a potential barrier there and is that some existing business models may come under strain and for traders it's having to cope with so many changes CDs, Windsor framework and so on.

6:59

This single trade window might not be front of mind at the moment.

7:04

OK, thank you.

7:07

Question number six, what functions of the UK single trade window are you aware of and think are the most beneficial from a business and customs perspective?

7:19

Again obviously this is slightly incompetence because I am doing engage regularly with HMRC on the single trade window and probably other than Deloitte, IBM who are building it, developing it probably no more than most.

7:33

So the functionality, the beta testing is, starting or just starting with very much with small businesses self-serving using Roro from the EU and standard goods only.

7:52

And that reflects obviously the fact that that the likes of Defra and light import export licenses are not in strategic release one nor health certificates and so on.

8:03

So it's a very specific ask and it's very much focused on SM ES free to use and imports import.

8:15

First of all I understand and I'm not saying this will be the case is that exports, customs exports will be next that was SR3.

8:24

But it's being put forward I guess because of the potential link with CDs and there is obviously talk of an API for the larger businesses that want to put things through in bulk from say SAP or something like that.

8:41

But the initial focus is on the small business because I guess there is a good public value, social value, good in, in giving free to use for SM, ES and women owned businesses.

8:58

Question #7 how important is the interoperability function of the single trade window?

9:06

Yeah essential and interesting question.

9:14

I guess in the context of interoperability for single trade window as opposed to other digital trade elements, it's essential in that it's got to connect with API's, probably be a government API HMRC API, not a Deloitte / IBM API's

9:32

But I could be wrong and it really needs to have that connectivity if you're going to bring the large players in who want to do bulk uploads, who possibly want to upload from SAP for me to E to open and another big Oracle and other big platforms, wonderful.

9:59

So we've got two last questions.

10:01

So question #8, what are the key considerations for businesses when starting to utilize the UK single trade window?

10:12

One is I think they would want to see tangible benefits.

10:15

So again comes back to my point, if you're a business with SPS, if you're a business with licenses or excise goods you're you probably want to see this this concept of tell us once retention of static data which will greatly reduce your declaration costs and also the need to you know have as much customs resource or certain customs resource.

10:44

So take up I think is of certain types of businesses is going to be is going to take longer because of that if you're say a I've used this example and again it's confidential with someone like next or something who's importing shirts and socks or something like that more standard type goods you may see early benefits but again the argument is next probably have some excise products in their in their portfolio even then they've got a decision to take but if say night of probably 90% of their imports are standard goods then it could work so but certainly reduction in cost simplicity and also trade compliance if it can be used to measure trade compliance more than I think and I'll say less customs audits but you're not having to re engineer a customs audit every year.

11:43

If you're a big business that could be quite useful as well.

11:48

And we've got a last question Kevin do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows with various countries globally.

12:07

I think the, the interoperability which is maybe slightly later in the single trade window is going to be very important that I think we also must bear in mind that some other countries or some of our key trading partners don't have a single trade window.

12:21

The European Union countries and there's some way behind is, is under the EU customs reform is several years, certainly several years in the future.

12:31

the US has one.

12:32

I think the US is an interesting one, especially as IBM potentially are involved in the US one and the UK one that does present some potential.

12:41

Yeah, with all due respect to Singapore has been talked about a lot.

12:45

There are some, there are some big commodity companies there, but there isn't the same level of trade as there is with the EU.

12:51

So we're obviously pushing for Kenya as one of the early ones as that's one of the earlier more successful single trade windows garner as examples, possibly Egypt has a good air single trade window, Pakistan, India and so on.

13:05

So I think interoperability will be key, but probably starting with some of the key trading partners of the UK where it's not just about you know the high value commodities, the aerospace industry and which is important, but it's also about the actual number of shipments and things like that as well.

13:27

And it would stress interoperability is not just necessarily with a single trade window.

13:32

It could be within a port community system, especially where it's government owned overseas.

13:39

It could be with the customs platform.

13:42

So is coming in in the EU.

13:45

It's not just a single trade window.

13:47

If you can connect it to customs platforms, sorry, national government customs platforms, you have an opportunity.

13:57

Thank you ever so much for answering all of the questions and I also would like to say if you in the meantime would like to withdraw for any reason, you have the right to do so.

14:13

Thank you very much for sending me the consent form and as I said, this interview will the responses are anonymous and will be used purely and only for my dissertation purposes.

14:25

And that your answers provided me with the really great insights and that will definitely enrich my visitation.

14:40

Thank you so much.

### Single Trade Window Interview - Student 2192736 and Participant 5 - 20240330\_160008-Meeting Recording

0:12

Just to quickly introduce myself, my name is xxx and I'm currently completing my dissertation at work university called Innovating Trade in the Digital Era, Empowering UK manufacturers with advanced trade and customs technologies, and the strategic role of the UK single trade window.

0:31

So as I explained in my e-mail, the focus of my research is to understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, bring to trade facilitation for the various actors within the supply chain.

0:50

I deeply appreciate your time and willingness to share your expertise with me.

0:55

This interview will consist of nine questions and should take approximately 15 minutes.

1:02

The consent form has been shared with you in advance to ensure all ethical standards are upheld and your and your responses will be treated with utmost confidentiality and will be used exclusively for.

1:23

I would greatly appreciate if you could give me a brief introduction about yourself.

1:32

Hello, so my name is xxx

1:35

I'm working at the automotive company in Warwickshire

1:41

My job is in the Logistics and in my current role I'm looking after transport after deliveries I'm booking the vehicles.

2:01

I'm also supporting my team with the customs declarations and I'm checking if the all deliveries what we are receiving are ready to offload and all the and we received all the documents to proceed the our deliveries.

2:24

I'm also advising about the Incoterms to all our team, team members.

2:35

Thank you.

2:45

So first question.

2:48

One, are you aware of any single trade window systems globally?

2:55

Yes, I am.

2:55

I know that one of the countries for which already implemented it is United States and New Zealand as far as I remember and obviously UK is planning to introduce that thing in in the end of this year and the next year.

3:15

Which party or organization in your opinion takes the greatest advantage of the single trade window system.

3:31

I think the, I believe that customs and especially the customs officers, which when this all process will be implemented, that job will be definitely easier and more clear to do, if you know what I mean.

3:52

And I think all the companies will benefit from that as well.

3:58

OK, thank you.

4:02

Who in your opinion will benefit most from connecting to the UK single trade window there?

4:13

I believe that all companies will benefit from it because almost all companies trade and you know all companies dealing with customs when they bringing the goods from the Europe and especially queue on the tech island and obviously after a Brexit situation has changed.

4:36

So yeah, definitely all UK companies effectively

5:04

Sorry, question #4, what impact will the UK single trade window have on UK business operational efficiency?

5:18

For example the company like browser when what I'm currently working is this is the automotive company, we're bringing a lot of parts from Europe and because we are running our production lines with them goods and with them on time, we can't afford any delays because the results of stopping the line are in a quite high financial fees from our customers.

5:50

So that's the main thing I would say why we should only what how we could benefit from the single window trade.

6:07

Question #5, In your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

6:18

As I mentioned in the in the previous question and I can say it from my experience, the most problematic issue are when the deliveries stop at the border because of the documentation issues and there might be a lot of there is always combination of combination of what events that could lead to it.

6:59

But I would say that, yes, the delays, avoiding the delays at the ports and bringing the stuff and the materials quicker, it's the costly most benefit.

7:26

Question number six #6, what functions of the UK single trade window are you aware of and think are the most beneficial from a business and customs perspective?

7:43

The greatest, the greatest possibility, what the system will give us, it will be to send the all the information about export and export.

8:00

Export and import only once and in one place, and we will be able to declare the codes free of charge.

8:11

Obviously.

8:12

And as I'm always, you know, highlighting here, the most important is time.

8:18

So even if we need to do it any time of day and sometimes even evenings or even night, we will be able to do it.

8:32

We've got three last questions.

8:34

Question #7, How important is the interoperability function of the single trade window?

8:43

It is hugely important because this system will be processing and sending and also exchanging information in on the one platform which obviously easiest on the all the process and eliminates a lot of issues which can occur now if we need to use different platforms and different systems.

9:12

Thank you, question #8, what are the key considerations for businesses when starting to utilize the UK single trade window.

9:25

But I can say even from my experience the one of our consideration when we were implementing different or different systems, it's always how the how the our system will cope with the new concepts and how we how quick we will be able to absorb it.

9:52

And I think also very important is the support and not only as it providing the train training, but also Technical Support especially with the program is new and they might be technical issues because they can this can stop of course.

10:19

We've got a last question.

10:25

#9 Do you believe the UK government should further facilitate trade by creating and aiming for of interoperability agreements between various single trade windows with the various countries globally?

10:39

Yeah, I'm sure about that.

10:40

Because if the UK won't still stay in the trade network, that's the not only the possibility and opportunity to be a part of it, but also to be on the same level that other countries and it will definitely talking about the benefits we already spoke to, so it's not the question even.

11:19

That concludes all of the questions.

11:34

You've got my e-mail address, so you can contact me anytime.

11:45

Thank you.

### Single Trade Window Interview - Student 2192736 and Participant 6 - 20240402\_100049-Meeting Recording

0:04

And so hello once again and thank you very much for joining me today.

