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Air Transportation Security Measures: Ics2

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Abstract

In this research, ICS 2 security measures in airline transportation were examined. The aim of this research is to investigate security measures in airline transportation and the economic effects of the ICS 2 application which the EU has implemented in customs on air transportation. The EU Commission with its proposal for a new Customs Code (R-UCC) has proposed that the EU Customs Data Center is managed by the national EU Customs Authority that be given to the person declaring that the raw material, product or semi-processed product has been brought into the EU or removed from the EU. In this research, the effects of the ICS2 reform on the stakeholders of the supply chain, customs procedure were discussed and the reasons for the different treatment of some traders in ICS2 was examined. The research used quantitative research method. In France, Germany, Switzerland, Sweden where ICS 2 which started to be implemented in 2021 was implemented the application results in 2017, 2018, 2019 before ICS 2 implementation and 2022, 2023 and 2024 (10 months) after ICS 2 were examined in 2 periods. The conveniences brought by ICS 2 during the transportation of products with codes HS 07, HS 08, HS 30, HS 71 transported by air transportation mode were evaluated. JAMOVI 2.3.24, SPSS 24, PSPP programs were used in the research and the data were analyzed with ANOVA test. According to the research result, ICS2 significantly shortens the delivery time. It is thought that this research may be important for those who research the delivery times of ICS2 in the future.

1. Introduction

The European Union (EU), which has 27 members (Union E., 2024) that make up 6% of the world's population is the world's largest political, economic, and commercial community. With its large market structure and advanced infrastructure, it has a large structure managed by directives prepared by the European Parliament in many areas that are tried to be standardized in all member countries. The European Community Commission in 1961 has followed the policy of;

- Creating a free competition environment,
- Making infrastructure arrangements,
- Establishing a pricing system,
- Making taxation and related institutions financially

and commercially independent and autonomous. Ensuring the harmony of transportation markets that preventing monopolization. Creating logistics and employment areas in all transportation modes on border lines, contributing to economic and social life standards (Alperen, 2018). Various R&D studies (Marco Polo Program, Trans European Transport Networks etc.) with the aim of setting standards among international and EU members in order to increase efficiency in transportation in Europe. One of these studies is ICS 2. The transportation policy of the European Union is to increase energy efficiency to take necessary measures in the field of logistics regarding global climate change. A new one has been added to EU policies with the idea that ICS2 will save time, energy and manpower.

2. EU and International Trade

The EU is a union with a significant surface area of the world economy and trade and a political power that cannot be underestimated. The EU is the second largest economy in the world (after the USA) with a consumer capacity of 449.2 million (Bloomberg, 2024) and a per capita income of $ 33,928 and a Gross Domestic Product (GDP) of 9 trillion 949 billion 792 million TL in the second quarter of 2024 (Commission, 2024).

The Table 1 shows the import values of EU countries from world countries in 2019-2023. While import values were low due to Covid 19 that import values increased in 2022-2023.

Table 1. 2019-2023. The EU Countries -World Countries import export values

Product Code	Product Label	Imported Value In 2019, US Dollar Thousand	Imported Value In 2020, US Dollar Thousand	Imported Value In 2021, US Dollar Thousand	Imported Value In 2022, US Dollar Thousand	Imported Value In 2023, US Dollar Thousand
TOTAL	All Products	19.097.074.798	17.725.978.906	22.455.262.414	25.406.356.836	23.553.539.406
Product Code	Product Label	Exported Value In 2019, US Dollar Thousand	Exported Value In 2020, US Dollar Thousand	Exported Value In 2021, US Dollar Thousand	Exported Value In 2022, US Dollar Thousand	Exported Value In 2023, US Dollar Thousand
TOTAL	**All Products**	18.761.814.917	17.514.968.797	22.154.054.456	24.719.795.601	23.291.072.313

Search (www.trademap.com 12.10.2024).

It has an EU export rate of $ 7.2 trillion (Trade Map 2023) and an import rate of $ 7.0 billion (Trade Map 2023). It has a share of 15.2% in world goods exports; and a share of 14.7% in world imports. It ranks second in world goods exports and imports. It has a trade capacity of $ 112 billion in services trade (Council, 2024).

3. European Import Control System 2 (ICS2)

The EU Customs Union was established in 1968 to facilitate trade between EU companies and to equalize customs duties on goods coming from abroad. The EU considers all member states as one country. They apply the same tariffs to goods imported into their territory from the rest of the world and no tariffs at all. No customs duties are paid when goods are transported from one EU country to another.

The EU has developed policies to prevent smuggling. The EU's Rome Treaty and the EU Treaty (Maastricht Treaty, the second White Paper in 2001) forms the basis of transportation policies. According to these agreements, the adoption of common transportation policies among. EU member states and the codification of the legislation of all member states are taken as basis. EU transportation policies aim to promote global climate safe and clean transportation in European countries, liberalization of trade in the common market, safe import and export (Affairs, 2024).

In accordance with the transportation policy, ensuring the sustainability of transportation services, road safety, the sector's compliance with a safe, green economy, common, uniform, and mandatory practices have been put into effect with the adoption of new legislation and negative environmental impacts have been reduced.

The EU has introduced the ICS2 system for road, air, sea and postal operators, cargo transportation and crossings to one of the EU member states. This system is known as the electronic customs system of EU member states based on the principle that economic operators submit PLACI data before loading and ENS data before arrival, detailed cargo information and risk analyses to the EU Customs Administrations in order to ensure the security of EU member states (Taxation, 2024).

The EU's ICS2 application is one of the EU transportation policies and the White Paper's common transportation policies. The European Union affected by the COVID-19 pandemic that has amended its legislation to facilitate the implementation of an alternative and expedited process for EU aviation security and verification of supply chain operators of member countries. To this end, in the context of the International Civil Aviation Organization (ICAO) and the World Customs Organization (WCO), the WCO has promoted the development of the international policy concept of Pre-Loading Advance Cargo Information (PLACI) which is used to define a specific 7+1 data set (3), as defined in the SAFE Framework of Standards (SAFE FOS).

Air carriers and postal operators upload their shipment data to the system as soon as possible before and after the departure of the cargo and their documents at the point of departure. Article 186 of Commission Implementing Regulation (EU) 2015/2447 (5) determines the risk analysis and control process applied by the customs office of first entry and Article 182 of that Regulation establishes the Import Control System (ICS2) designed by mutual agreement between the Commission and the Member States which is essential for the submission of details of entry summary declarations which requests for modification, requests for invalidation, processing and storage and sharing of relevant information with the customs authorities (Commission, 2021).

Customs duties constitute around 14% of the total EU budget. Customs controls at the EU's external borders protect consumers from goods and products that may be dangerous or bad for their health. They protect animals and the environment by preventing endangered animal species, illegal trade, plant, and animal diseases. EU customs controls protect national governments against tax and duty fraud as well as against irregular tax evasion by companies and individuals (European-Union, 2024).

