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Abstract

Nowadays, organizations, public organizations and businesses base a large part of their tasks on advanced information systems (IS). Rapid growth of shipping, coupled with the need for fast and secure shipping commerce, has made Information Systems a key tool for economic operators and especially customs.

This paper deals with the role of Information Technology (IT) systems in the customs services in Greece and in particular with the use of specialized software - hardware that contributes to the development of Greek shipping as well as to the battle against economic crime. In fact, the number and the range of these specialized systems is quite small compared to the business requirements of the modern commercial world.

The information systems which are going to be analyzed are the most basic and most commonly used in government agencies, which aim at introducing automation and innovation in their highly complex and costly internal processes and operations in the country. The purpose of this paper is to show the reader in simple terms the systems and at the same time to display any problems and advantages through this research.

The development of advanced composite e-government transaction services, which enable citizens/firms to conduct electronically many different procedures with multiple government agencies require a large number of actions. In the modern world this is an important component of the capacity of its public administration, and also critical for its economic development.

Keywords: *E-government, e- customs, public administration, information systems (IS), digital services, economic crime, smuggling, customs development, port services.*

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Author

Nikolaos Bithizis-Petsis

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1.   Introduction

The last years, the need to upgrade the quality of customs services is greater than before. Electronic customs and its' services are a major project for the EU's Customs Union. The project, which introduced by the European Commission, aims to replace paper-format customs procedures with EU-wide electronic procedures and to create a more efficient, modern and secure customs environment[1].

Generally, the project has two objectives; it seeks to enhance the convenience, accessibility and quality of interactions within the public and businesses. At the same time it enhances the security at the EU's external borders, by facilitating trade and transactions.

Today in the EU, 27 customs administrations work closely together to provide protection for citizens and businesses. The customs association is the key element of the single market, which can only works efficiently by performing common rules at its external borders. Something this implies that the 27 customs administrations in the EU should act as one and only customs administration, fact achieved by applying one common customs policy and adopting advanced IT systems.

Figure 2: Information Systems

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[1] https://ec.europa.eu/taxation_customs/general-information-customs/electronic-customs_en

1.1.   The e-governance and digital maturity in Greece

The development of digital services in Greece present quite low performance and less growth compared to other European countries. Recent analyzes show that our country is one of the last in Europe concerning the digital maturity and exploitation of digital services. According to the indicator of the digital economy performance, Greece is among the last three countries in Europe, presenting a lag in areas such as the use of internet, the digital services and the level of public services digitization[2].

Greece is also ranked in the last 4 positions of the EU (61st out of a total of 189 of the surveyed economies) in the Doing Business[3] index, which reflects the business environment and business conditions. Correspondingly, Greece is ranked 81st in a total of 144 economies in the global competitiveness index[4]. Regarding the performance of the justice system, the figures of EU Justice Scoreboard rank Greece among the countries with the highest processing time of judicial cases in Europe, as well as the highest number of unfinished cases court cases per 100 inhabitants[5].

Finally, according to recent research, the contribution of the internet advantages to the national economy of Greece is only 1.2% of the Gross Domestic Product (GDP)[6].

The success of the attempted changes depends heavily on the exploitation of the ICT potentials. Despite the implementation of several digital projects over the past decade, computing has not developed into satisfactory degree in Public Administration. This delay has created a "vicious cycle" by keeping traditional bureaucracies and inefficient structures, mechanisms and attitudes. Hence, the attempt to increase the growth rate of IT applications is included in the broader reform agenda.
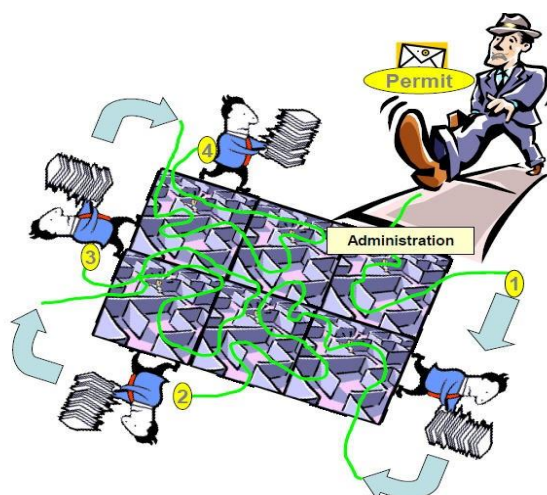
Figure 3: Greek Bureaucracy

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[2] http://ec.europa.eu/digital-agenda/en/digital-economy-and-society-index-desi
[3] World Bank Group (2014) Doing Business 2015: Going Beyond Efficiency
[4] World Economic Forum (2014) The Global Competitiveness Report 2014-2015
[5] European Commission (2015) The 2015 EU Justice Scoreboard
[6] Boston Consulting Group (2012) Connected Greece: The Internet as a Development Lever for the Greek Economy

Despite significant efforts and funds paid, the Greek Public Administration is characterized by:

1. The small number of installed integrated information systems and their limited use.
2. The small number of reliable and maintained databases.
3. The focus on management information systems instead of administrative and front-office systems for bidding services to the citizens.

1.2. Digital technology as a catalyst for growth in Greece[7]

Due to the fact that nowadays, more than a fifth of GDP (22.5%) in the world digital mature markets is generated by the digital economy and this percentage will be even greater, shortly, the digital economy is the strongest growth catalyst in the world. By 2020, the digital economy will account for a quarter (25%) of global GDP and at the same time the 70% of the world's population will use smart phones, with subscriptions exceeding 6 billion.