0:13

Just to quickly introduce myself, my name is xxx and I'm currently completing my visitation at Warwick University called Innovating Trade in the Digital Era, Empowering QK manufacturers with advanced trade and customs technologies, and the strategic role of the UK Single trade window.

0:32

So as I explained in my e-mail, the focus of my research is to understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, will bring to trade facilitation for the various actors within the supply chain.

0:50

I deeply appreciate your time and willingness to share your expertise with me.

0:55

This interview will consist of nine questions and should take approximately 15 to 20 minutes and the consent form has been shared with you in advance to ensure all ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes.

1:16

Now before we dive into the questions, I would greatly appreciate if you could introduce yourself focusing on your experience and for within the trade compliance sector.

1:29

OK, so, my name is xxx

1:33

I'm Director of Customs Compliance Projects for xxx

1:37

I've been with xxx xx years now this month and during that time I've look to all imports, exports, logistics.

1:49

Prior to me working with xxx, I was 10 years in logistics for an engine manufacturing company and also a trade compliance general manager for an aerospace company.

2:10

I'm xx years as a member of the Institute of Export.

2:45

So yet single trade window is an important thing to look at for the future.

2:51

So hopefully that introduction from itself gives you a better insight into myself.

2:57

Thank you ever so much.

3:09

So question number one, are you aware of any single trade window systems globally?

3:17

No, I'm not aware of any.

3:19

I know the UK are wanting to introduce a single trade window during this year, but like with everything with HMRC the wheels of progress turned very, very slowly.

3:32

So I've seen over my years various things that HMRC want to introduce and it falls at the first hurdle because they don't either get any interaction from trade bodies etcetera or very, very little from any sort of trade associations regarding the implementation of various things.

3:54

And single trade window is for me is one of those ones where it sounds a good idea, but I've not seen any other countries globally who've taken upon themselves or implemented any sort of single trade window.

4:07

I could be wrong, but I've not seen any at this moment in time other than HMRC wanting to try and implement a single trade window during 2024.

4:20

So question #2.

4:21

Which party or organization in your opinion takes the greatest advantage of the single trade window system?

4:30

What takes advantage?

4:46

I can see HMRC are trying to implement this into the UK this year, but without support from various trade associations etcetera and trade bodies including intergovernmental trade departments, it'll be a difficult thing to get off the ground unless they get participation from everybody else.

5:08

OK, question #3, who in your opinion will benefit most from connecting to the UK single trade window?

5:19

OK, so who will benefit from it?

5:22

Well, when you read all of the information from HMRC about the single trade window, it should be something that is a system that benefits both freight forwarders, carriers, the importer and the exporter or any other sorts of intermediaries or agents basically to access these particular movements across the UK Border.

5:51

And obviously it's all about delivering that functionality to hopefully get goods released in a much more easier and the quicker way.

6:02

So it should benefit to various traders, but like with everything in the UK, it takes time and that's the little bit that I get concerned about because there's no sort of urgency that takes place, very little in terms of talks between HMRC, trade associations, etcetera on this particular topic.

6:24

So it seems a very, very slow burner.

6:26

It's there, but may take a bit of time to get off the ground of course.

6:33

Question #4, what impact will the UK single trade window have on UK business operational efficiency?

6:43

Well, if it's done correctly because it can't be just be HMRC.

6:49

But when you look at a lot of traders going backwards and forwards into the EU etcetera, having an EU single trade window, whether that's going to be a totally you one or whether that'll be individual member states.

7:05

It is.

7:06

For me it's an important thing because the whole of the UK and the EU would benefit from this because obviously you've got the quick clearances and you're only in giving the information once rather than having to keep giving information at each both an import and an export.

7:26

So it should in fairness improve the efficiencies.

7:29

But that's all based on everybody understanding what it's for and understanding if legislation comes in.

7:38

It's all about understanding the clear legislation simply because if you get poor legislation and on and in certainly the EU, the EU legislation, some of it is a little bit difficult to sort of comprehend.

7:54

And also it's very much about people being able to interpret that that information.

8:02

So interpretation of that is a very, very important factor when, if and when a single trade window comes into operation in full.

8:16

Question #5, in your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

8:39

So the advantages, again the advantages are very much linked to the previous question and that is obviously try only having to do things once within a particular system.

8:51

The advantage of that is increased, increased, increase efficiency in terms of completing A customs declaration with only having one piece of information and obviously only having to do it once.

9:06

So that that once everybody's got used to doing it and working with it, it should improve and speed up customs clearances for both the agents and obviously ultimately for, for the traders, whether that's AUK or an international trader.

9:23

You'd like to think that this would speed things up rather than having lengthy delays etcetera as sometimes we do what we do have in, in the UK and the EU because people are not understanding what the legislation is on that.

9:44

Yeah, the challenges again on this one is the challenges for me are the important factors because it's all about interpretation.

9:52

The challenges are companies, traders, agents, hauliers, freight forwarders etcetera, understanding what a single trade window does, what it's about and understanding the rules, the rules to use a single trade window as and when it comes out.

10:11

So the challenges for certainly for me from the logistics professional would be about obviously some of these types of industries understanding what the rules are to operate within that single trade window and everybody thinks and interprets things differently.

10:29

And that is sometimes due to the way it's actually written because some people who write all of these regulations, some of the disadvantages that that people have is because the people who write pieces of legislation and information don't actually work in the industry.

10:50

So I'm a big believer if you don't work in the industry, how will you ever know that it actually works.

10:56

And the problem I always see with pieces of legislation, whether it's in the UK or in the EU, these are made by policy makers.

11:05

And so a disadvantage is it's they're made by policy makers who actually don't work in the industry.

11:13

And so it worries me that that we're going to also have another single trade window or have another area to try and improve efficiencies.

11:23

But then it falls flat on its face because it's badly written, it's interpreted wrongly, etcetera, rather than including people from

trade associations and trading businesses to be invited to help write the pieces of legislation that will cover a single trade window.

11:54

Question number #6, what functions of the UK single trade window are you aware of and think are the most beneficial from business as well as customs perspective?

12:17

So the functions, again the functions on a single trade window is basically to look at functionality and improving user experience of only inputting information once into a particular system and basically will that customer be able to meet those obligations by using any sorts of existing processes and systems.

12:48

So that is obviously linking to CDS etcetera using those particular systems.

12:53

How is that going to link to a single trade window?

13:06

And so the functions of the UK single trade window you're aware of and think are the most beneficial from business and customs perspective.

13:18

So again from a from a business perspective using the single trade window, it allows users of that single trade window to meet their import and transit obligations and also exports as well.

13:39

Because if you're going to use it for both import and export, again we also look at transit across to the EU and beyond by Road.

13:49

So again, some of these particular areas, everybody needs to be aware of what the rules are, when the rules get written and also being able to interpret those rules and make any changes if people don't understand or trade and associations don't understand what this is.

14:09

So it's there to hopefully simplify any duplications within systems, etcetera and do music and reduce any sort of administrative, administrative burdens because it's no use introducing something that's going to take years or months or years for everybody to get used to operating in a single trade window.

14:30

That's the bit that I worry about.

14:36

How important is the interoperability function of the single trade window?

14:44

So the interoperability which is basically connections to the various systems, so allowing the system communication to another system

14:49

That is always a big problem certainly with HMRC as we've as we've already seen the introduction of CDS, CDS has been on the back burner with HMRC for many, many years, probably over 10 years now to bring up to date a more robust system than the old system.

15:15

So if it's going to take years to implement this one, I can remember many years ago, before you was even thinking about going into a career in logistics when they introduced NCTS.

15:30

So on the on the introduction of that one, it was fraught with problems and glitches within the system.

15:38

And now we're only sort of at a point now, now we've left the European Union that we now have to make NCTS work properly.

15:47

And I'm not saying it's a, it's a flawed system, it isn't.

15:51

But the implementation of that system as well as other systems like NES etcetera used to be called the new export system, but now it's obviously the national export system because it was new about 25 years ago.

16:08

So and again implementation of some of these systems that are driven by HMRC and other trade departments etcetera, other trade departments I would say things like Defra etcetera and other particular areas you get involved in the importing and exporting of goods.

16:29

They all need to be aligned, their systems need to be aligned.

16:33

As we can experience at the moment you've got CDs system which doesn't align with Defra and obviously some of the requirements that are needed.

16:42

So there's lots of things that if you're going to introduce and moving forward you want to introduce things that are going to take and give that particular trader the opportunity of speed and efficiency.

16:55

Otherwise, you may as well just go back to what you were doing rather than progressing.

17:07

We've got two last questions.

17:09

Question #8, what are the key considerations for businesses when starting to utilize the UK single trade window?

17:27

OK, starting to utilise, OK so, so the key considerations certainly from me in in business and see how businesses work and all of my years of experience not just as strong and her but also out on the other side of the fence actually making some of these things work.

17:44

The key considerations are the workability and that is does it work, how fast is the system?

17:51

Will I as a trader will I be able to take advantage of a system that is quick and efficient and also will it solve any internal problems that I've got in internally like things like staffing issues etcetera.

18:08

So, so from a traders point of view they'll be looking at all of these potential benefits from the use of a single trade window.

18:18

But these benefits could be that that they're actually not a benefit because it's yet another system that's been introduced by HMRC that that all of a sudden falls flat on its face because it's of no use to A to a trader or a haulier or a freight forwarder or an agent.

18:36

And therefore it has to have benefits.