On May 1, 2016, the European Union (EU) initiated a study to digitalize the data transfer, storage and customs transactions of economic operators with the Union Customs Code (BGK).

Import Control System 2 (ICS2) has introduced the requirement that responsible operators going to or transiting to EU member states must report their summary declaration data to EU customs via ICS2 before they reach the EU member state. The first version of the system which is planned to be implemented in three versions that entered into force on March 15, 2021 for "air cargo transportation pre-loading" and "air mail transportation pre-loading" processes; and the second version entered into force on March 1, 2023 for "air general cargo transportation", "air transportation" and "mail transportation".

ICS 2 is implemented in three stages:

- Publication 1 15.03.2021 mail and courier (taxation-custom, 2021)
- Publication 2 01.03.2023 airline (Taxation, 2023)
- Publication 3 01.03.2024 land sea railway (Taxation-2024)

Since July 1, 2023, the system has been implemented in the airline.

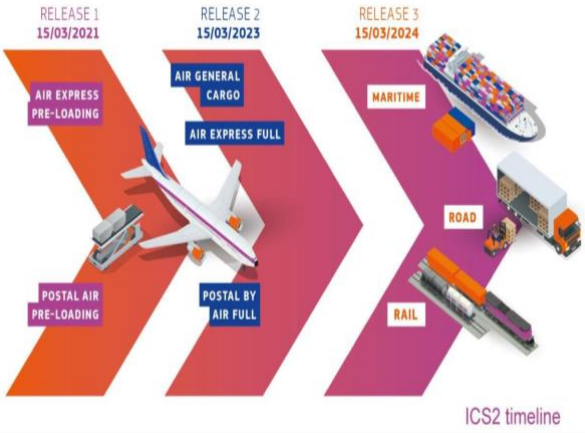

Figure 1. ICS2 Timeline Search: IATA, 2024.

The third version is planned to be gradually implemented in maritime, rail and road transport on 3rd of June 2024 with maritime carriers expected to start on 3rd of June 2024 and no later than 4th of December 2024 and their interim filings (house level filing) on 4th of December 2024 and no later than 1st of April 2025 and rail and road carriers expected to start on 1st of April 2025 and no later than 1st of September 2025 (TIM, 2024). Version 3 to be processed by the European Commission on 1st of March 2024.

ICS2 is the EU's new advanced cargo information system supporting the implementation of the customs safety and security regulator Summary Declaration (ENS) which collects data from Economic Operators (EO) entering and transiting the EU prior to arrival in the EU. The program is one of the main contributors towards establishing an integrated EU approach to reinforce customs risk management under the common risk management framework (CRMF).

ICS2 / PLACI requests information such as the sender name, sender address (including postal code and telephone number), recipient name, recipient address (including postal code and telephone number), number of pieces. Gross weight, detailed goods description, if any, HAWB number. In the global economy, it aims to increase the security measures of goods entering the EU customs area, ensuring the security and efficiency of international trade and to facilitate customs procedures. Threats are detected by subjecting them to safety and security risk analysis within the scope of the EU Common Risk Management Framework. The EU Common Risk Management Framework states that when a summary declaration is submitted for a vehicle and goods entering any EU member country that have common risk criteria are applied within the scope of the EU common risk analysis system.

We can list the risks within the scope of safety and security as explosives, narcotics, precursors, dangerous counterfeit drugs, dangerous toys or electronics, contaminated foods, weapons and all kinds of organized smuggling in air cargo (TAXUD/2022/OP/0001). Although the word "import" is included in the name of the system that the system doesn't cover a control related to the free circulation entry regime (TAXUD, 2022). ICS ensures that import transactions started in a member country can be completed in another member country without re-submitting the entry summary declaration (ENS). The ENS then enters the risk assessment and the safety also security data is transmitted to the other member state. (Revenue, 2024). After the carrier submits a summary declaration to a country customs administration integrated into the system and this information is also transmitted to the customs administrations of the other countries where the vehicle will stop and thus eliminating the need to submit a summary declaration again to the other country customs administrations integrated into the system.

With PLACI (Pre-Loading Advance Cargo Information) / ICS2 application, detailed information about cargoes going to European Union countries and planned to be transit-transferred must be sent to the relevant authorities of the first country of arrival by the transport business organizer or the airline before the cargo is loaded onto the plane (BULTEN, 2024).

The entry of goods into the EU consists of a 5-stage process. ICS2 covers the first three of these stages. (TAXUD, 2022)

1) Submission of the entry summary declaration (ENS) (within the scope of ICS2)
2) Notification of arrival of the means of transport (within the scope of ICS2)
3) Presentation of goods to customs (within the scope of ICS2)
4) Temporary storage of goods
5) Subjecting the goods to a customs regime

It is stated that the postal operators inside and outside express, air cargo carriers, consigner established in the EU.

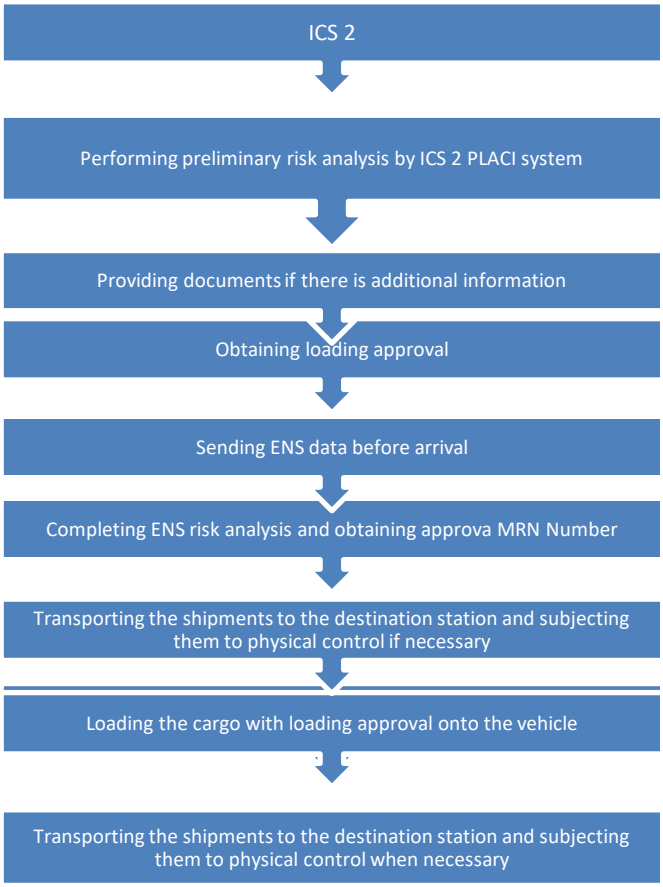

Figure 2. ICS 2 transaction steps Search (Comission, Taxation, 2024)

3 .1. Advantages of ICS 2

The main reason for the introduction of ICS 2 is to ensure the safety and security of the citizens of the Union member states and the EU common market. Every year, goods worth a trillion

Euros enter the EU and 15% of world goods trade passes through the EU. For this reason, the EU implements a safety and security program before the arrival of goods to ensure the safety of its citizens and market. (TAXUD, 2022)

The European Union Import Control System 2 (ICS2) requires detailed electronic advance arrival declarations (PLACI Pre Loading Advance Cargo Information) to be made for goods entering the customs area to strengthen the security measures of the imported product or service to facilitate customs procedures to protect borders and to increase efficiency and productivity in trade. The declaration requests information that will enable advanced risk assessments by importers, carriers or their representatives and customs authorities.