For a country like Greece, digital economy can be a key driver of growth. Greece today is facing a critical challenge:

1. The need to multiply the productivity and competitiveness of its economy.
2. The obligation to increase investment and employment, but not in terms of labor costs, but in terms of innovation and knowledge. By taking advantage of comparative advantages, such as its geographical location, high-level human resources and today's digital capabilities.
3. The requirement to upgrade the efficiency of the public administration, while reducing its operating costs.
4. The demand to accelerate the speed of the justice process and transparency.

At all these levels, digital technology provides solutions and creates opportunities. According to a recently published study, an 100% increase in the spread of digital services in Greece can lead to the creation of more than 6,000 businesses. It can also lead to an improvement in the ranking of the country by 25 positions in terms of competitiveness and by 33 positions in terms of transparency.

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[7] http://www.reporter.gr/Eidhseis/Oikonomia/291347-Michalos-H-pshfiakh-oikonomia-mporei-na-apotelesei-mochlo-anaptyxhs

For every 1,000 people who improve their digital skills level, Greek exports could be boosted by 14 million euros and 72 new businesses created. Greece can aim to create 500,000 jobs - especially for young workers - in the field of new technologies, digital skills and IT.

In particular, the adoption of digital technology by the supply chain sector including the customs services has been chosen, not only because of its contribution to the Greek economy (10.8% of GDP in 2014) but also of its importance of attracting new private investments. Digitizing the sector covers the entire goods journey from / to customs, commissions, transportation, invoicing, taxation, exchange of documents, and so on, up to the final consumer.

Figure 4: Digital Services Development

Furthermore, in the case of justice, its delays affect the business environment in Greece negatively. Accelerating the processes through digital solutions will work to the benefit of both legitimacy and entrepreneurship.

Because of the geographical position of Greece, the national shipping industry has grown in many areas. Shipping is one of the most economically growing branches in the country. Since 1990 it has been showing significant expansion rates close to other countries more developed in Europe. The advantages of digital services are multiple and are related to the shipping growth and extroversion. The public sector has the obligation to improve the exchange operations, to increase public revenues, boost employment and all these with the necessary safety measures.

1.3. Economic crime

Economic crime, as one of the forms of crime and antisocial activity, has taken an important dimension in recent years and is one of the main causes of economic and social diversion.

Financial crime does not have the same characteristics as the common criminal offense, the so-called street crime, and experience has shown that its treatment lies in the existence of effective regulatory mechanisms, flexible control and prosecution services, and the expectation of the world that the rich and the economically strong will not have opportunities to encroach on society and escape conception and punishment[8].

Financial crime and the increase in damages associated with it, expose the passive attitude of the organizations towards this phenomenon. More than one in three organizations (36%) have experienced financial crime incidents in the last two years, with electronic crime affecting almost a third of them (32%), the highest rate recorded by PwC's global survey of the economic crime which is carried out every two years.

The largest number of economic crimes, during the two years of the survey, was presented to the financial services industry, followed by state-owned agencies with financial services organizations[9].

At the same time, customs services are trying to tackle all kinds of smuggling. Smuggling is characterized as any attempted trade in violation and circumvention of the applicable law, with the ultimate goal of avoiding payment of duties. In practice, it is cheating on the authorities of a State when importing or exporting goods. In general, in accordance with the Greek Customs Code, smuggling is characterized as the import or export from the state border of goods subject to import / customs duty or tax without a written permission of the Customs Authority, and the time and place other than the one determined[10].

Figure 5: Smuggling

Indicatively, during the first nine months of 2016 (January – September), were identified, checked and fined smuggling cases approximately € 350 million. The list is as bellow:[11]
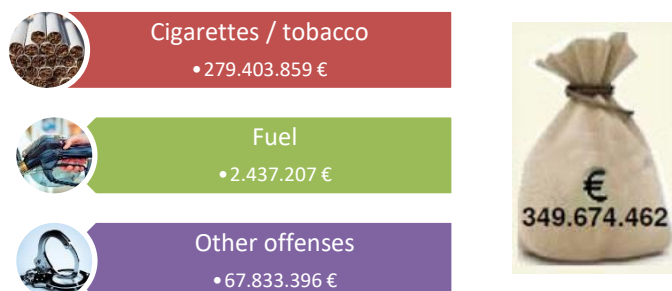
Figure 6: Fined Cases

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[8] http://www.eglimatologia.gr/το-οικονομικό-έγκλημα-ορισμοία-μέρος/
[9] PwC, Press release, 29 March 2016, Alexandra Filippaki
[10] https://el.wikipedia.org/wiki/Λαθρεμπόριο
[11] Gialouri Eirini, The strategy in tackling smuggling, presentation (p.7), 07/11/2016

2. Project's methodology

This paper is a bibliographic study, which took place in between March and June 2018 period. All the references are valid and true during the above period.

Initially, in order to start working the paper, it was necessary to find the economic statistics and the digital services used in the public sector. Then, an attempt was made to write down a complete collection of all the customs services, both electronic and manual. For this research the use of internet search sites and telephone calls to the Piraeus Port Authority SA, were imperative.

**Figure 7:
Project's Methodology**

Furthermore, the above services were analyzed, recorded and compared to corresponding European ones, for the needs of this work.

Apart from the above, information was requested from the General Secretariat of Public Revenue (Section of the Ministry of Finance), in order to find instructions on the procedure for electronic submission of the customs declaration and other customs documents within the framework of the current Information Systems.

Finally the data material that was collected from the Greek authorities, researches and internet sites, were compared, analyzed and useful conclusions were drawn[12].