18:38

Otherwise if there's no benefits, what's the point in what's the point in introducing something costing millions of pounds if it's not going to work or if it does work, it's slow and that just put that's what puts people off.

18:52

So some of the key, some of the key areas would be things like well, how much is it going to cost me if I've got to employ more people to do, to do this sort of thing.

19:01

How is that a benefit to me?

19:03

And that'd be a major concern for me as a business is how much is it going to cost especially when we're in, in areas at the moment where businesses are really struggling.

19:15

We don't want to introduce more things that's going to make it more costly for businesses to keep up to keep operating.

19:21

We're already seeing with the high inflation etcetera.

19:24

So some of these things are the key, the key areas for me is as a businessman that I will be take, I would want to consider before I adopt and go into any sort of a single trade window.

19:38

And we've got the last question.

19:42

Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows with various countries?

19:57

Yes, I do.

19:58

Again, it's all about improving that trade with other countries.

20:03

But again, the bit that is always concerning for me with trade agreements etcetera is the WTWCO involvement.

20:13

Within those particular trade agreements and obviously the hoops that that countries have to jump through in line with WTO guidance on trade agreements and if countries have got single trade window windows, it's got to be, it's got to be that's to be seen to be working both sides.

20:34

So it's a bit like the introduction of AEO and the mutual recognition agreements that's been on the go for many, many, many years since certainly since 2008, we've seen very, very little in terms of progress from certainly since we left the European Union.

20:52

There's been certainly very, very small amounts of progress with HMRC, if any progress since we've left the EU back in 2021.

21:02

From the 1st of January, AEO has been seen to be sort of on the back burner.

21:08

So if it's if AEO is going to be sort of left behind, how is a single trade window going to operate?

21:15

Because if you can't get help and guidance from the UK and support from the UKI can't.

21:21

I can't see how a single trade window is going to support is going to support trade when you've already got something in place with AEO with mutual recognition agreements worldwide.

21:34

So we've got something already similar in in logistics and transport under the AEO scheme.

21:41

So how is single trade window if the government and the powers that be in in terms of who set the legislation, how is that going to improve when we can't currently do for AEO?

21:55

So how is single trade window ever going to get off the ground if you can't get AEO to be working any better And that's just unfortunately with respective governments.

22:08

It's not just down to one particular party it's down to respective governments without being too political.

22:14

Nobody wants to get involved in in these areas unless they seem unless they're seen as a massive advantage.

22:22

And that's the bit that I see that government don't do enough of and that is getting people involved and asking people to come together and talk about some of these things and obviously what the intention is.

22:34

And that's the way I see a single trade window.

22:39

It's down to government support and also interaction with government and the various trade bodies.

22:46

Because without that interaction, how is anything going to get off the ground?

22:53

So that was the last question.

22:57

So thank you very much once again for your participation.

23:03

Yeah, you're very welcome.

24:21

Thank you.

### **Single Trade Window Interview - Student 2192736 and Participant 7 - 20240404\_103227-Meeting Recording**

0:12

Just to quickly introduce myself, my name is xxx and I'm currently completing my dissertation at Warwick University.

0:20

My dissertation is called Innovating Trade in the Digital Era, empowering UK manufacturers with advanced trade and customs technologies, and the strategic role of the UK Single Trade window.

0:34

So, as I explained in my e-mail, the focus of my research is to understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, will bring to trade facilitation for the various actors within the supply chain.

0:51

As I deeply appreciate your time and willingness to share your expertise with me, this interview will consist of nine questions and will take approximately 15 to 20 minutes.

1:05

A consent form has been shared with you in advance to ensure all ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively for the academic purposes.

1:20

Before we dive into the questions though, I would greatly appreciate if you could give me a brief introduction about yourself.

1:34

So hi, good morning, and thank you for asking me to participate.

1:41

I'm the managing director of xxx, which is a company that has been training and doing consultancy and business support help-line in the areas of customs, international trade and export control for nearly 30 years

2:07

My background was always to do with managing customs procedures and of course a lot of it was is very manual with spread-sheets and things.

2:21

So it's nice to see that customs are moving forward into a digital world as well.

2:28

And at the moment I represent the xxx Association on the giant customs consultative committees and some of the other sub-groups such as the Policy Committee.

2:42

And we're involved with the single trade window and xxx is going to be the second tier of the single trade window, a test area for them, but we haven't got there yet.

3:19

So question number one, are you aware of any single trade window systems globally?

3:26

Yes, I have been involved with some in the past because I worked with the World Customs Organization and a few countries were setting up single windows especially for managing import paperwork.

3:44

So the Argentina, Brazil ones in particular were around at that time being set up, but also because of we act like on a consultancy basis, one of our clients, contractors to write reports which go out anonymously.

4:04

So the white label but included in that is how to operate single trade windows in different countries and as UK exporters, how it can facilitate that trade and if the importers don't have the correct registrations, how that can slow things down in those particular countries.

4:32

Question #2 Which party or organization in your opinion, takes the greatest advantage of the single trade window system?

4:44

I actually brings together lots of different government departments in a way that other kinds of facilitation schemes don't.

4:54

So I think one of the areas that you'll find a great advantage in is the interacting between different government departments.

5:05

That brings its own challenges, especially under UK law.

5:10

As you know we've got primary legislation that says we cannot share companies or individuals data across the different government departments.

5:22

So we've got a bit of a challenge there with how much data currently can be shared.

5:28

But I believe there's they're reviewing that but I do think it's a good system to get that integrated system in place for importers and exporters to benefit from looking at the UK single window which might be jumping to your next question, I'd think it's more beneficial for importers and importers who require import approvals from different government departments.

6:02

That seems to be the primary force of the focus of the UK one.

6:08

Looking at other countries where they've introduced it, they've also linked it to, you know some financial control.

6:18

So Egypt has a different level of system with the letter of credit scheme and different registrations within the single trade window.

6:28

So that has really benefited importers who can see more security in the release of funds.

6:38

So yeah, there's a mixture really exporters, I don't normally see getting a massive advantage out of the single trade window.

6:50

But as everybody's export is somebody's import, if their customers are getting this sort of streamline advantage, then of course it will help them in a in a roundabout kind of way.

7:02

But I haven't seen.

7:05

Maybe this is my me not spotting everything, but I've not seen as a single window that has actually incorporated things like the export control regulations on military dual use and those kinds of items.

7:23

That always seems to be a distinct ministry.

7:26

Away from the single window though, you would be doing customs declarations, declared the use of those licences, I've not noticed any actually been a system for applying for the use of those licenses.

7:46

Question #3, who in your opinion will benefit most from connected to the UK single trade window?

7:57

Yeah, it's something I keep thinking about and we discuss it here in our business quite a bit.

8:06

We're not sure it will benefit small businesses, although I think that's one of the aims.

8:13

But maybe medium sized businesses who do, as I said, need different authorisations.

8:20

Maybe an exporter health export health certificate, maybe some kind of registration and check in with Port Health when goods arrive that can all be brought together within the single trade window.

8:34

But of course it is also a system for making customs declarations, so they may find that that is a facilitation.

8:43

That means they don't have to employ logistics companies and intermediaries to do declarations on their behalf.

8:51

They could just go through the single trade window, which we believe is going to be free for customs declarations, a bit like the TSS is for the Northern Ireland trade.

9:06

So importers I think are definitely going to benefit more than what I see from the exporter side.

9:14

But customs entries of course will benefit all parties.

9:19

It's where extra legislation is in place that you really see and mixed government departments involved in the same transaction that you see the benefit of having it all together in one place.

9:34

Question #4, what impact will the UK single trade window have on UK business operational efficiency?

9:43

Well, if you look at the aims then the aim is to streamline the import and export and the logging of the systems and flagging of different departments wish to inspect goods and also feedback if we get the facilitation to the exporting countries about what's actually happening with goods or if you're the exporter from the UK, what's happening in the import country though that that's a long way off.

10:16

I think with the UK system that integration with other single windows.

10:23

And it's my concern actually is that it's really going to if it works the way it is it's going to change the way that freight and logistics companies operate.

10:38

And I know they're involved in the trials and the development and also the software houses, but that's been the system that we've used in the UK for so long that I'm not sure of the initial take up.

10:57

So the benefits for some UK businesses unless they are seeing the most streamlined approach to import regulations might not be seen because they don't do this anyway.

11:13

So they, they outsource it to an integrator.

11:18

Yeah, you know, are an intermediary.

11:20

So I think that's going to be a challenge to actually sell this.

11:31

The question #5, in your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

11:46

Well, yes, to me there's only one predominant advantage and that's bringing everything under one system so that it's visible and clear.

11:58

But I do think of the challenges are some of the spin offs from trying to do that in the way that it might impact on logistics companies revenue.

12:10

You know if it's successful and UK importers and exporters are submitting declarations through the single trade window, then that will have an impact on the logistics industry.

12:24

That perhaps the opposite of what leaving the EU had, you know with the number of declarations that are required.

12:32

The other challenge I think if HMRC and the other government departments are expecting companies, the importers and exporters to make their own declarations, that hasn't been a successful initiative with the EU exit.

12:50

So companies are still unaware of what information they have to legally provide or where to get that information from.

12:59

So one of my concerns is they're building little platforms in to guide inexperienced companies on how to complete customs declarations.

13:13

But how robust is that guide?