As the trade relations of the countries develop, the importance of logistics and the logistics processes and document management has also increased. In order to manage time effectively and efficiently during logistics and cargo processes and to prevent loss of goods, time and money that some measures have been taken. For this purpose, it is thought that the ICS 2 process which is planned to reduce the waiting time at the customs and to carry out healthy and safe customs processes in advance will make an economic contribution to the EU countries.

1- Security of supply chains and transport (e.g. air cargo) - Safety, health and security of EU citizens and the internal market while facilitating the free flow of legal trade across the EU's external borders. ICS2 is the EU's new advanced cargo information system supporting the implementation of this new customs safety and security pre-arrival program and regulatory regime.

2- Classifies risky shipments according to the degree of risk in customs, determines customs control measures, strict inspections for risky shipments, verifies documents. ICS2 provides smooth communication, data sharing, cooperation and transparency in imports. It includes functions such as ensuring codification of EU legislation and strict implementation measures, facilitating political trade activities, ensuring the security of the EU customs area.

Freight forwarding and logistics companies, sea rail and road transport, representatives of all affected EOS sectors will be affected (Keleci, 2024). In the Figure below was give sectors affected by its implementation from ICS 2.

Figure 3. ICS2, Sectors Affected by Its Implementation Search (Derneği, 2024)

Figure 5. ICS2, Sectors Affected by Its Implementation Search: (Comission, Taxation, 2024)

According to Figure 5 ICS2, effects these sectors: Postal operations, express carriers, freight forwarding logistics providers, air carriers, maritime implementation, railroad carriers, business receiving goods in EU, consignees, importers.

There is also a cost to implementing policies aimed at preventing tax evasion and in this respect, tax evasion also causes a loss of efficiency in the economy. The resources that taxpayers allocate for consultancy services etc. for actions contrary to tax regulations and the expenses incurred by the tax administration to reveal tax losses are clear indicators of the loss of efficiency (Slemrod, 2007).

ICS2 provides the following conveniences:

1. ICS2 Simplifies Arrival Notifications:

There is a pre-arrival notification process where goods going to the EU customs area are sent electronically with detailed notifications. These notifications cover important information such as the nature, quantity, value, origin and intended recipient of the imported goods. These notifications made through a user-friendly interface are made in a timely manner before the goods arrive at the EU border that allowing for smoother customs clearance.

2. Authorization with Risk Analysis:

ICS2's robust risk analysis mechanism allows customs authorities to conduct comprehensive assessments of each incoming shipment. Taking into account factors such as the type of goods, their origin and the importer's compliance history, ICS2 categorizes shipments into high-risk, medium-risk or low-risk categories. This classification guides subsequent customs control measures, providing a targeted approach to security and safety measures.

3. High Customs Control Measures:

ICS2's customs controls of high-risk goods or shipments in accordance with the law, cooperating with regulatory authorities and ensuring control

4. Facilitating Communication and Data Sharing: Increasing transparency

ICS2 enables seamless communication and data sharing between stakeholders in imports. It further strengthens cooperation, security and compliance efforts among EU institutions.

5. Ensuring Compliance and Enforcement: Customs authorities ensure the integrity and security of the EU customs area by ensuring compliance through inspections, controls and penalties in cases of non-compliance.

It requires the person to declare the safety and security data related to the activities within the scope of customs legislation through summary declaration with ICS2 is an electronic customs system (TAXUD, 2022).

3.2. Disadvantages of ICS2

In ICS2, thanks to artificial intelligence and machine development and tax calculation can be maintained automatically and the carrier must be very careful in high expansions. There will be a penalty for those who report incomplete or late receipt of ICS2. In this case which leads to delays in customs clearance and customs authorities and customs policies. There are regulations regarding the imposition of the penalty (Icustoms, 2024). According to the official records of the General Directorate of Taxation and Customs Union on January 29, 2024, the EU Carbon Border Adjustment Mechanism (CBAM) and Import Control System (ICS2) documents could not be submitted by the operators due to a technical malfunction in the system. General Directorate of Taxation and Customs Union Carriers who were unable to make Pass Registration and Import Control System 2 (ICS2) Pass Registration were given time and requested to submit this information after the technical malfunction was resolved within 30 days. If this security system which depends on artificial intelligence and machine automation, malfunctions that there are carriers that have problems in transit.

The Commissions acknowledged that they experienced technical problems that could not provide the submitted EU Carbon Border Adjustment Mechanism (CBAM) and Import Control System 2 (ICS2) data and reports (KPMG, 2024).

Individuals who live outside the EU and send goods from the EU to the EU in transit may be penalized if they do not provide accurate information about their shipments. In this system, all stakeholders have great responsibility. Economic operators should be ready to handle the ICS2 data incorrectly with Entry Summary Declaration (ENS) in accordance with safety and security standards.

All exporters and producers will be indirectly affected in the system. Economic operators should ensure that all stakeholders are informed about this system. After March 1, 2023, air cargo carriers and express carriers will be required to provide electronic data sets for ENS and ICS 2. After June 3, 2024, road, sea, rail carriers and final recipients of all goods brought to customs will also be required to provide a fully developed electronic data set for ICS2 via electronic ENS. Carrier operators must ensure that their IT systems and software are compatible with ICS2 formats and standards. In addition, employees not being trained in this regard is also a disadvantage. If there is no electronic data set in ICS2 format, problems will arise. A separate budget should be allocated for employee training. Employees should be trained on how to solve problems in the event of a possible problem. Business partners will need to establish a communication line with customers about ICS 2. Incomplete and incorrect information from the customer will cause problems. Your customers and business partners should provide accurate and complete information about.