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[12] Bryman A. & Bell E., "Business Research Methods", 2007

3.   The current situation of customs services

Nowadays, international trade faces two major problems. On the one side, the long and complex supply chains, leading to a steady increase in the volume of transit traffic and on other hand, the need to ensure full transport security. From the above, modern methods of exchanging information between the players of international trade are imposed. In particular, the steadily growing volume of trade, the need to secure a smooth and easy flow of legitimate goods safely, calls on the Customs authorities to address the diverse challenges with programming, accountability and efficiency.

The European Union (EU) is heavily dependent on the international trade for its economic development and that is why, is exposed to security threats to and market protection violations. Illicit international trade also undermines economic and social well-being in the EU. Effective risk management in the movement of goods through the international supply chain is vital for security and protection and is essential for facilitating legitimate trade and protecting financial health

After 11 September and other terrorist attacks in Europe, security has become a top priority for European customs. Effective cooperation between the customs authorities of the European Union is therefore becoming increasingly important.

Moreover, another important issue concerning the Greek economy, is that according to the United Nations Conference on Trade and Development (UNCTAD) last report, which, in conjunction with the HIS Fairplay database, processes data for the world merchant fleet of 1,000 gt and above, Greek merchant shipping maintains, in 2012, ranked first in dwt, with Japan ranked second, following by Germany, China and Korea[13].

In addition, it should be noted that the shipping market is subject to many influences from exogenous factors. The global nature of the shipping industry is often affected by the impact on it of economic, political, social and other developments at both international and national levels[14].

The existence of a framework of activities aiming at more efficient Customs Authorities:
1. Enhances the competitiveness of businesses by facilitating fair trade, reducing compliance costs, administrative burdens and cost of protection against unfair competition.

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[13] http://unctad.org/SearchCenter/Pages/Results.aspx?k=world%20merchant%20fleet
[14] Farantatos Konstantinos Master Thesis University of Piraeus, September 2012 (p 1)

2. Facilitates trade.

3. Contributes to the protection of the Union's financial and economic interests.

4. Contributes to the prevention of fraud with a view to protecting its citizens, their health and safety, the environment and civil society, in each Member State.

This will allow citizens and businesses to benefit from the full potential of the international market and world trade.

For all the above reasons, this chapter will deal with the services that customs offer to those who are involved with them.

3.1. Customs mission

In general, the mission of the Customs Office is to protect society and environment, by facilitating and improving the quality of the trade life through its obstruction the illicit trafficking of narcotic drugs and other species subject to prohibitions and restrictions, the collection of public revenue for which the department is responsible, the facilitation of legitimate trade and business activities and collection and analysis of trade statistics related to its activity.

In this respect the main priority is the fight against smuggling, fraud and related criminal activity to ensure the collection of import duties and other taxes on which the Department has competence[15].

In order to achieve the above, the Customs Office uses modern technology and methods, such as risk analysis that allows the controls to focus on specific suspects and goods. In addition, computers have spread rapidly, evolving data storage, database management and access to information. They also automated information systems by providing to all the stake holders on-line information.

The World Wide Web is a powerful, cost-effective, easy and fast means of communication, allowing free access to large online databases. Electronic information can be transmitted from one computer system to another fast and quite secure.

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[15] The Customs Code Law, Law No. 94 (I) Of 2004, Κ.Δ.Π. 437/2004

Figure 8: Customs Information Systems

Technological changes in both shipping and port operations have contributed to the development of a modern port industry and combined transports. Ports modernization and their role in world trade and economic development must be become more competitive and efficient, which means an integrated and automated transport chains and freight transport chains.

In conclusion, a port becomes more competitive when its features and services offer time and cost savings, while improving reliability, safety and quality. Finally, most of the above objectives can be achieved through the use of information systems, which will also offer a competitive advantage over neighboring ports, since there will be a difference in the total transport cost of the customer[16].

3.2. Information and Communication Technology in the Greek customs offices

The customs office should use direct, simplified and automated exchange of messages, information and data without effort between all stakeholders (ships, ship-owners, freight forwarders, agents, shippers, drivers etc.) in maritime transport to optimize procedures, safety and environmental protection. This facilitates sea, land or air transport, reduces environmental risk and improves overall efficiency in the port industry.

The integration of ICT in ports is a widespread phenomenon and allows the provision of value added services to meet the needs of their customers. The selection, implementation and operation of ICT and the production of electronic port services in a port are influenced by the port industry, the environment in which the port operates and the specific features of the ports[17].

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[16] Parthenis V., "Port Community Systems", Master Thesis, University of Piraeus, 2016, (p. 13-14)
[17] Parthenis V., "Port Community Systems", Master Thesis, University of Piraeus, 2016, (p. 15)

Perhaps the best-known e-customs worldwide are Hong Kong's Tradelink and OnePort. Tradelink's main stakeholders are the trading companies and the Hong Kong government (Ministry of Finance). Thus, the system focuses on online services for customs declarations and electronic transactions; although OnePort also offers software solutions that help port users to handle customs clearance procedures in China's mainland customs[18].

As Greece is a country with multifaceted geographical coverage and many entrances, there are more than 400 public customs offices. The majority of these customs offices do not provide electronic services and in periods of increased mobility, problems and delays are created quite often. For this reason this study is focused on the larger ones customs offices in Piraeus, Patra, Thessaloniki and Athens.

Figure 9: Greek Customs Agency

There were found and selected four major digital services that lead to better management, control and coordination of the business and public supply chain activities namely:

1. Electronic transactions system and support services (monitoring of the procedure).
2. Electronic information about the pricing between businesses, organizations, and consumers.
3. Traceability services and systems (monitoring of the goods).
4. Electronic customs clearance services for commercial documents (load declarations)[19].