13:16

And if the companies make a mistake and the mistake incurs civil penalties are worse, Will they be lenient with them because of the information that's been put on the single window?

13:29

Or is it actually sort of forcing goes because they expect inexperienced traders to be making customs declarations?

13:38

So a bit like EU exit, I'm just concerned that they're dumbing down in their minds what is actually a legal declaration and think with a few little bullet points and flow charts they can teach companies how to do this.

13:57

And that brings another challenge.

13:58

If you're a small or medium sized business, do you have to employ somebody to do it?

14:03

No.

14:04

How are you actually going to cover this?

14:06

So it's a tricky one for I think the UK rather than some other countries like Argentina which had a really long delay in in import declarations.

14:18

You know when certain goods were going into Argentina, you were looking at two weeks to two months to get the goods verified and imported in the UK.

14:29

We don't have that delay.

14:32

So it's not going to speed up that kind of customs clearance.

14:38

I wonder if it'll slow it down as well.

14:42

So we'll have to see.

14:43

The other big challenge is that we have the inventory linked ports and airports and we've also got the community service providers and they handle the inventory.

15:00

And as far as I can see, the single trade window has not addressed taking on board the handling of the inventory at ports and airports.

15:12

And there is some reluctance quite right, it's their business from the CSPS to hand that over to what will be a free service.

15:21

So the current focus will be on the EU arrivals GMVS type movements with the added requirement for export health certificates and import checks.

15:38

Beyond that, I think there's a massive challenge in changing the way that the freight world is structured in the UK.

15:53

Question number #6, what functions of the UK single trade window are you aware of and think are the most beneficial from the business and customs perspective?

16:07

Well, it is all about having different departments viewing the same information and feeding in to a central point which is automatically linked to the importer or exporter.

16:22

Though I believe the first trials are actually with the logistics companies because they seem to be expecting them to move away from their current software providers and adopt the single trade window.

16:39

I think that's another challenge as well.

16:41

And the software companies are working with the single trade window, but I'm sure they they're looking over their shoulder a little bit and wondering where it's going to going to go, benefits for business.

16:58

I think we've got to wait and see because I think some of the challenges and the robustness of the system will have to be tested.

17:08

You said you won't share a great deal of this.

17:11

So I will say one of the comments that I have made is we don't want to miss debates versus the single trade window scenario when the users are negatively financially impacted because they haven't used it right.

17:29

You know that that is that is a fear and I think a lot of companies will be nervous about doing that.

17:38

From a customs perspective they're only one of the parties involved and although they do seem to be taking the leaders HMRC, the main benefits are going to be with Defra and port health authorities and the other government departments that get involved in checking, monitoring goods both at import and export.

18:03

So border Force.

18:04

So I've not seen an, I've not been on an STW meeting where Border Force has been present.

18:11

So I'm not sure what their involvement is at the moment, but they're certainly going to be one of the departments that needs to be integrated into the single trade window.

18:25

We've got three last questions.

18:27

Question #7, how important is the interoperability function of the single trade window?

18:35

I think that's essential and though I've said quite a few things that might be seen as being negative, I actually do support this initiative.

18:43

And then one of the main reasons is this interoperability function, because we don't have that at all.

18:51

So if it's structured correctly, if they do take feedback from the people who are doing the tests and the development work and can manage all of that, I think this will be an extremely important tool.

19:06

But I think it'll take a time to build up across lots of different disciplines.

19:13

And you know that I know this.

19:14

They've got a time plan which is taking us up to 2027, I think.

19:21

But I think it might take a bit longer than that.

19:25

To me, your question #7 is the most important thing about getting this right.

19:32

Thank you.

19:34

Question #8, What are the key considerations for businesses when starting to utilise the UK single trade window training?

19:43

I would say what kind of guidance do they have the time to do the entry and follow it through, you know you, you know as well as anybody that to actually monitor and check and do the compliance after the entries gone through is quite time consuming.

20:07

I would hope that with the single trade window as it's the trader who's well.

20:14

It could be an intermediary as well, but the trade is going to be completing the information that they get it right for time, so they won't have to keep going back and making amendments, which happens if you outsource occasionally to that function.

20:29

But a lot of these businesses do use the parcel operators as well, so they're going to have to consider whether they can continue to use the fast parcel operators alongside the single trade window, or whether they have to change the supply chain plans, which could increase supply chain costs if they're moving to more conventional methods of transport to utilise the STW.

21:00

So that might be my lack of awareness of what are the pros of going with the single trade window, but again, I haven't seen them on any meetings that I've been on yet.

21:12

So if they're going to be separate, that's a massive freight that you'd have a conflict as a business.

21:20

Do we stick with the first parcel operators or do we utilise the single trade window?

21:25

So there must be some kind of integration being planned.

21:28

But I can imagine the big Fpos being a little bit reluctant because they have really all their systems are single trade windows but not connected to government departments, UK government departments.

21:45

But there's a pre alert comes out of the export country, go straight into the system because it's all within the same system, they handle the import, they report back.

21:57

So it's be interesting to see how that would develop.

22:05

We've got a last question.

22:06

Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade window windows within the with various countries globally?

22:25

Yes, yes, I do.

22:26

We we've got an issue of course because not all countries are at the same IT level and also there's challenges around security.

22:38

But in the Mercosur group they integrate within the single trade windows for the group.

22:46

So it's not impossible to do that and I do think it would be a great scheme.

22:52

What one of the areas I think could be potentially an early when is if we could bring in the pre alert system into the single trade window rather than have it externally so that other countries could enter the Pre Alert information which border force and customs could verify before allowing the goods to be loaded.

23:18

And I think that's going to be one of the benefits with the non inventory link ports where currently GVMS operates you know you you'll know and it's not really a secret that freight isn't being declared to customs because GMVS has gaps in in the in the area.

23:45

So goods can actually travel into the UK and just move from Dover to be delivered.

23:53

So the single trade window especially if it can lead back into the say Francis system of the pre alerts and the pre notifications that would really help a lot in closing that down.

24:07

So I think the steps here and I think we can look at an early sort of fix with the pre alerts and the controls on non inventory link ports and then extend it out.

24:20

But again we're going to have that challenge with the community service providers with their inventory linked and getting release of the inventory from ports and airports to really make it fully integrated.

24:36

But yeah, definitely, I think that's got to be on HMRC's list of successes of a single trade window when it's up and running link up with other countries.

24:54

So that concludes our interview.

24:57

Thank you ever so much once again for all your comprehensive answers.

### **Interview - Student 2192736 and Participant 8 - Single Trade Window-20240412\_073624-Meeting Recording**

0:09

So thank you very much for joining me today.

0:12

Just so quickly to introduce myself, my name is xxx and I'm currently completing my dissertation at work university called Innovating trade in the Digital era and powering QK manufacturers with advanced trade and customs technologies and the strategic role of the UK single trade window.

0:33

So as I explained in my e-mail, the focus of my research is to really understand the impact, impact and possibilities that trade innovations in trade, especially the UK single trade window will bring to trade facilitation for the various actors within the supply chain.

0:51

I deeply appreciate your time and willingness to share your expertise with me.

0:57

This interview will consist of nine questions and should take approximately 15 minutes, and a consent form has been shared

with you in advance to ensure all ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes.

1:19

Just before we dive into their questions, though, I would greatly appreciate if you could give me a brief introduction about yourself and focusing on your experience and role within the trade compliance sector.

1:35

So as you know, my name's xxx

1:38

I was in customs in Australia for 34 years.

1:44

I retired in 2018, but then I completed my Masters of Customs administration over the next two years.

1:52

I wasn't, so I wasn't really retired.

2:00

I was working in a team, a small, very small team that was looking at the single, the single window.

2:09

In Australia, we were looking at, you know, starting to understand what people want, what, you know, the industry want so that we could design a single window system.

2:25

And that's, that's where I that's where I finished up.

2:28

So we were doing sort of, I'd call industry engagement.

2:32

Yeah, What what's the problem with our system currently and what are we going to do in the future.

2:37

So for your info, yeah, in Australia, Australia's has had a single window system since 2000 and five 2005.

2:50

But it's a basic it's a basic single window system and it communicates between customs and the quarantine department or agricultural department and the importers and some of the processes are automated but it's a very basic system and it's all and of course as you know that single windows of today have a lot more.

3:21

A lot more connectivity, functionality, etcetera, etcetera.

3:26

I think that's about what I can say about single window in in Australia.

3:36

Your insights are incredibly valuable to my study and I'm looking forward to our discussion.

3:47

So I've got nine interview questions.

3:50

So the question number one, are you aware of any single trade window systems globally?

4:01

Many, many countries have started to research and explore single windows.

4:09

Some countries have single window systems up and running.

4:13

Yeah there's quite there's quite a few and I can't off the top of my head I can't think of who they were but I know New Zealand were working on a single window.

4:23

Singapore for example.

4:25

Singapore, quite a few countries have started are on the journey or have implemented single window, single window systems.

4:41

Question #2, which party or organization in your opinion takes the greatest advantage of the single trade window system?

4:53

So if this if this is implemented properly everywhere then then clearly the industry is going to benefit from having a single window system.

5:08

So your importers and exporters, your freight forwarders, your shipping companies, airline companies, they all have to communicate with, with customs in the first instance.

5:21

They'll all benefit from a single window system.