4. Turkey and Customs Union

The importation of goods without paying customs duties partially or completely through deceptive transactions and behaviors is regulated in the 3/2nd paragraph of the Anti-Smuggling Law. The crime regulated in this paragraph is a crime committed with the aim of paying less tax or not paying any tax through deceptive transactions and behaviors. In other crimes, in addition to not paying tax, the aim of evading trade policy measures may also be in question (Bülbül & Özay, 2016). In Turkey, the Ministry of Trade has put the Union Customs Code (BGK) into effect as of May 1, 2016, of the European Union (EU). It is reported that customs administrations in Turkey are working on conducting all customs transactions including all data transfer and storage transactions between economic operators that in an electronic environment and that information technology systems developed for this purpose are being gradually implemented (TIM, ICS2, 2024).

Although the Turkey-EU Customs Union is still in effect but it has lost its relevance. Since the Customs Union entered into force in 1996, Turkey-EU relations have changed. The Turkey-EU Customs Union is still in force but has lost its relevance. The EU's trade relations which have expanded from 15 to 27 member countries need to be reexamined (Yanarışık, 2023).

According to Article 12 of the Customs Union Decision No. 1/95, Turkey has complied with the Community's rules on common rules for imports and common rules for imports from certain third countries also the administration of quantitative restrictions and measures against unfair commercial practices of quotas and tariff quotas in exports, quantitative restrictions applied to third countries in the textile and ready-to-wear sector and inward and outward processing regimes as of January 1, 1996. According to Article 16 of the Decision No. 1/95, Turkey has started to make agreements like the Free Trade Agreements (FTAs) that the EU has made with various countries to comply with the Common Trade Policy (Union C., 2024). Under the Import Control System 2, the third phase of the European Union (EU) pre-arrival security and safety system for customs, all goods (including mail and express shipments) transported to or from the EU by sea, inland waterways, roads and railways will be subject to new requirements (TIM, 2024)

Turkish Airlines has been requesting HS Code in E-AWB (E-Airway Bill of Lading) notifications for flights arriving in Europe since February 15, 2023. If the companies' software programs are compatible that there isn't problem but companies whose systems aren't compatible experienced problems. Citizens of the European Union (EU) must provide additional information for their safety and security at customs. It is necessary to have software systems to provide this information to avoid delays in shipments against high penalties. If a shipment is by air to or transiting through the EU, Northern Ireland, Norway and Switzerland so all shipments must: At least a six-digit Harmonized System (HSIP) code for each product in the shipment;

Accurate product description for each item in the shipment; (Harmonized or HS code) Recipient's Economic Operator Registration and Identification (EORI) number. These rules apply to all products (except documents) regardless of value. EORI stands for "Economic Operator Registration and Identification". In all kinds of customs operations such as export, import and transit in the European Union customs area, economic operators EORI number, statistics, and security are important for customs operations.

From 1st of March 2024 Highway, railway, on the seaway If information is not provided with the imported/exported goods that the shipment will not be delivered to EU member countries until they obtain this information. A minimum six-digit HS code must be given for each product.

The Harmonized System (HSIP) code is an internationally standardized system for identifying and classifying products. HS code**:** A Harmonized System (HS) code is a numerical customs code that classifies products on a universal level. For

filing to EU Customs entities**,** the first 6 digits of the HS code are mandatory. EORI number: An Economic Operators Registration and Identification (EORI) number is an identification number that is required when exchanging information with EU customs entities. The inadequacy of technology in explaining long-term growth as an external factor has led to the emergence of internal growth models instead of this growth theory (Özer, 2012, s. 70) This model stated that technological developments would cause income inequality between countries (Yürek, 1997, s. 2)

The extent to which developments in foreign trade affect economic growth is discussed in the economic literature. In this respect, there are studies in the literature examining the effects of export and economic growth together. In recent years, the effects of IIT on economic growth have been questioned. Then, this issue has become a subject of research. In this section, studies on the relationship between IT and economic growth in national and international literature are included (Yağış, 2024).

Table 2. The Effects of Export and Economic Growth Literature

Author	Country-	Period	Method	Result
Wörz (2004)	45 Countries	1981-1997	Dynamic Panel	A Positive Result Was Found Between Export Products and Economic Growth
Falk (2009)	22 OECD Countries	1980-2004	Dynamic Panel	A Positive Result Was Found Between IIT and Economic Growth
Kılavuz & Topçu Altay (2012)	22 Developing Countries	1998-2006	Panel Data	A Positive Result Was Found Between High-Tech Manufacturing Industry Exports and Economic Growth
Turkey (2013)	53 Countries	1995-2008	Regression Analysis	A Positive Relationship Between Information and Communication Technologies and Economic Growth
Telatar Et. (2016)	Turkey	1996-2015	Cointegration and Causality	It was found that HTE and Economic Growth have a Causality Relationship.
Isik & Kilinc (2016)	Selected Countries Dynamic	1990-2011	Panel Data	A Positive Result was Found Between Innovation and Economic Growth
Kizilkaya (2016)	Brics	2001-2011	Panel Data	A Positive Result was Found Between RDE and Trade Openness HTE
Alper (2017)	Turkey	1990-2015	Causality	Causality was Found from Economic Growth to RDE and HTE.
Usman (2017)	Pakistan	1995-2014	OLS	IIT and Economic Growth Found to be Correlated
Konak (2018)	OECD	1992-2016	Panel Data	Turkey Lags Behind Other Countries in High Technology Export
Kabaklarlı Et. (2018)		OECD 1989-2015	Panel Data	A Relationship Between IIT and Economic Growth is Found
Erdil Şahin (2019)	Turkey	1989-2017	Causality	A Positive Result is Found Between IIT and Economic Growth
Şeker & Özcan (2019)	Turkey	1986-2016	Time Series	A Causality is Found Between IIT and Economic Growth
Buchinskaya & Dyatel (2019)	38 European Countries	1992-2016	Panel Data	A Relationship is Found Between IIT and Economic Growth
Köse & Gültekin (2020)	OECD	1996-2017	Panel Data	A Bidirectional Causality is Found Between IIT and Economic Growth
Doru & Dabakoğlu (2021)	11 Transitions Country	1995-2018	Panel Data	A Positive Result Was Found Between IIT and Economic Growth
Ersin Et. (2022)	35 OECD Countries	1992-2016	Dynamic Panel Threshold Regressions and Bootstrapping Threshold	It Was Found That IIT Has a Positive Effect on Economic Growth
Sojoadi & Banghbanpour (2023)	30 Developing and 30 Developed Countries	2007-2022	Panel Causality	Causality from Economic Growth to IIT Was Found
Shadab & Alam (2024)	UAE	1991-2020	Causality Analysis	Causality from IIT to Economic Growth Was Found.

Search (Yağış, 2023).

ICS 2 application which was put into practice because of the application of developments in information technology in customs transactions has begun to be implemented to prevent smuggling and ensure safe passage through customs. With the use of technology, evasion of taxes at customs can be prevented and economic contribution can be made.