Generally, e-customs is an integrated information system tailored to the needs, requirements and peculiarities of the port and its user community and provides secure and direct service to all organizations, services and businesses involved in processes such as transport, exports, imports, transhipments, dangerous goods, the provision of statistics, etc. E-customs and the Information System **ICISnet** offer a wide range of services, which are summarized below[20]:

1. Electronic submission of all customs documents
2. Electronic payment of all customs debts
3. Electronic submission of all license and approval applications
4. Electronic and continuous information of the process

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[18] Parthenis V., "Port Community Systems", Master Thesis, University of Piraeus, 2016, (p. 70)
[19] Lamprou M., Nikitakos N., "Electronic Port Services", ebusinessforum, 2008, (p, 21-22)
[20] Information Society Ltd., "The Evolution of the 20 Basic e-Government Services in Greece", 2013, (p. 20-21)

5. Statistics
6. Submission of price lists (cars, etc.)
7. Helpdesk function
8. High system availability (24/7)
9. Possibility to use digital signatures and data encryption for extra security
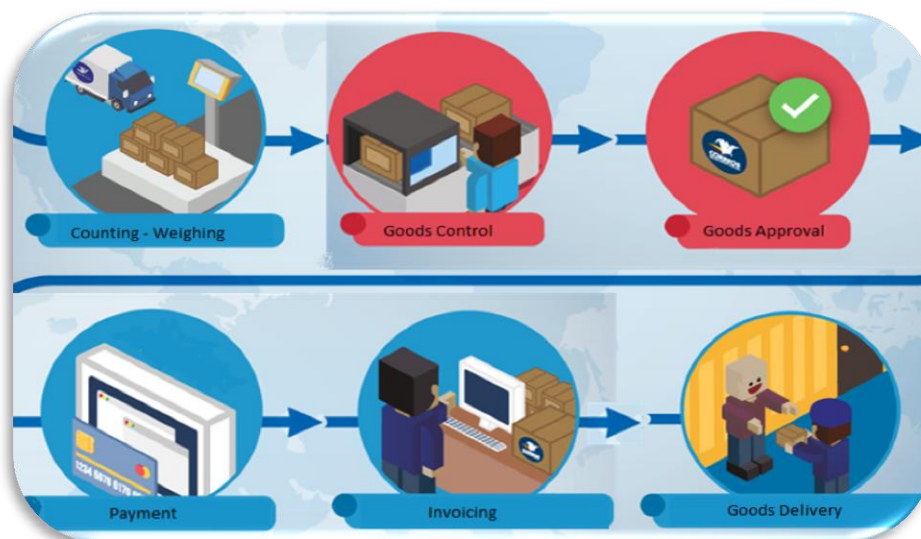
ICISnet is an information system owned, operated and offered by the Greek Ministry of Finance. Actions, requests and any kind of submission of documents can be done electronically in three ways:

1. Submission through the application of the Ministry (offered on its website portal)
2. Upload XML messages to the relevant Ministry application
3. Use of the offered web services (system-to-system communication).

These services are offered for certified systems / users. The choice of the communication mode or the exchange of information will be made by the traders according to their needs. The specifications of the XML messages (XSD files) are published on the website so that everyone who wishes to develop relevant information systems to be able to do it.

In addition an application for test submissions is available in the ICISnet portal which will allow the use of standard - draft submissions. In each case, the submitted data will be stored appropriately encrypted and time-stamped, for safety reasons.

Yet another great feature of ICISnet is the electronic and continuous information of the process. The certified user / information system either through the portal of the Ministry or using

the services offered will be able to be informed of the progress of the submitted document and to perform any subsequent steps provided by incoming messages in the mailbox.

ICISnet will gradually cover the needs of all Greek Customs Services and operators (of the interested public who apart from residents of Greece, may be from the European Union – EU and from third countries that are occasionally obliged to trade with the Customs Service or seek relevant information).

Figure 11: Information System ICISnet

Eventually ICISnet will meet the interconnection and interoperability needs of Information Systems of Public Administration and Institutions as well as the corresponding Information Systems of the EU within the framework of the Community "e-customs project".

3.2.1. Main problems in the development of port infrastructure and customs in Greece

In Greece, the existence or creation of development and public interest projects such as electronic customs are significantly influenced by certain particularities. It has to be mentioned that Greece is a country which has a large coastline (about 17,000 km) and an enormous number of islands where nearly 900 ports and port facilities and airports are registered. In addition, its geographical location has enabled our country to be the link of Europe with the countries of Asia and Africa. Terrestrial and maritime transport and the transport of products between these three continents are made through mainland Greece or its seas, something which is good for the economy but difficult for the facilities organization.

For the smooth operation of customs offices, there is a need for appropriate infrastructure to serve the vehicles, ships, airplanes, and passengers traveling with them, as well as an unhindered and timely movement of goods and products.

The most common infrastructure shortages are the inadequate internal projects to serve multiple and simultaneous arrivals. These deficiencies are of course considered in relation to the traffic served by each reception area. Additionally, there is inadequacy in the land areas, traffic regulations and passengers waiting areas.

In Greece, the Customs Service is politically accountable to the General Secretariat for Public Revenues of the Ministry of Finance and is organized at central and regional level. It is

staff is fulfilled by customs officers, secretarial, administrative and accounting personnel as well as a number of workers. The authorized posts of the customs departments were 46% less staffed in 2016[21].