5:24

And what we are trying, what we are trying to do in Australia now since I moved on in 2018, you know those the Australian Border Force which is Customs has it has started to move forward to develop started to move forward with trade modernisation and looking at a single window system.

5:49

And the aim of it would be to for a start at the very start just have one point of contact.

5:57

So if you're an importer and exporter you don't have to talk to Customs and then you have to talk to quarantine and then you have to talk to this permitting agency here and that permit agency there.

6:08

You just, you put your information in one spot and every all the government departments have access.

6:14

So in terms of who who's going to benefit the most, I think the import I think the community the trading community is going to should benefit the most.

6:26

But of course everyone will benefit.

6:28

It'll make it easier for the customs and for the other agencies if this, if this is done properly.

6:37

Question #3, who in your opinion will benefit most from connecting to the UK single trade window?

6:47

Good question.

6:50

I don't know anything at all about the UK single window system, so I really can't help you there.

6:55

I don't know.

7:02

That's absolutely fine.

7:03

Basically the first phase of the UK single trade window is envisaged to start from this year, although we haven't heard anything back from HMRC.

7:16

And the there are three phases, the first phase that should have started that this year.

7:24

The next second phase will start a year after and then third phase it's envisaged for 2027.

7:35

Basically speaking, first phase will allow the safety and security declarations as well as import declarations to be raised free of charge.

7:45

The second phase will add the export declarations and some extra they well some extra functionalities like multiple users that will be able to access the declaration.

8:01

With the third phase which is the most interesting one, it will actually allow the supply chains actors to be connected to the to the single trade window.

8:10

So we're talking about the exporters, freight forwarders, customers, brokers and the import importers and also will break the global connectivity.

8:23

So basically in, in light of the European Union single trade window, that is also being implemented fairly well, hopefully very soon.

8:36

Although with UK it's an easier task because we only respond to HMRC whereas EU has to align with the 27 different countries.

8:47

So they've got more challenges but nevertheless once the EU single trade window will start running the possibility will be that that the UK and the EU system will be connected.

9:01

But that would that would be introduced at the third last stage of the UK single trade window.

9:27

But no worries, we'll go to the question #4 in what impact will the UK single trade window have on UK business operational efficiency?

9:42

As I said, not knowing, not knowing very much at all about the UK single window, but just talking single windows in general.

9:51

OK.

9:52

If one is, if one is implemented among a single window, then it should have significant impact on operational efficiency.

10:02

It should, it should, it should make a big difference in terms of paperless.

10:15

You know, in you, you, you go to, you go to customs with your documentation and it should get cleared straight away and your cargo should get cleared pretty much straight away unless you've got some restrictions or permits.

10:32

So it should make a big difference in terms of you know, time release studies, in terms of speed, in terms of efficiency etcetera.

10:42

So it should be should could be a big improvement.

10:47

Question #5, in your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

10:56

Now I'm conscious that you are not referring specifically to the UK one but from your experience as working in Australian single trade window, what would you say would be the main advantages and challenges around that?

11:16

OK, I think we've sort of talked about the main advantages of a single window.

11:24

I think we've you know it'll have it'll have a significant improvement of operational efficiency.

11:31

Yeah what are the challenges again I can't if this is done properly.

11:39

Yeah, and implemented with, you know with good input from industry to meet their needs.

11:49

There shouldn't be too many challenges other than the challenge of having of going through the implementation process itself.

12:01

OK, once you once it's up and running, I don't, I don't foresee any challenges as such.

12:09

But the big challenge is to get one, to get a system running, to get A to get a good single window system running.

12:19

One of the challenges being for example that for a government to implement a single window, it would probably be very expensive.

12:31

So a challenge for government is are they prepared to spend the money to implement a single window.

12:40

It's very expensive.

12:41

So if I can go back to the Australian context, when the Inter, the integrated cargo system was introduced here in 2005 that's that was there but that was the basic single window system that that started in 2005, the integrated Cargo system or the ICS.

13:02

It was at that time the biggest IT project in Australia ever.

13:08

The complex the complexity of it was such that it was it was it was the biggest ITIT project bigger than anything that what defence was doing or the taxation office.

13:21

So it was a huge IT challenge and it cost a lot of money.

13:31

It's very out of date now.

13:32

It's pretty old and whether or not the government of Australia has the money in in order to implement a modern single window, that's one of the big problems, I think.

13:52

Question number #6, what functions of the UK single trade window are you aware of and think are the most beneficial from business and customs perspective.

14:16

Yeah, can I, I might have to get back to you on that one

14:21

That's no problem at all.

14:30

I'm in a holiday house and I haven't got access to any of my former documentation that would help me answer some answer some questions here.

14:41

I could probably put these sort of answers in writing for you.

14:48

It's absolutely fine.

14:59

The next question #7 I have is around the interoperability.

15:03

So basically how important is the interoperability function of the single trade window?

15:12

I think that is I think that's critical OK be able to operate from the let's just think of the government agencies that that have a have a role in trade at the border customs quarantine permit issuing agencies like defence and police and department the environment department.

15:41

So how we all, how we all interoperate and how the sys how the single window will connect to all these departments of government.

15:54

Yeah and then back through one single window to the actual importer and exporter.

15:59

I think that's crucial to the whole system.

16:06

Got two last questions.

16:08

Question #8, what are the key considerations for businesses when starting to utilize the single single trade window?

16:18

I think when this is stood up, it's really important that business are given take, take, take the time and effort to learn the system and to participate in any training provided by the department, by customs, to the to the industry so they can start the system, start using the system straight away.

16:47

So it's really important that on day one before day one of the starting of the system that everyone knows how to use the system.

16:57

Now what happened in Australia in 2005 when they switched the system on there was several months of a couple of months of confusion and problems caused mainly by the fact that and what the problems resulted in is cargo wasn't, wasn't going to, wasn't released.

17:25

The system wouldn't release cargo, so then we had to call.

17:31

Apparently we had to call in a whole lot of people from customs to go in there and manually release cargo for importers.

17:41

So there's a big backlog of cargo for a couple of for a couple of months there.

17:47

Which is a huge a huge embarrassment to the department to the customs and subject and was subject to lots of media criticism and backlash.

17:59

And it turns out that a lot of the problems was caused because the importers didn't know how to use the system.

18:07

Oh my God, that's so they just said, right, we'll turn it, turn it on, we'll go off again.

18:13

But they didn't understand how to use the system properly.

18:17

And it created this huge backlog for a couple of months till it all sorted out, then it ran, then it ran smoothly for the next, you know, 15 to 20 years.

18:28

But it was a huge, a huge issue.

18:30

And so on day one, everyone has got to all our, all our, all our community trading community has got to know how to use the system.

18:40

And it's probably incumbent upon customs to make sure that everyone is up to speed and trained properly, of course.

18:50

But when it turns, when it's turned on, you don't have some problem.

18:56

That creates a massive backlog of cargo.

19:02

We've got the last question.

19:05

Do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows with various countries?

19:19

Absolutely, absolutely they should.

19:22

And if I recall again, it's been a little while since I've looked at my single window notes, but I recall that it was the goal of the World Customs Organization to have globally networked customs.

19:37

Have you heard of that concept and what was that again?

19:42

Sorry, globally networked customs, the customs global network.

19:48

I will look, I will look into that.

19:51

Yeah, please do.

19:52

So the objective was although the grand objective is that one day yeah all customs around the world are networked, are connected OK via their single window systems.

20:11

So that if you have a have an importation of goods from Australia, the Australian exporter obviously is talking to the UK importer, the UK importer is taking to HMR is talking to customs in the UK.

20:28

But at the same time the Australian exporter needs to do up an export declaration to Australian customs.

20:37

Though you know the paperwork for exports so but then if you had Australian customs could pass that information to the UK customs then then you've got a network of data you've got to this data flow between customs services that marries up with what the importers and exporters are talking to their respective customs services.

21:03

So the aim the I think I think from my memory the aim of the globally network customers was to have everyone networked or customs networked.

21:13

Now that that's probably some many, many years away.

21:19

But in the meantime we need to start having networks between countries who tried who are who are your biggest trading partners so that your single window talks of their single window.

21:35

Yeah.

21:36

So we want our single windows to start joint being joined up and our single.

21:42

I knew when I left we were doing a trial with New Zealand Customs where we could talk to each other about import data, import export data.

21:51

Singapore, we want to network with Singapore from what I recall, and so on and so forth.

21:57

So you want to start that process of building up your single window interoperability networks.

22:08

Thank you ever so much.

22:45

So, yeah, so thank you very much for asking all the questions.

22:49

I just wanted to mention that you have the right to withdraw from this study anytime and all the responses will be anonymous and will be only used for the dissertation and for the academic purposes.

## Single Trade Window Interview - Student 2192736 and Participant 9 - 20240412\_123104-Meeting Recording

0:18

My dissertation is called Innovating Trade in the Digital Era, empowering UK manufacturers with advanced trade and customs technologies, and the strategic role of the UK Single trade window.

0:32

So, as I explained in my e-mail, the focus of my research is to understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, will bring to trade facilitation for various actors within the supply chain.

0:49

I deeply appreciate your time and willingness to share your expertise with me.

0:55

This interview will consist of nine questions and should take approximately 15 to 20 minutes.

1:01

A constant form has been shared with you in advance to ensure all ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively, sorry exclusively for academic purposes.

1:20

Before we dive into the questions, I would greatly appreciate if you could give me a brief introduction about yourself, focusing on your experience and role within the trade compliance sector.