5. Research Method

The research used quantitative research method. In France, Germany, Switzerland and Sweden, where ICS 2 was implemented in 2021 and the applications were examined for the years 2017, 2018 and 2019 before the ICS 2 implementation and the years 2022, 2023, 2024 after the ICS 2 implementation and the efficiency of the application was evaluated. Data on a commodity group basis was requested from some statistics centers abroad but our request was rejected. There upon, current data on the selected export groups in question were requested from the Ministry of Trade of the Republic of Turkey for the specified countries and obtained. The delivery times determined for these groups are the "Average Delivery Times" obtained from Airline Cargo companies. The reasons for choosing the countries Germany, France, Sweden and Switzerland for the research are as follows;

1- They are the countries with the most exports from Turkey to the European Union countries by air.
2- These countries have long distances to our country and developed economies also effective weather conditions (especially in the winter seasons).
3- In these countries, there are very high level services related to the air transportation system (Airline, Airport, Ground Services etc.).
4- There are some risks related to security and delay situations on the route and corridor.

Table 3 shows the export figures of HS7, HS 8, HS 30, HS 71 products in France, Germany, Switzerland, and Sweden where ICS 2 is implemented in 2017, 2018 and 2019, and the export figures of HS7, HS 8, HS 30, HS 71 products in 2022, 2023 and 2024.

HS Codes & Products

HS 07 - Edible Vegetables and some roots and tubers
HS 08 - Edible fruits, nuts, citrus and melon peels
HS 30 - Pharmaceutical Products
HS 71 - Pearls, precious stones and metal products, coins

The reasons for choosing the HS 07, HS 08, HS 30, HS 71 product groups for the research are as follows;

1- Since the shelf life of the products is short and there is a risk of spoilage, they must be delivered to the customer as quickly as possible.
2- Transportation must be carried out with high security, minimum risk factors and a damage rate close to 0.
3- The elapsed time causes the financial value of the product to decrease and the chance of sale to decrease.
4- Since a large amount of cold storage will be needed to hold the products during the European Union customs procedures. The products must be customs processed and delivered quickly. **Table 4,** shows the comparison of exports from Germany, Sweden, Switzerland and France to the European Union in 2017, 2018, 2019 and 2022, 2023, 2024 using the ***Levene's*** Homogeneity of Variances test.

T.A. - Total EU Airline
Te - Total EU Export
G.E.T. - Germany EU Total
F.E.T. - France EU Total
Sw.E.T. - Sweden EU Total
S.E.T. - Switzerland EU Total
HTG - Germany HS Total
HTF - France HS Total
HTSw - Sweden HS Total
HTS - Switzerland HS Total

Levene's Test was performed to analyze to homogeneity of variances assumption. If the test result of the variables taken into the homogeneity test is at the 0.10 level of significance (asymp. Sig.) $p<.10$, the homogeneity hypothesis is rejected. Table 4 shows Levene test results. Levene's Test results show that FET, H8Sw, H8S, H30G, H30Sw, H30S, HTF didn't provide variance homogeneity but it was determined that the remaining 20 variables provided the homogeneity assumption. Total 19 variables provided assumptions.

Shapiro-Wilk test was performed to analyze whether the research data showed a normal distribution. **Table 5** shows Normality One-sample Shapiro-Wilk test is a test used to test whether the hypotheses are significant or not and whether the values of the variables are normally distributed. If the test result of the variables taken into the normality test is at the 0.10 level of significance (asymp. Sig.) $p<.10$, the hypothesis is rejected and the distribution is decided to be non-normal.

Shapiro-Wilk test was performed to test the normality assumption. P value of tests is $p\geq.10$ ensures that the hypothesis is accepted. The distribution does not exhibit a significant difference from the normal distribution. Test results show that other then **Te** all variables provided normality assumption.

ANOVA was applied to these 19 selected variables. Table 6 shows the ANOVA results.

Table 3. ICS 2 (Air Turkiye - EU Export) (X1.000)

TOT.EU.AIRLINE	TOT. EU EXP.	AIRLINE EXP.	Germany	France	Sweden	Switzerland	INCOTERMS	Average Delivery Time (Hour)
9.994.137	**67.987.332**	**2017**	**167.594.989**	**18.756.121**	**3.013.064**	**128.098.993**	**FOB**	51 Hour
		HS 07	24.438	118.949	1.312	124.019		
		HS 08	11.290	891	1.101	7.353		
		HS 30	351.351	27.215	8.476	178.807		
		HS 71	17.160.116	1.816.710	304.578	13.101.785		
		Total	**$ 17.547.195**	**$ 1.963.765**	**$ 315.467**	**$ 13.411.964**		
6.171.107	**77.429.205**	**2018**	**182.140.088**	**21.155.141**	**3.017.980**	**953.164.182**	**FOB**	51 Hour
		HS 07	31.173	129.237	522	96.687		
		HS 08	14.538	9.013	1.019	2.647		
		HS 30	303.081	21.327	2.477	111.899		
		HS 71	14.167.773	1.526.487	236.515	75.755.952		
		Total	**$ 14.516.565**	**$ 1.686.064**	**2 $ 40.533**	**$ 75.967.185**		
6.299.220	**76.726.198**	**2019**	**123.318.301**	**16.672.597**	**4.195.282**	**242.539.405**	**DDU**	46,5 Hour
		HS 07	22.103	95.732	1.927	78.237		
		HS 08	11.765	9.156	1.484	3.563		
		HS 30	307.077	19.638	101	170.862		
		HS 71	9.795.819	1.245.961	341.340	19.684.077		
		Total	**$ 10.136.764**	**$ 1.370.487**	**$ 344.852**	**$ 19.936.739**		
8.388.196	**103.049.092**	**2022**	**2. PART 126.609.651**	**24.577.093**	**5.822.518**	**180.961.529**	**DDP**	36.5 Hour
		HS 07	22.312	45.565	1.526	43.988		
		HS 08	9.320	1.341	2.189	5.174		
		HS 30	1.449.118	32.981	1.576	575.187		
		HS 71	8.825.275	1.920.688	468.662	14.105.919		
		Total	**$ 10.306.025**	**$ 2.000.575**	**$ 473.953**	**$ 14.730.268**		
10.219.598	**104.283.598**	**2023**	**107.535.752**	**23.659.463**	**5.889.915**	**466.083.571**	**DDP**	33 Hour
		HS 07	44.697	95.324	5.399	101.450		
		HS 08	10.540	8.799	13.974	5.459		
		HS 30	197.004	54.350	1.456	237.193		
		HS 71	10.479.827	2.202.741	566.884	46.171.038		
		Total	**$ 10.732.068 $**	**$ 2.361.214 $**	**$ 587.713 $**	**$ 46.515.140**		
7.836.289	**80.289.847**	**2024 (10 months)**	**104.161.616**	**29.116.692**	**4.034.004**	**75.483.907**	**CIF**	33 Hour
		HS 07	23333	44546	1982	53111		
		HS 08	6 811	2013	2002	4121		
		HS 30	100.596	63.940	2.255	45.672		
		HS 71	10.191.676	2.774.965	393.530	7.377.551		
		Total	**$ 10.322.416**	**$ 2.885.464**	**$ 399.769**	**$ 7.480.455**		