Finally, with regard to the handling of freight traffic, many ports do not have adequate sheltered storage areas or suitable stowage areas or screening shelters or silos and bulkhead conveyors freight, etc. Many ports do not have sufficient equipment (cranes, self-propelled cranes, back-up networks, fork-lift trucks, etc.) for loading and unloading goods and loads like pallets and containers.

3.3. Information and Communication Technology in the customs offices around the world

In the new globalized environment, where international trade is constantly expanding, there is an increment on the threats industry. Customs, in addition to their traditional role in securing national financial interests, play a central role in security of international logistics, while ensuring that the increased level of the customs controls does not hinder the development of the world trade.

Perhaps the best-known examples of world-wide import and export systems are the Portnet of the Singapore port (PSA), the Data Communications System (Dakosy) and the Harbor Authorization System (COST) of the Port of Hamburg, the Customer Plus Program, OnePort Ltd Tradelink of the Port of Hong Kong (HIT), PortofRotterdam.com, Virtual Port and WebJonas in Rotterdam and PACE at the Port of London[22].

Information systems and legislation have different forms and characteristics in each country. When considering the functions and services of these systems, it can easily be concluded that not all systems offer all the services performed elsewhere. Some of them offer only a fraction of the services and this depending on the main stakeholders of each system[23].

The **World Customs Organization**, recognizing this need, has developed the SAFE framework, with the aim of establishing commonly accepted safety and security standards. Through its actions, it welcomes the unified supply chain management, the modernization of the

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[21] Gialouri Eirini, "The strategy in tackling smuggling", presentation (p.4), 07/11/2016
[22] Keceli Y., & Choi H. R., "Level of Information Systems in Turkish public ports and direction of improvement", (p.637-691), 2008
[23] Parthenis V., "Port Community Systems", Master Thesis, University of Piraeus, 2016, (p.69)

role and function of national customs administrations and the facilitation of the movement of goods through secure supply chains. The 21st Century Customs Agency's strategy provides a high level of exchanging information through modern and interoperable electronic systems and "smart" risk analysis methods with a focus on identifying safety and security risks.

This strategy is based on two pillars of SAFE:

1. The global customs networking, through the cooperation of national customs administrations, with a view to a harmonized and integrated approach to the supply chain.
2. The development of cooperation between customs and trade with the aim of identifying reliable business partners.
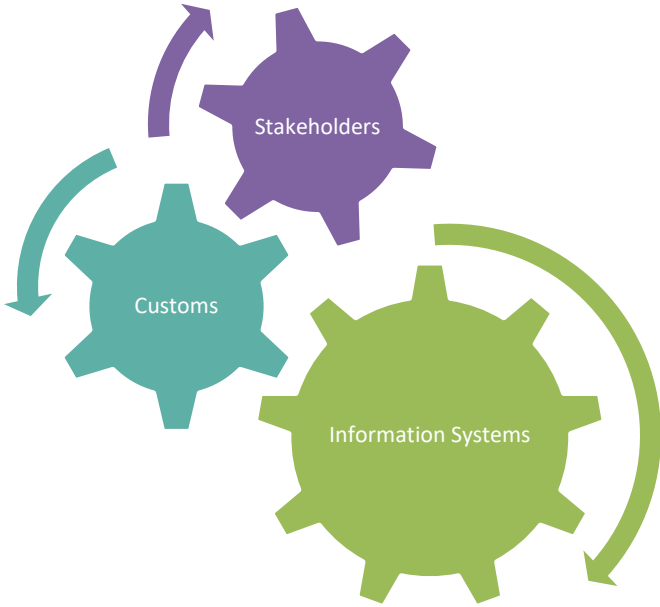
Figure 13: SAFE Framework

This relationship of cooperation and mutual trust provides benefits to both the customs authorities and the economic operators. The authorities give the possibility of more efficient management of their human and not only resources by releasing resources from the control of trusted business partners and channeling them to the control of increased risk transactions. Reliable economic operators must enjoy tangible advantages over other operators when carrying out their customs transactions.

This relationship is already embodied, since 2008, through the institution of the Authorized Economic Operator and the granting of a relevant certificate to the trusted **Authorized Economic Operators**[24].

Under the current negative global economic climate customs have the aim to minimize the cost of transactions and, above all, to develop export trade. Customs administrations are already playing a leading role by trying through the development and implementation of modern IT systems, to introduce simplified customs procedures to the benefit of the involved stakeholders.

However, the biggest bet to be won is the interconnection of all customs authorities with interoperable electronic customs information systems (e-customs). Information systems that will be able to provide, in addition to those mentioned above:

1. Reservations and travel reports
2. Loading – Unloading information
3. Graphical motion and process display
4. Absolute Security and protection when storing and exchanging documents
5. Easy and secure communication with banks and companies
6. Facilitations and fast procedures between companies and port authorities
7. Information on the current dues and online payment services
8. Information on the condition and location of containers
9. Input / output gateway status reports
10. Reports on the availability and status of terminals
11. Registration and renewal of user characteristics
12. Answers to frequently asked questions
13. Exporting of Data and Analyzes
14. Statistics
15. Forms, certificates and documents
16. Status reports in the course of a process
17. Update - notify users of the delivery / receipt of documents and e-packages

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[24] http://www.wcoomd.org

3.3.1. Singapore harbor

Singapore's Portnet Information System is a representative e-customs system as it is fully associated with PSA's terminal management system, and the TradeXchange system of Singapore Ministry of Finance. Portnet provides integrated internet services to shipping companies, carriers, agents, shippers and various local government agencies operating in Singapore.