1:33

OK, yeah, no problem.

1:35

I'm xxx

1:37

I am a customs advisor and head of xxx for an international trade consultancy firm.

1:49

I have been with the company now for around four years

2:04

I've also completed a Level 4 Customs Practitioner award with the Institute of Export last year.

2:16

Did that and really my experience I suppose within trade compliance is assisting businesses with their day-to-day inquiries.

2:28

I focus quite a lot on the customs side of things, whether it's sanctions, import sanctions, using the digital tools, so using the online tariff and really guiding clients on where to find the information they need.

2:48

Thank you.

3:01

So question number one, are you aware of any single trade window systems globally?

3:09

I'm aware.

3:10

I think Switzerland run one and I know a number of African countries I think have them as well.

3:18

But I'd say this, the Swiss one is the one I'm most aware of.

3:24

Thank you.

3:25

Question #2, which party or organization in your opinion takes the greatest advantage of the of the single trade window system?

4:02

Oh, I would say small businesses, SM, ES definitely.

4:08

Thank you.

4:10

Question #3, who in your opinion will benefit most from connecting to the UK single trade window?

4:18

I think so small, I would say small and medium, medium businesses definitely.

4:26

I think potentially it would benefit exporters more than importers.

4:35

That's just an opinion, but I think small, medium businesses, I think imports can be slightly more complex.

4:43

So they're probably more inclined to use an intermediary for that.

4:48

Whereas I think a single trade window would enable a lot of smaller businesses and medium businesses to run their exports in house.

4:58

Thank you.

5:00

Question #4 what impact will the UK single trade window have on UK business operational efficiency?

5:11

Oh, I think it will streamline it for a number of businesses, especially those with a smaller team or perhaps don't have the resources to have trade compliance managers or in or logistic managers.

5:27

I think if done correctly, it can enable businesses to bring that in house definitely.

5:36

Question #5

5:39

In your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

5:50

So advantages from a business perspective, I think efficiency within the within the business time resources.

6:05

I think it can be cost effective if it's done correctly.

6:12

I think the challenges will come in not just providing access to within the single trade window, but for companies to understand their responsibilities within each, within each sector that is, you know, linked together within the single trade window.

6:35

I think knowledge and understanding is key.

6:39

And that could be an area that some traders may find difficult because they might think, oh, this is really easy, we've got access to everything now, we can bring it in house, we can do it all ourselves, but they may not have the knowledge and understanding to actually be compliant, I suppose within international trade of course.

7:01

Question number #6 six, what functions of the UK single trade window are you aware of and think are the most beneficial from business and customs perspective.

7:13

So I am aware of that it will be linking with I think transit first, so NCTSI know it's going to link with Defra, so like health ipafs, health certificates, things like that.

7:33

So I do think that will be very helpful from a customs perspective that traders can input the information.

7:42

Well, the theory is that traders can input the information once and it will be passed on to the different government departments.

7:49

So I do think that will make life much easier for traders from a customs from their point of view.

7:57

From a customs perspective, I think it will obviously have to be linked to CDS correctly.

8:08

It's not going to remove the need for software houses, so traders will need to still obviously have CDS compliance.

8:16

Software data protection is probably a key thing, you know, which perhaps in large business which employees have access to.

8:27

You know, is there going to be different sections of a single train window that some people have more access to?

8:33

Or if you had an agent would they have access to all of it or just some of it.

8:39

So I feel those are probably I suppose data protection elements and commercial decision elements.

8:47

I think from a customs point of view enabling people to handle all that information in one instance from one window hopefully will enable traders to be more compliant because they aren't faced with these multiple departments and multiple processes which can be confusing.

9:12

So hopefully linking it all together will have a positive impact on customs compliance.

9:19

Question #7, how important is the interoperability function of the single trade window?

9:31

Yes, very important, I would say.

9:35

OK.

9:37

And question #8, what are the key considerations for businesses when starting to utilize the UK single trade window?

9:50

I think key considerations are or should be will it streamline their processes?

9:57

Will it save them time and money if they utilize it?

10:03

Can they utilize all aspects of it or will some Max aspects still need to be being outsourced such as, you know, customs, intermediaries?

10:15

And if that is the case, what information do they have access to, perhaps commercially sensitive information and just ensuring really that it's robust enough to stand up to their business activities?

10:34

And if we have a last question, do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows with various countries?

10:54

Yes, I do.

10:55

I think that would be a good move to facilitate trade, definitely wonderful, wonderful.

11:06

So that concludes our interview.

11:10

Once again, thank you ever so much for your time and for your answers.

11:17

Your insights are very will enrich my dissertation.

11:23

So once again, thank you for that.

11:25

You have to withdraw from the study at any time if you wish to do so.

11:32

You've got my e-mail address, you know where to find me now and yeah, if you wouldn't mind sending me the signs and dated consent for that would be highly appreciated.

11:46

And, in case of any questions, please do not hesitate to contact me.

11:50

And, thank you once again I'm, I'm very, very grateful for your input.

12:16

Bye.

#### **Interview - Student 2192736 and Participant 10 - Single Trade Window-20240412\_130634-Meeting Recording**

0:11

Just to quickly introduce myself, my name is xxx and I'm currently completing my dissertation at Warwick University.

0:18

My dissertation is called Innovating Trade in the Digital Era, Empowering QK manufacturers with advanced trade with advanced trade and customs technologies, and the strategic role of the UK single trade window.

0:32

So as I explained in my e-mail, the focus of my research is to really understand the impact and possibilities that digital innovations in trade, especially the UK single trade window, bring to trade facilitation for the various actors within the supply chain.

0:48

I deeply appreciate your time and willingness to share your expertise with me.

0:53

This interview will consist of nine questions and will take approximately 15 to 20 minutes.

0:59

A consent form has been shared with you in advance to ensure ethical standards are upheld and your responses will be treated with the utmost confidentiality and will be used exclusively for academic purposes.

1:12

Before we dive into the questions though, I would greatly appreciate if you could give me a brief introduction about yourself, focusing on your experience and well within the trade compliance sector.

1:28

Thank you for inviting me for interview.

1:30

So I'm xxx and I'm the xxx of the supply chain and trade group at xxx University.

1:38

I suppose my reason, my more reason I suppose to be being interviewed today is based on my experience of working with various businesses and organisations, including the government in terms of trade, this includes trade compliance, you know, barriers to trade, looking at ways in which we can improve trade in the supply chain, looking upstream and downstream.

2:09

So that's sort of my background in terms of I suppose where my reflections are going to come from.

2:15

So I suppose my reflections are going to be a bit more macroeconomic in their views and opinions because I'm not at the point of physical import export, I'm not in the actual microeconomic environment.

2:31

So I can give you a holistic and a macro view on single trade windows, for example, in the UK potentially with a single trade window.

2:42

Thank you.

2:55

So question number #1, are you aware of any single trade window systems globally?

3:02

So I know that various countries like for example, let me get this correct.

3:07

So Singapore, the US, New Zealand and there's another Sweden use single trade window, single trade window or the single trade window model.

3:23

Obviously, I know in terms of the current model we've got, you've got your trade, your intermediary and then you've got HMRC, the Home Office and potentially Defra in there.

3:38

So in terms then of a single trade window model, I'm not fully aware of the actual, I suppose the potential data processing packages and that that they'd use in order to govern a single trade window.

3:55

But I'm aware of the hub and spoke activity that goes on, like I say in Sweden, Singapore, the US and New Zealand.

4:03

And they've already implemented the single trade window.

4:06

And I think the UK government is hoping that we will also mirror something similar.

4:15

Question #2 Which party or organization in your opinion takes the greatest advantage of the single trade window system?

4:26

I think from my opinion, if we're talking about different actors and agents and parties here, I think that the people that are going to get the greatest advantage are the people on the ground who are physically importing and exporting types of products, especially those that have got maybe products that are more perishable.

4:48

It's hoped that a single trade window removes the barrier to trade.

4:53

It's hoped that it eases the flow of goods coming into and out of the country at the minute.

5:00

As you're aware, there's a lot of paperwork and a lot of documentation and a lot of going back and forth, especially for larger organisations between the HMRC, for example Defra.

5:13

And so I think ultimately the greatest advantage of the single trade window system will be for the people on the ground and I and that really depends on the nature of the supply chain.

5:27

I think it really depends on the type of products that real micro level in terms of what's being imported and exported.

5:36

But ultimately I think the people on the ground there, there is talk though that the government is going to really benefit from a single trade window in the sense of that other countries and people with significantly integrated supply chains are going to be more willing to trade with the UK.

5:59

Because if you've got an integrated supply chain and you're using a hub and spoke activity, you're not put off by the fact that you know products can be held at port, you know for 2-3 days because the paperwork or the declarations got the wrong date or hasn't been signed for example.

6:19

So the fact that is going to be ease of entry, ease of engagement in trade would have a multiplied effect for the UK economy.

6:32

Obviously in terms of trade flows and injections within to the UK, import in an export is a significant contribution to GDP growth.

6:45

So I think actually the government being able to remove some of the barriers to trade will also be an advantage to them on a bigger scale.

6:59

Question #3, who in your opinion will benefit most from connecting to the UK single trade window?

7:06

Are we talking about countries or are we talking about so companies?