Table 4 Test of Homogeneity of Variance Homogeneity of Variances Test (**Levene's**)

	F	df1	df2	p
TA	3.2567	1	4	0.145
Te	0.3353	1	4	0.594
GET	3.3020	1	4	0.143
FET	5.3171	1	4	0.082
SwET	0.1761	1	4	0.696
SET	3.4110	1	4	0.138
H7G	3.0989	1	4	0.153
H7F	1.2070	1	4	0.334
H7Sw	4.3002	1	4	0.107
H7S	1.1592	1	4	0.342
H8G	1.0447	1	4	0.365
VH8F	0.2124	1	4	0.669
H8Sw	14.8016	1	4	0.018
H8S	9.7832	1	4	0.035
H30G	14.5109	1	4	0.019
H30F	2.6161	1	4	0.181
H30Sw	6.3045	1	4	0.066
H30S	5.1950	1	4	0.085
H71G	1.4438	1	4	0.296
H71F	3.9237	1	4	0.119
H71Sw	0.0615	1	4	0.816
H71S	1.8706	1	4	0.243
HTG	2.5576	1	4	0.185
HTF	6.0603	1	4	0.070
HTSw	0.2739	1	4	0.628
HTS	1.8568	1	4	0.245
TS	1.2308	1	4	0.329

First we planned to apply ANOVA (Analysis of Variance) to determine whether there is a significant difference between the results of the 2 application periods based on countries and commodity groups that the assumptions of ANOVA. Since the significant value of the values in Table 4 and 5 is p>0.10, the ANOVA test was performed, Normality assumption and equality of variances were tested using SPSS 24 and the Open-Source Code "Jamovi 2.3.24" was used.

Table 5 Test of Normality Normality Test (Shapiro-Wilk)

	W	p
TA	0.890	0.316
Te	0.764	0.027
GET	0.952	0.758
FET	0.907	0.420
SwET	0.917	0.484
SET	0.902	0.385
H7G	0.932	0.592
H7F	0.906	0.412
H7Sw	0.940	0.663
H7S	0.991	0.992
H8G	0.887	0.301
VH8F	0.925	0.543
H8Sw	0.836	0.121
H8S	0.913	0.458
H30G	0.850	0.157
H30F	0.932	0.592
H30Sw	0.929	0.571
H30S	0.919	0.497
H71G	0.989	0.988
H71F	0.933	0.607
H71Sw	0.925	0.543
H71S	0.844	0.141
HTG	0.975	0.925
HTF	0.938	0.639
HTSw	0.928	0.566
HTS	0.845	0.142
TS	0.878	0.259

Note. A low p-value suggests a violation of the assumption of normality

According to ANOVA results, there was a difference in France in the ICS2 application period for the H7 coded product group. A difference was determined only in Germany for the H8 coded product group. A significant difference was determined for Sweden for the H71 coded product group. When the totals of H7 – H8 – H30 – H71 were taken into account, it was determined that the ICS2 application created a difference in Sweden as well. In addition, it was obtained that the two periods were different in TS which shows average delivery times which is meaning that the ICS2 application significantly reduces the average delivery time.

Alpha type error was taken as 10% in the tests. The tests will be carried out at a 90% confidence level in the research. A low p-value suggests a violation of the assumption of equality of mean. The ANOVA test result is given in the Table 6.

Table 6. ANOVA One-Way ANOVA (Welch's)

	F	df1	df2	p
TA	0.173	1	2.86	0.706
GET	5.577	1	2.61	0.112
SwET	16.498	1	3.92	0.016
SET	0.501	1	2.78	0.534
H7G	0.633	1	2.64	0.492
H7F	7.385	1	3.41	0.063
H7Sw	2.207	1	2.47	0.252
H7S	1.929	1	2.93	0.261
H8G	6.802	1	3.51	0.068
VH8F	0.364	1	3.90	0.580
H71G	1.844	1	2.81	0.273
H71F	4.290	1	2.57	0.145
H71Sw	21.975	1	3.99	0.009
H71S	0.325	1	3.23	0.606
HTG	1.701	1	2.35	0.305
HTSw	19.539	1	3.88	0.012
HTS	0.320	1	3.24	0.608
TS	73.923	1	3.48	0.002

This contradictory situation directs us to alternatives that do not require assumptions. For this, the Kruskal-Wallis test which is the non-parametric alternative of one-way Analysis of Variance was applied. The test results are summarized in the Table 7.

Table 7 Kruskal-Walli Hypothesis Test Summary

Null Hypothesis	Test	Sig.	Decision
The distribution of TA is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of Te is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of GET is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,127	Retain the null hypothesis.
The distribution of FET is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of SwET is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of SET is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of H7G is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of H7F is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of H7Sw is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,127	Retain the null hypothesis.
The distribution of H7S is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,275	Retain the null hypothesis.
The distribution of H30G is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of H30F is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of H30Sw is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,827	Retain the null hypothesis.
The distribution of H30S is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of H71G is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,275	Retain the null hypothesis.
The distribution of H71F is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of H71Sw is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of H71S is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of H8G is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of VH8F is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of H8Sw is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of H8S is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of HTG is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of HTF is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.
The distribution of HTSw is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,050	Reject the null hypothesis.
The distribution of HTS is the same across categories of D.	Independent-Samples Kruskal-Wallis Test	,513	Retain the null hypothesis.

Kruskal-Wallis Tests (One-Way ANOVA Non-parametric Alternative)

Te (Total EU Export) there is a significant increase between the period of 2017, 2018, 2019 before ICS2 and between the years of 2022, 2023, 2024 after ICS2. A significant increase is also seen for **F.E.T**. between the same periods. There is also a significant increase in **Sw.E.T.** in the same periods.

The significant difference found for France the **HS 07** group is due to the return of fruit and vegetable exports to this country.

This decrease is due to the characteristics of the product group.
A similar situation is seen in Germany and Sweden for the **HS 08** group.
In the **HS 30** group, ICS 2 created a significant increase for France.
The **HS 71** group creates a significant increase in France and Sweden.
A significant increase occurs in Sweden after ICS 2 when the total export figures for these 4 product groups are considered. It is also known theoretically that not all of the significant increases that occur are due to ICS 2.
The number of data and observations will increase and more reliable multivariate comparisons will be possible when the implementation period of ICS 2 is extended. Since the number of variables will also be a separate constraint in such multivariate comparisons that the number of observations for each period (before and after ICS 2) needs to be increased.
In our study, only the 6 criteria which is the minimum number of observations for tests at the level of 10% for a single variable (separate variables) could be met. Because the implementation start date was very close.
In general, the delivery time is shortening and the expected significant results have emerged in product groups that need to be produced in accordance such as **HS 30** and **HS 71**.