The system allows online ordering of customs services, document submission, tracking of cargo location and status. It also offers the possibility of submitting legal and regulatory documents, an easy access to data repository for the sharing of critical data on the coordination of port and transport services, and a range of economic functions. Due to its advanced information systems, PSA is the most efficient terminal in the world, achieving a world-class ship-load time record[25].

Figure 14: Singapore Harbor

3.3.2. Port of London

London uses an information system, developed by the Port Authority. PACE is the only source of information on all port activities in London. It includes not only, a complete ship and cargo data inventory, but also, its main functions include information, billing data, customs clearance functions, transport and warehouse management functions for all inland port services, as well as more than 50 inland hubs across the wider London area[26].

Figure 15: Port of London

The system connects shipping companies, carriers, customs, agents, terminals, docks, warehouses, etc. There are three distinct parts on PACE:

1. The inventory of cargo, based on the data of ships and bills of lading
2. Access to the financial system, which is responsible for handling customs duties

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[25] https://www.researchgate.net/
[26] http://www.pla.co.uk/About-Us/London-Gateway-Port

3. The web portal, which is the "single window" gateway to the service.

3.3.3. European Union

The European Union, driven by the need to take precautionary measures to prevent terrorism, and in particular the need strengthening security in Europe, but also in the context of harmonization of its customs legislation with the standards for safety and health global trade facilitation which are worldwide validated by the World Customs Organization, has adopted the program of the Authorized Economic Operators, which has been implemented since 1/1/2008, by mutual agreement benefits for the customs administrations of the Union[27].

Customs services across the European Union are planning to modernize in order to provide Europeans with better service. Within the next decade, the following two major initiatives will be progressively undertaken.

The e-customs initiative aims to create secure and interoperable electronic data exchange systems, leading to better targeted customs controls and facilitating the activities of trusted dealers / operators. The need is to have a total paper-free customs environment. European citizens will benefit from a safer flow of goods, greater protection and less bureaucracy. The modernization of the Community Customs Code is the legal part of electronic customs. In particular, it will

Figure 16: European Commission

pave the way for the electronic exchange of information between national customs administrations and other authorities along the Union[28].

According to the E.U., e-customs help enhancing consumer safety against the fight to dangerous products trading and minimizing time consuming procedures. Create the factors to reduce the costs in the ports, airports etc., by improving administrative processes and quality of services. Modern technology and information systems are able to connect with the most means of transport in order to provide efficient door-to-door service, which gradually, can reduce bureaucratic procedures both in the customs office and the stakeholders.

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[27] Ministry of Finance, "Authorised Economic Operator", (p.12), 2012
[28] http://ec.europa.eu/40customs

Another area of e-customs includes the improvement of the central management through integrated financial supervision applications for both cargo - merchandise and their owners, thus facilitating cooperation between competent authorities and governments in the field of security as well as the critical issue of environmental management risk[29].

3.3.3.1. Background and related legislation

Another important milestone in the E.U is the creation of the **Customs Union**. The European Customs Union is composed of all the Member States of the European Union and a number of surrounding countries. The union, since it's foundation in 1958, is one of the pillars of the European Community and is at the heart of the internal market. It operates with the aim of not imposing customs duties on goods traveling within the union and - unlike a free trade area - the members of the customs union impose a common external tariff on all goods entering the union. One of the consequences of the customs union is that the European Union must negotiate as an entity in international trade agreements such as the World Trade Organization[30].

The main purpose of the union is the continuous and stable foundation for economic integration and growth services, which helps to maintain trade protection and quality standards at a high level. The role of customs, the working methods and procedures have changed significantly since 1957 in order to adapt to the growing volume of world trade, the rapidly changing technologies, modern business models and the persistent transnational threat - crime.

The last two decades paper customs procedures have been gradually replaced by electronic forms and devices with a view to enhance the competitiveness of European companies and at the same time to improve safety and security controls. Customs procedures are more complicated in comparison with other businesses. Movements of goods, storage, documents and receipts need time, manpower and facilities. Department's objectives are not only the cost reduction and gradually, the profit of each national economy, but also other equally essential factors that ensure on time and secure delivery, high quality of goods, improved means of pricing, and eliminating bureaucracy, and thereby fully and continuously satisfying customer's requirements.

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[29] Vlachopoulou M., Manthou V., Folina D., "Integrated Information Systems for Business Resources Management", Thessaloniki, (p.26)
[30] https://en.wikipedia.org/wiki/Customs_union

The first step for the electronic exchange of customs declarations across the EU was created with the New Computerized Transit System (NCTS) launched in 1997. A few years later, the **e-Customs Decision** laid the basic framework for creating a paperless environment for customs and trade, defining the objectives, as well as the structure, means and significant deadlines. The Commission then drew up a plan setting out the vision, objectives, strategic framework and milestones for the implementation of the e-customs initiative, the **Multi-Annual Strategic Plan** (MASP)[31].

3.3.3.2.   Multi-Annual Strategic Plan (MASP)[32]

As it has already been mentioned above, one of the most important plans in the E.U. is mainly the Multi-Annual Strategic Plan (MASP) coordinated by the Customs Union, while the businesses and the national ministries of finance play an equally important role. This plan set the rules, with the operational and legislative procedures, for the creation of a European electronic customs environment.

MASP also provides to the stakeholders with an over-view of the project information, the key issues related to the evolution of the e-customs initiative and the current state of play, including the developments plans or the progress in the customs field. In the context of the e-Customs Decision, the Commission's Directorate-General for Taxation and Customs Union (DG TAXUD) compiles an annual report assessing the progress made

Figure 17: Multi-Annual Strategic Plan

by the Member States and the Commission in regards to the e-customs initiative.