7:16

So basically yes, with regards to connectivity to the UK single trade window, it might be that the businesses and various actors within the supply chain can find it beneficial as well as the various governmental bodies, it could be that they were quite beneficial.

7:42

So I think I can reflect on 2 aspects here.

7:45

I'll go on, I suppose, an industry level for one of the benefits.

7:51

I think the automotive industry, I think we can look at industries here in terms of benefiting from connecting to the UK single trade window.

8:00

So I think automotive firms that have been trading with UK or are looking to trade with the UK, especially electric vehicle and electric batteries and things like that.

8:11

I think the automotive industry, there's always a lot published and from contacts that I've got that at the moment even companies like JLR production, especially in electric vehicle and battery operation is held up at port because of the documentation, because of the nature of the product being imported and exported in terms of the levels of declarations and customs clearances.

8:39

Obviously the UK and the EU, for example, the EU has significant supply chain integration in the automotive industry with the UK and obviously with Brexit that created a significant barrier.

8:55

So I think that in terms of automotive, the automotive industry and the actors and agents in the automotive industry will benefit from connecting to the UK single trade window.

9:07

I also think agricultural, the agricultural industry will also benefit.

9:14

I think your point in terms of you know governments benefiting, I think for me a single trade window is about transparency and I also think it's about removing red tape.

9:28

Now red tape, what I mean by that, I don't mean the legal ramifications of import and exporting because I still think we need control of standards and ensuring, especially when we think of different or rules of origin and things like that.

9:45

I think it's still very important.

9:48

But when I reflect on red tape, I think of all the paperwork because not everyone is fully digital.

9:55

You know, we've still got a big push to go into this new era of digitization and digitalization, especially in terms of trade.

10:05

So I think from a government perspective, it's going to be easier to monitor and engage with importing and exporting between different countries.

10:17

I also think for example, Switzerland, sorry, not Switzerland, New Zealand, sorry.

10:24

I think when we talk about a free trade agreement with New Zealand, I actually think that the UK also operate in a single trade window is really going to help us in terms of engaging with that trading block.

10:39

So I think it's not only looking at an industrial level, but I think you can look at it from a country governmental level as well.

10:49

Question #4, what impact will the UK single trade window have on UK business operational efficiency?

11:00

I think it's going to be a good thing from my experience.

11:04

I think in terms of operational efficiency, there's a lot of inefficiency when we're looking at moving goods in and out of the UK.

11:13

Like I've already alluded to, sometimes products can be stuck at borders for days at a time and then having to go back through the process of getting like say things Stein things with the stamped.

11:26

I think that that is a significant hold up because it can cost some companies thousands of pounds a day by having a product stuck at port and this is really important, very pertinent especially if it's perishable type products.

11:44

So I think from my perspective, it will increase operational efficiency by enabling a smoother and a quicker process with hopefully less cause for products to be delayed in the supply chain.

12:00

And like I said, that delay, a big thing from my view is the time, the time things take to get processed.

12:08

I think when we talk about operational efficiency, I also think there's something to be said about the level of transparency in terms of operational efficiency, transparency in terms of an understanding when overseas act as an agents are engaging with the UK market and firms within the UK market.

12:31

So from my opinion, having something that's a bit more standardized and standardized in line with other countries like say New Zealand, the US, for example, Sweden, I think standardization, I think transparency and arguably a little level of conformity is very key in terms of thinking about efficiency and operational efficiency from my opinion, wonderful.

13:03

Thank you.

13:05

Question #5, in your opinion, what are the main advantages and challenges of the UK single trade window from the business perspective?

13:16

I think one of the benefits, like I said from me is the big one, is transparency and the ease of not having to have lots of paperwork, the ease of certain systems they force you to have to go through in terms of the documents, certain processes of certain uploading.

13:37

So actually the chances of being rejected on entry are relatively thin in my opinion.

13:45

One of the disadvantages is the data collection and the usage.

13:52

So the ability of all different personnel within a business to understand everything that is needed, You know for the whole process.

14:05

And smaller companies for example, who haven't got links into the HMRC for example, that haven't got links into, we spoke about Defra for example.

14:19

I think they will struggle because in terms of oh you know, self declaration of border data in terms of understanding what they need because you are relying on single points of potential failure in terms of that process.

14:46

Question number #6 six, what functions of the UK single trade window are you aware of and think are the most beneficial from a business and customs perspective?

15:08

So in terms of functions, I didn't know.

15:22

Now I think that's a really important question.

15:24

In terms of the functions, obviously the declaration for me of the single trade window in terms of bringing together everything from codes to rules of origin to places of production, I think the single trade window is going to encourage us to be more open and transparent in terms of the product itself.

15:56

Now I think this is really pertinent actually in terms of not only agricultural but also pharmaceutical type things because the function of a single trade window is not only ease of import and export, but a single traded window is also in my opinion about collecting data you know on the trade flow.

16:19

And I think from a business and customer perspective, understanding the components of the products, where they've come from, everything also from VAT and different excise duties from a business perspective, I think it's very key.

16:38

And from a customer's perspective on this, obviously it's enabling them to have greater understanding like I said, in terms of the overall supply chain.

16:49

And I'd argue because the single trade window is going to give you the whole, well, ideally the whole end to end of the supply chain, not just what's coming into the UK, but previous documentation of what's been going back and forth through other countries because you've got to declare everything, especially with rules of origin for example.

17:12

I think from a customers perspective, it's going to encourage greater understanding and transparency.

17:22

We've got three last questions.

17:24

Question #7, how important is the interoperability function of the single trade window?

17:31

I think it's very key, I think, because everything's got to run very smoothly.

17:36

I think even though we are thinking about digitisation and digitalisation, for example, of data in order to make the single trade window work, you've still got to think about the before, the during and the after.

17:52

The single trade window is not just one snapshot.

17:55

It should be, like I said in terms of interoperability, end to end, but also it's still going to have to fit in with those countries that don't use a single trade window.

18:07

So there's several countries that don't.

18:10

I think interoperability in terms of the single trade window is going to, like I say, provide some transparency and some consistency for firms looking at import and exporting from those countries that have already got a single trade window.

18:26

Like I said, the US, Sweden, New Zealand, for example.

18:32

Question #8, what are the key considerations for businesses when starting to utilize the UK single trade window?

18:42

I think the key consideration for me is the data and the software that is used in order to use a single trade window.

18:54

You know, there's lots of platforms, programs, different ones in New Zealand, in Sweden, the US, and I think it's about upskilling.

19:03

I think upskilling is going to be a big thing for UK businesses in order for them to use a single trade window.

19:11

I think we've also got to think about accessibility.

19:15

You know, larger organisations like for example Jaguar, Land Rover, Aston Martin, obviously they have greater mobilisation, they have their own customs function, they have their own dedicated sort of supply chain and trade person that I presume would be fully aware of how we do idea and comply and use the platform relating to the single trade window.

19:45

But I think SM ES are very underrepresented and I think that they're going to have a bit of a bigger challenge to upskill, especially when you've only got 5-6 people within an organization of an SME.

19:59

You know, I've there's discussion about training courses being offered by various suppliers within.

20:08

I suppose it's an education type platform, but then there's discussion about the access to them, the cost.

20:15

Can an individual and SME be released for a day or two to go and have training on the software on the platform?

20:23

That is a single trade window, So I think.

20:27

In my opinion, that's a key consideration for business.

20:34

The last question, Rebecca, do you believe the UK government should further facilitate trade by creating and aiming for interoperability agreements between various single trade windows within the various with the various countries?

20:53

Yes, I think it's a very firm, yes.

20:55

Here I think we should look at these like free trade agreements found to be honest with you, I think that we should be looking at trade facilitation and trade creation.

21:08

I think we need to be thinking about reducing trade barriers, you know, because like I say, the operational aspect of import and export, it's very clunky, creates significant delays, especially when things are caught in customs at borders.

21:24

And I think agreements on how we can conform and how we can standardize a single trade window between the UK and other countries.

21:36

I think it should be as important as when we're looking at free trade agreements between the UK and other countries.

21:47

That was the last question

21:51

Thank you very much for your time.

21:52

I just would like to mention that you do have the right to withdraw from the study at any time.

21:58

You do have my e-mail address, so you know where to find me.

22:01

Thank you very much for your signed and dated consent form.

22:06

I did have received that one.

22:09

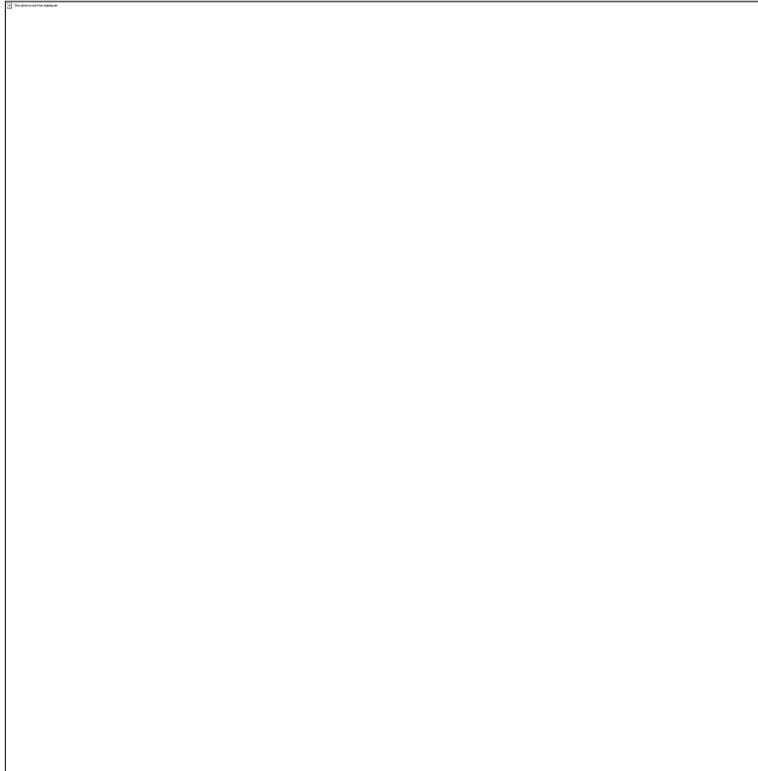
I did receive that and all the responses will be anonymous and will be used purely for my for my visitation and academic purposes.