6. Conclusions

The ICS2 system isn't a system that includes the creation of an import declaration for free circulation. It is an electronic customs system based on detailed cargo information and risk analysis that requires economic operators to submit PLACI data to EU Customs Administrations before loading in shipments to third countries directly or in transit to the EU and ENS data before arrival in the country of destination. It is implemented in Switzerland, Norway and Northern Ireland and in 27 EU member states. Economic operators including postal operators, express cargo, air cargo transportation, maritime, rail and road transportation that consignees in the EU and logistics companies will be affected. As of March 15, 2021, air cargo transportation has been implemented in Switzerland, Norway and Northern Ireland in the EU in the first phase, preloading and air mail transportation. It has been implemented in air general cargo transportation and mail transportation after March 2023 with the second phase.
It implemented for maritime transportation after June 3, 2024. The third phase is planned to be implemented in maritime, rail and road transportation. It will be planned to be implemented in the EU for road and rail transport as of April 1, 2025.
Data entry has also started for postal operators, express cargo, and air cargo transportation. As of June 3, 2024, for maritime transport, it is mandatory to transmit ENS information to the system before the shipment arrives at EU customs after June 3, 2024.

Thanks to the ICS 2 system that cargo information will be transmitted and early intervention of customs authorities will be possible by performing risk analysis and security controls will be able to intervene at the most appropriate point of the supply chain that facilitating trade by controlling the legal trade flow outside the EU - facilitating international customs procedures
- Simplifying the exchange of information between economic operators and EU Customs Administrations,
- Accelerating the processing processes thanks to the pre-arrival security notifications and the ability to determine the risk criteria of the cargo carried in advance.

The ENS document is an electronic summary declaration document. It is a mandatory document that must be submitted before the shipments to be made to the EU or to third countries in transit from the EU are delivered to the EU Customs Administrations under the responsibility of the carrier or a representative to be appointed in his place.

Information regarding the goods in question such as the sender, receiver, seller, manufacturer and their addresses, telephone numbers and tax numbers etc. (6-digit HS code, description, weight, container information and freight charges, etc.), location information (reception place, loading, unloading, delivery, shipment route and route of the means of transport, etc.), transportation information (transport vehicle information, departure and arrival dates and times, etc.) and supporting document information (delivery note, invoice, etc.) must be submitted.

Data regarding air cargo transportation, express cargo and postal shipments and shipments going to EU member countries or transiting from the EU to third countries are submitted to customs as PLACI data (i.e. 7+1) before loading. The information also called PLACI data is in the form of a 7+1 data set and is requested to ensure security at customs. This data includes the name/title of the sender, the address of the sender (including postal code), the name/title of the receiver, the address and EORI number of the receiver, detailed description of the goods and 6-digit GTIP Code, weight, quantity and HAWB number if any.

For shipments in sea, railroad and air transportation modes, the entire ENS data set must be submitted and the arrival notification must be made and the procedures for presenting cargo transportation shipments to customs must be carried out. The carrier preparing the ENS document is uploaded to the relevant EU system (https://customs.ec.europa.eu/gtp) as a Single Filing or Multiple Filing.
In Multiple Filing transactions consisting of two or more ENS files, the carrier, intermediaries and the final recipient are jointly responsible.

The ENS document is an electronic summary declaration document. It is a mandatory document that must be given to the carrier or a representative to be appointed in his place in all shipments before they reach the EU Customs Administrations. The sender, recipient, seller, manufacturer and their address, telephone also tax numbers etc. information regarding the traded goods (6-digit HS code, description, weight, container information and freight charges, etc.), location information (place of acceptance, loading, unloading, delivery, shipment route and route of the means of transport, etc.), transportation information (transport vehicle information, departure and arrival dates and times, etc.) and supporting documents (delivery note, invoice, etc.) should be submitted.

While the ICS2 system is mandatory for all cargo, courier and postal shipments that will transit and arrive in European Union countries (including Norway, Switzerland and Northern Ireland), there is an exception for postal letter shipments, diplomatic shipments and cargo carried for military purposes. ENS is not requested as an exception in these shipments. The exporter is responsible for the complete and accurate transmission of PLACI and ENS data of the goods within the scope of the shipment to the carriers.
In ICS2, economic operators are responsible for electronically entering PLACI and ENS data related to the goods into the EU

customs system within the time limit. The ultimate responsibility lies with the carrier. The MRN number is an arrival summary declaration number. The Movement Reference Number (MRN) is a number assigned by the customs administration of the member state to which the ENS document is transmitted that based on the master bill of lading which after the ENS document is uploaded to the ICS2 system and approved, accepted and recorded.

With this number, import clearance procedures are initiated after the shipment arrives at the EU customs. In the absence of the MRN number, customs penalties may be applied and delays may occur in the import clearance processes.

The Economic Operator Registration and Identification Number (EORI) is a number valid throughout the European Union and is the number given to economic operators by the competent customs administration of a member state.

The economic operator will use this number in customs procedures or in all transactions with a customs authority. There is no obligation to obtain an EORI number for goods not destined for the EU and tax numbers must be written.

ICS 2 is seen as a security measure for all carriers entering the member countries of the European Union, for the European Union. The development of artificial intelligence of information technology, the Internet of things and block chain technology will be gradually placed in logistics customs' transactions. For this, it is important for everyone from transport operators to all stakeholders to establish their technical infrastructure also train their personnel for this purpose and provide uninterrupted energy service in customs. While the new world order is implementing ICS2 in customs today and it is trying to reduce energy time efficiency carbon footprint by sending documents and making payments with block chain in making virtual meetings with meta verse and smart contracts by sharing this information between customers. It is necessary for all logistics stakeholders to convey the information correctly that provide personnel training, prepare the technical infrastructure and convey the necessary information correctly on time. In case of incorrect information being provided, the information being hidden by the carrier and the customer and penal sanctions are applied also customs transactions cannot be carried out. According to technological advances, the Turkish Anti-smuggling Law should be applied to those who provide false and unfounded information in ICS2 transactions and those who do not fulfill the responsibilities of the carrier in the Turkish Law should be subject to penal sanctions. Updates and codifications should be made in our legal legislation and the "Regulation on the Non-Use of Crypto Assets in Payments" published in the Official Gazette dated April 16, 2021 and numbered 31456 should be updated for international payments.

According to our research results, there is a significant increase in Te (Total EU Export). There is also a significant increase in F.E.T. There is also a significant increase in Sw.ET. The significant difference found for the HS 07 group is due to the return of fruit and vegetable exports to this country.

This decrease is due to the characteristics of the product group. A similar situation is seen in Germany and Sweden for the HS 08 group.