MASP deals with the promotion and implementation of the necessary application tools and Customs European Information Systems. Its main functions include the immigration of the current situation to the new automated (where appropriate).

Another main work of the MASP includes research for the simplification of declaration in order to receive the most cost-effective customs services. Under the current legislation, simplified transit regimes are used for goods carried by rail, air and sea transport. The aim of the trans-European project is to create new phases in order to implement in the existing system the new European requirements and aligning the data requirements to the international standards.

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[31] https://ec.europa.eu/taxation_customs/general-information-customs/electronic-customs_en
[32] European Commission, Masp, Annex2, (p. 34-44)

Apart from that, all of the transits must be grouped, taxonomized and executed according to the bases of the international frameworks. The aim of the national projects is to implement the processes related to the use of electronic transport documents (for rail, maritime and air) as transit declaration. At MASP, land, air and sea transit will continue to benefit from the simplification use of one and only electronic transport document as a customs declaration.

One more particular issue that MASP is required to address is to verify the origin of the products. At present, under the Generalized Scheme of Preferences (GSP), the authorities of the beneficiary countries certify the origin of the products. If the proven origin was found to be incorrect but there was no fraud, importers are often not required to pay the full import duty because they acted in good faith. As a result, there is a loss for the EU's own resources and ultimately the EU tax-payer bears the burden. Since exporters are better placed to know the origin of their products, it is appropriate to oblige exporters to provide their customers directly and under their responsibility with declarations of origin. For this reason, it has to choose the best, fastest and most reliable operators around the world and all that, by checking those repeatedly using modern electronic systems.

Figure 18: Authorized Economic Operator - European Commission

The main purpose of the system, in addition to replacing the current paper certification process in an IT-supported self-certification system, is the fight against smuggling. A central data-base will contain the registered exporters with all their individual components. IT systems will therefore enable Member States to strengthen their national systems for customs declarations by means of automated exporter verification based on the central database.

4. The development of ICTs to prevent and suppress economic crime - Illegal products trafficking

From the appearance of the TCP/IP protocol in 1978 and thereafter, the World Wide Web and the ICT technologies became useful transaction tools for commercial use around the world, as well. Now, as an indispensable tool for both individuals and professionals, it has enabled data and information to be uploaded and made available to any authorized user to process or supplement them.

Direct purchases from online stores started internationally almost three decades ago, however, in Greece they started after 2001 due to the delayed spread of the "fast internet". Fortunately the use of euro, as stronger currency than dollar, made purchases from third countries more attractive and more often. In addition, China has emerged as a major economic player in world trade over the years.

Figure 19: Global Retail e-Commerce Sales

Online shopping platforms from third countries such as China, Asia or America (ebay, amazon, aliexpress, etc.) should begin to adapt and incorporate the European customs duties per country in addition to shipping costs, where the products are intended. From now on, online shopping platforms are legally responsible for remitting the distance selling charges that they facilitate. This is because, so far, most of the goods imported to the EU from distance sales, pass through

Europe with various tricks without the corresponding taxes, resulting in unfair competition for European and Greek companies and services[33].

Thus not only it is ensured high quality of the products, which meets the specifications set by the companies or the individuals, but also it is a big step in the fight against smuggling and Illegal Products Trafficking.

Nevertheless the fight against smuggling cannot stop to the legal responsibility of a purchase department which belongs to a shopping online platform. ICTs are able to provide customs authorities with controlling tools and a sufficient number of items such as scanning devices or barcode readers in order to ensure safe and legitimate transit services.

4.1. Smuggling - Historical review and relevant legislation

People drawn by the whirl of consumerism and the sovereign tendency to show others a comfortable and full of fun lifestyle are unable to prioritize correctly the real values of life. They are therefore indifferent to their personal spiritual and moral cultivation and are looking for fast and non-laborious ways of saving money, as in a paradox in modern society labor is treated with contempt. So, a lot of people are finally resorting to criminal or illegal acts, as they soon find that there are no "easy" ways to obtain money.

Crime is defined as the set of criminal offenses that are particularly condemned by the laws (national or international). Crime is determined locally (region, country), time, size, structure (species - significance) and evolution (increase, decrease). Key elements identifying the above are most commonly police statistics as well as similar criminal courts or other public administrations.

Nonetheless, the crime resulting from the above statistics is the so-called "obvious crime", as opposed to the "hidden or dark crime", which clearly exists but is not recorded for various reasons, such as cases that are not revealed or not denounced. The extent of crime in one country is calculated on the basis of the crime index[34].

The crime committed and related to the customs authorities is smuggling. In general, smuggling is characterized by any form of attempted trade in violation of existing legislation, such

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[33] http://www.newmoney.gr/palmos-oikonomias/343282-sta-teloneia-metaferetai-o-polemos-gia-to-ilektroniko-emporio

[34] https://el.wikipedia.org/wiki/Εγκληματικότητα

circumvention, with the ultimate goal of avoiding payment of duties. In practice, it is cheating on the authorities of a country or state when importing or exporting goods.

Smuggling occurs mainly in goods subject to heavy or excise duties, to any type of monopoly, if any, to antiquities as well as to prohibited marketing or importation. Such as, for example, luxury goods, jewelry, beverages, furs, cars, tobacco, cigarettes, oil, etc., or prohibited free-market items such as weapons, drugs, explosives, etc.

In accordance with the Customs Code, smuggling is the import or export from the state border of goods subject to import duty or customs duty or tax or other entitlement without a written authorization of the Customs Authority or even carried out in a place and time other than specified. Similarly, any action aimed at depriving the state of duties, taxes, on imported goods or goods exported for that purpose, even if they have still been collected at a place other than that provided for in the relevant law.