22:20

So once again, thank you ever so much for your time and I would like to wish you a wonderful day.

## Appendix D: Ethical clearance

Ethical approval number is WMG-PT-R\_4Isjo2WI2qOFayu



## Appendix E

### Global examples of STW - Table

STW →	Hong Kong (SAR)	Finland	Germany	Guatemala	Malaysia	Mauritius	Senegal	Singapore	USA	Sweden
<b>Launch date</b>	2004-2006	1993-94	1982	1998	2002	2001	2004-2005	1989	2015	1989
<b>Name</b>	Tradelink / DTTN	PortNet	DAKOSY	SEADDEX	Dagang Net	TradeNet	ORBUS	TradeNet	ACE	Swedish Customs Single Window
<b>System communication methods</b>	<p>FTP EDIFACT XML</p> <p>Protocols: FTP/S HTTP/S SMTP S/MIME AS/1 AS/2 ebMS V2</p> <p>Document formats: XML EDIFACT ANSI X12 Excel Flat file Cargo-IMP</p>	<p>Manually: Internet browser</p> <p>Input forms</p> <p>Automatically: FTP and XML</p> <p>EDIFACT- (CUSCAR, CUSREP, IFTDGN)</p>	<p>EDI Formats: UN-EDIFACT XML Inhouse- Formats EDI Protocols: FTP E-Mail (SMTP/POP3) APPC over TCP/IP (Anynet) X.400 OFTP (Odette File Transfer Protocol) FTAM</p> <p>ASP: Microsoft Windows</p>	<p>SOAP XML WebServices Java .Net</p>	<p>RosettaNet - PIP3B18 (ASN), PIP3A1 (Quotation), PIP3A4 (PO), PIP3B2 (DO), PIP3C3 (Invoice)</p> <p>PAA Pre- Declaration message format (XML) Permit - UN/EDIFACT – SANCRT</p>	<p>Manifests and import/export permits submitted electronically EDI format with paper copies of declarations required (printed and kept record of)</p>	<p>Scanned docs, invoice data and stakeholder docs being submitted to the system</p>	<p>UN/EDIFACT (standard version D.96A) CUSDEC, CUSRES, APERAK (and many others). The UN LOCODE</p> <p>‘Alternatively , the users could submit in other formats and the company then translates the</p>	<p>ANSI x1 EDIFACT</p> <p>Internet-based web portal.</p> <p>Via EDI Interfaces</p> <p>Document Image System</p>	<p>EDIFACT</p> <p>XML CUSDEC</p> <p>Internet</p> <p>Mobile Solutions</p>

	SMS		98/2000/NT/XP WBT (Windows Based Terminal) 5250-Emulation Browser with JDK (JAVA Development Kit) Citrix					information into that required by TradeNet®		
<b>Technology</b>	HP-UX / Oracle with Axway XIB messaging hub (allowing transformation and communication with various parties)  Internet	Conventional techniques: Database, Firewall, Internet, Communication server  Win2k Oracle 9.0 Apache 2.0 Tomcat 4.1 IBM WeBSphere MQ 5.4.	IBM iSeries eServer: DAKOSY DP-EDI and ASP-Services	Oracle Forms (Version 6; PL/SQL Version 6  Oracle Reports (Reports Builder 6)  Remote module: Visual Basic 6 with Service Pack 5	XML RosettaNet Business Process Engines, Message Translator	No information	-Web (VB6 /ASP) MTS MSMQ	Java J2EE: J2EE, EJB 2.0 (Enterprise Java Beans), Core Java, Java Servlets, JSP, JMS (Messaging), RMI, Java Applets, JDBC  XML: XML, XSL, XSLT, JAXP, Apaches' Xerces	A mainframe application	No information

				Website module: ASP, ASP.net in migration to J2EE with Java				Parser, SAX & DOM APIs, xQuery  UML object-oriented analysis and design methodology		
<b>Services</b>	Any document exchanges – trade, logistics, finance  Covers imports and exports via ocean, air, truck, rail, river (Pearl River Delta region)	National Maritime Single Window: Preliminary Notice, Cargo Declaration, Dangerous Goods Declaration, Ship arrival notification, Permits, Departure notices	German ports: Hamburg, Bremerhaven and Wilhelmshaven related activities, transport document exchanges  Compulsory Dangerous Cargo Movements and announcements of exports (Customs control)	Export related: Exporter codes, registrations and control forms, certificates of origin, CITES  Export statistics  Training	Filing applications and re-suing the information for other authorities.  Import/Export permits, ASN's, Cross-border Declaration exchange services  Overseas export declarations reused to prepare import/export declaration	Submission of customs related documentation	Imports / Export declarations, Certifications (e.g. phytosanitary, quality, sanitary), permits	Company registrations Licensing Certificates of Origin Permits Information exchange Import/Export declarations	Imports (air, sea, rail, truck) Exports  Interface for all US government agencies  Manifest, Cargo Release, Post-release, Export and Partner Government Agency (PGA) data	Import (Voluntary) Export (Voluntary) Transit (Compulsory)

<b>Capabilities</b>	Processes 18 million documents annually and has over 53,000 customers	70000 annual ship calls, system handles 99%	No info	No info	1000 transactions per month (ePermit)	No information	300 demands per day (each consisting minimum 2-3 documents ) 70% clients connected to ORBUS 30% connected to GAINDE 2000	30,000 permit applications per day 9 million transactions per year	No information	100,000 electronic messages daily
<b>Data security</b>	Implementing 'trust framework' Message encryption Digital signatures using certs accepted by Certification Authorities (Digi-Sign or Hong Kong Post).  Allowing trading	Robust user profiling	User specific – own password and coding, information only passed to and handled only by authorised users	Information stored at 'private facility', data exchanged with government bodies (international & customs)  Regulated by AGEXPRONT	Service Subscriber Agreement  Legislation covers privacy as well as above Subscriber Agreement	No information	In 2006 new legislation was to come in force to assure protection of private information (before 2006 not in place)	Documents and information submitted is restricted for use by authorised users. Only authorised users can also retrieve/download data. Messages are sent via secured channel and	Agencies are able to access only that information which they have the authority to see  Trade users are able to access only that information pertaining to their transactions.	Awareness of what (necessary) information is exchanged between Customs and other public services.  Restrictions on specific bodies forwarding information

	partners flexibility on different security requirements for different documents							are encrypted	Only authorised users have access to information and can only do it via passwords	
<b>Extra information</b>	Processes huge amount of documents (147.2 million in 2012 alone)  Intended Small profit  Private entity jointly owned by Tradelink, Government of the HKSAR and industry associations	Finland is not interested in enlargement of PortNet system, similar national PortNet-like systems have to be established in those countries and then interconnected with us (e.g. Denmark)	Own by 3 shareholding companies  Operations in Hamburg port only  1360 clients using this SW  DAKOSY is privately owned  Creating profit	Privately owned  Creating profit  Export documents can be obtained remotely (electronically at own facilities)	Privately owned company	Public private sector partnership / owned  Impossible to obtain ASYCUDA newest version that could link with TradeNet, had to develop own local customs management system	Customs operates with separate system GAINDE 2000 and accepts electronic documents via ORBUS	Subject to Harvard case studies  TradeNet is owned by Singapore Customs / government. Website is operated by CrimsonLogic	Customs and Border Protection also partnered with Altana Technologies (providing AI based solutions) to use the foundational map of the global supply chain to fight against the crime	Dedicated lane for AEO  Declarations submitted electronically are based on: UN/EDIFACT, CUSDEC, CUSRES (international) standards
<b>Future plans</b>	Pan-Asian E-Commerce alliance established to expand on SW	Working towards PortNet 2 establishment	Involvement of more importers/exporters	Data exchange projects between Central	To further promote the usage	No information	Interoperability with others SW platform	Further developing SEW concept as a single gateway to		STW establishment independent of technology

	<p>cooperation with other countries</p> <p>Expansion of local and global interconnections</p>		<p>Expansion of information chain</p> <p>e-Docs</p> <p>System development</p>	<p>American countries</p>	<p>Involve Government with promoting the SW</p> <p>Continuous roll-out</p> <p>Included in ASEAN Single Window task force</p>		<p>for African countries</p>	<p>all other critical systems (seaport, air cargo, maritime authority declaration systems)</p>		<p>Involvement of other public services like police, courts, involved in fighting crime</p> <p>Single Access Point allowing communication with customs regardless of location</p>
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