In the HS 30 group, ICS 2 created a significant increase for France.

The HS 71 group creates a significant increase in France and Sweden.

A significant increase occurs in Sweden after ICS 2 when the total export figures for these 4 product groups are considered. It is also known theoretically that not all of the significant increases that occur are due to ICS 2.

The number of data and observations will increase and more reliable multivariate comparisons will be possible when the implementation period of ICS 2 is extended. Since the number of variables will also be a separate constraint in such multivariate comparisons that the number of observations for each period (before and after ICS 2) needs to be increased. In our study, only the 6 criteria which is the minimum number of observations for tests at the level of 10% for a single variable (separate variables) could be met. Because the implementation start date was very close.

In general, the delivery time is shortening and the expected significant results have emerged in product groups that need to be produced in accordance such as HS 30 and HS 71.

Ethical Approval

The information obtained in this research is summarized within the framework of ethical rules.

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Conflicts of Interest

There is no conflict of interest regarding the publication of this paper.

References

Affairs, R. O. (2024). Transport Policy. https://www.ab.gov.tr/chapter-14-transport-policy_79_en.html.

Alperen, A. B. (2018). Uluslararası Karayolu Taşımacılığında Avrupa Birliği Mevzuatına Uyum Sorunu. [The Problem Of Compliance with The European Union Legislation In International Road Transport]. Haliç Üniversitesi, Sosyal Bilimler Enstitüsü Uluslararası Ticaret ve İşletmecilik Ana Bilim Dalı, Uluslararası Ticaret Bilim Dalı Yüksek Lisans Tezi .

Bulten (2024). https://www.utikad.org.tr/Images/Duyuru/mnggrhoutm mr20230002utikad149706.pdf. Accessed Date 1109.2024.

Bülbül, D. and Özay, N. (2016). Vergi Kaçakçılığı ve Boyutunun Türkiye ve AB Ekseninde Değerlendirilmesi. [Evaluation Of Tax Evasion and Its Dimensions in Turkey and the EU]. Gümrük ve Ticaret Dergisi (7), 52-62.

Bloomberg. (2024). https://www.bloomberght.com/ab-nin-nufusu-449-2-milyona-yukseldi-2356282. Accessed Date 11.09.2024

Comission, E. (2024). https://ec.europa.eu/eurostat/web/products-euro-indicators/w/2-30072024-ap. Accessed Date 11.09.2024

Comission, E. (2024). Taxation. https://taxation-customs.ec.europa.eu/customs-4/customs-security/import-control-system-2-ics2-0_en Accessed Date 12.09.2024.

Commission, E. (2021). Commission Implementing Regulation (EU) 202, /255 Of 18 February 2021.

Derneği, İ. G. (2024). ICS 2. https://files.igmd.org.tr/doc/13102022-092238_turkcepdf.pdf. Accessed Date 11.09.2024

European-Union. (2024). https://european-union.europa.eu/priorities-and-actions/actions-topic/customs_en. Accessed Date 09.09.2024

Icustoms. (2024). GB Safety and Security & EU ICS2 Declarations. https://www.icustoms.ai/ Accessed Date 09.09.2024

İhracıtçılar Meclisi. (2024). AB Ülke Notu. [EU Country Note] .https://tim.org.tr/files/downloads/Ulke_Bilgi_Notlar%C4%B1/AB%20%C3%9Clke%20.Accessed Date 12.10.2024

KPMG. (2024). EU: Penalty. https://kpmg.com/us/en/taxnewsflash/news/2024/01/tnf-eu-penalty-relief-due-to-technical-issues-related-to-cbam-registry-and-import-control-system-2.html.

Özer, H. A. (2012). Ekonomik Büyümenin Teorik Temelleri. [Theoretical Foundations Of Economic Growth] İktisadi ve İdari Bilimler Fakültesi Dergisi, Çankırı Karatekin Üniversitesi, 2(1)(63-72.).

Revenue. (2024). www.revenue.ie. .Accessed Date 10.10.2024

Slemrod, J. (2007). Cheating Ourselves: he Economics of Tax Evasion Journal of Economic Perspectives, 21,(1), 41-42

Taxation.(2021).https://taxationcustoms.ec.europa.eu/customs-4/customs-security/import-control-system-2-ics2-0/import-control-system-2-release-1_en .

(2023). /taxation-customs https://taxation-customs.ec.europa.eu/customs-4/customs-security/import-control-system-2-ics2-0/import-control-system-2-release-2_en.

(2024). https://taxation-customs.ec.europa.eu/customs-4/customs-security/import-control-system-2-ics2-0/import-control-system-2-release-3_en .

TAXUD/(2022), OP, 0001. https://taxation-customs.ec.europa.eu/taxud2022op0001_en.Accessed Date 10.09.2024.

Ticaret Bakanlığı, (2024). Yanıbaşımızdaki dev pazar Avrupa Birliği, [The Giant Market Right Next to us is The European Union]. https://ticaret.gov.tr/dis-iliskiler/avrupa-birligi/ yani-basimizdaki-dev-pazar-avrupa-birligi. Accessed Date 10.09.2024

Trademap, www.trademap.com Accessed Date 14.09.2024.

Turkish Exporters Union (2024). AB İthalat Kontrol Sistemi 2 (ICS2) Sürüm 3 Hakkında. [About EU import control System 2 (ICS2) version 3]. https://tim.org.tr/tr/ab-ithalat-kontrol-sistemi-2-ics2-surum-3-hakkinda., Accessed Date 14.09.2024.

Union, Customs (2024). https://www.ab.gov.tr/gumruk-birligi_46234.html . Accessed Date 14.09.2024.

Union, European. (2024). https://www.ab.gov.tr/_233.html. Accessed Date 14.09.2024.

UTİKAD. (2024). Utikad https://www.utikad.org.tr/images/BilgiBankasi/ithalatkontrolsistemi2ics2sunum-5833.pdf. Accessed Date 14.09.2024.

Yağış O. (2024). Yüksek teknolojili ürün ihracatı ve ekonomik büyüme ilişkisi: panel veri analizi. [The Relationship Between High-Technology Product Exports and Economic Growth: Panel Data Analysis]. Artvin Çoruh University International Journal of Social Sciences dergipark.org.tr/1433864

Yanarışık, O. (2023). Türkiye-AB İlişkilerini Yeniden İşler Kılmak | Nasıl Bir Ortaklık? [Making Turkey-EU relations work again | what kind of partnership?]. Talha Köse, Editör, SETA Yayınları, Ankara, 109-128, 2023

Yürek, M. A. (1997). İçsel büyüme teorileri, gelişmekte olan ülkeler ve kamu politikaları üzerine. [On Endogenous Growth Theories, Developing Countries and Public Policies]. Hazine Dergisi. 1-15.

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