Figure 20: Customs Code

4.1.1. Cases of smuggling[35]

Under the existing legislation of most states, smuggling cases are:

1. The import or export of prohibited articles, as well as of any other goods without customs control.
2. Disposal of imported articles for special use in other uses without authorization.
3. Replacement of imported goods free of charge (albeit temporarily) with other goods.
4. Any shortage of goods placed in warehouses for the purpose of depriving the state's rights.
5. The presence of goods on a foreign ship which has arrived without force majeure at a port or bay not permitted to carry out a commercial operation. Similarly for airplanes and airports.
6. The existence of goods not present on the official carrying statement of the ship or aircraft or other means of transport.

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[35] https://portal.gsis.gr/portal/page/portal/ICISnet/

7. The lack of goods alleged to have been loaded on an external or domestic ship or other means of transport at the time of departure.
8. Ownership of various goods provided for different pieces of legislation.
9. The purchase, sale and possession of goods imported or consumed in a manner constituting the offense of smuggling.

4.1.2. The offense of smuggling[36]

The basic term of smuggling is the fraudulent option, in order to deprive the legitimate rights of the State. Generally in customs legislation fraud is presumed to be inherent in the way in which certain provisions are infringed or, more simply, it is sufficient to violate the relevant laws on the establishment of smuggling. Therefore, in the above nine cases of smuggling, the judges have no room for seeking evidence of deception but are presumed to be legally

The elements of the offense of smuggling are distinguished in subjective and objective.

1. Subjectively: it is the intention of the offender to deprive the state of its legitimate rights by attempting to avoid paying the corresponding duties or to import or export by definition prohibited species.
2. Objectively: it is the actual manifestation of the above intention, that is, an attempted act which conflicts with the legislation in force.

It should be noted that any breach of customs legislation does not necessarily constitute smuggling, as is the case of the opposite. When, for example, a violation of customs laws is detected, for whatever reason, where there is clearly no deceit, then a customs offense is attested to the offender by the competent authority, which only gives the perpetrator a fine. The customs offense differs from the smuggling offense that results in additional, seizures and criminal prosecution of the offender.

4.1.3. Customs Code[37]

The Customs Code refers to the set of codified laws and regulations concerning customs and customs clearance of goods, control of the legal process of imports and exports, prosecution

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[36] https://el.wikipedia.org/wiki/Λαθρεμπόριο
[37] https://el.wikipedia.org/wiki/Τελωνειακός_Κώδικας

of offenses and smuggling, as well as the responsibilities - responsibilities of the accredited control bodies, which constitute the customs authorities of each country.

The Greek Customs Code was set up in 1918 and entered into force by law Nr. 1165 on 17 March 1918 under the title "About the Customs Code", as subsequently amended by a series of separate laws and decrees, parts of which are still in force. The Law - Code included 144 articles in 18 chapters in which all the customs legislation had been enacted so far.

It is worth mentioning that, with the adoption of the aforementioned law, which was produced by the director of indirect taxes and monopolies, N. G. Kofinas achieved a feat. The relevant previous law of king Otto, "Customs offices of the state" was in force since 19 March 1843. This law had been drawn up 75 years ago, at a time when both shipping and trade were in very different conditions, and state boundaries had already changed, as were ports and transport in general. Together with that, was abolished and the whole clarifying arrangements, that were issued after each differentiation and that were different from place to place, resulting even their monitoring to be from very difficult to impossible.

Then there was another administrative codification of the Greek customs provisions, which was occurred in 1968. Then, in 1992, the Regulation of the European Community 2913/1992, known as the Community Customs Code, came into force, followed by "**Customs Connection**", older institutions that were in force were abolished while most were modernized, those mainly maintained for trade with countries and places outside the European Union.

After the above, Greece, as well as all every other E.U. member satisfies the settings, the needs and the arrangement of the European Commission's **Customs Union**, which include various items such as the strategic plan of e-customs.

4.2. ICT contribution to customs[38]

The vision of the Customs Service that originates from the Customs Union strategic plan is to create the "Customs of the future". More specifically with regards to the ICT technology:

1. **E-customs** offer new, faster and safer e-business services in a modern electronic environment for Customs and Trade.

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[38] https://portal.gsis.gr/portal/page/portal/ICISnet/

2. Ensure the constant improvement of the services provided to citizens by combining the sensitivity to the needs of society by safeguarding the financial interests.

3. Create a climate of mutual trust between the Administration and the citizens.

4. Enhance and shield transparency by automating the processes.

5. Reduce the pathogens of trade by fighting phenomena that lead to deflections, posing risks to the health and safety of citizens and causing economic and legitimate trade shocks.

The progress in the financial sector have made necessary to modernize the Customs Service and increase its efficiency so that it can respond to new challenges. Its role in the field of trade is undoubtedly important, not only at national but also at global level. It is important to point out that globalization of trade promises economic growth and prosperity, but first of all there is a need to ensure transparency, equal treatment of economic operators in order to avoid distortion of the conditions of fair competition and the controls accomplishment without hindering the smooth movement of goods.

The need of an information system, application or software that will provide full coverage of all the above mentioned requirements, for all the stakeholders, is mandatory. At the moment in Greece the web portal of ICISNet technically offers a "single window" gateway to all the more often asked services:

1. Electronic submission and production of all customs documents
2. Electronic payment of all customs debts and taxes
3. Electronic and continuous information of the process
4. Users authentication
5. High system availability with redundancy
6. Data encryption
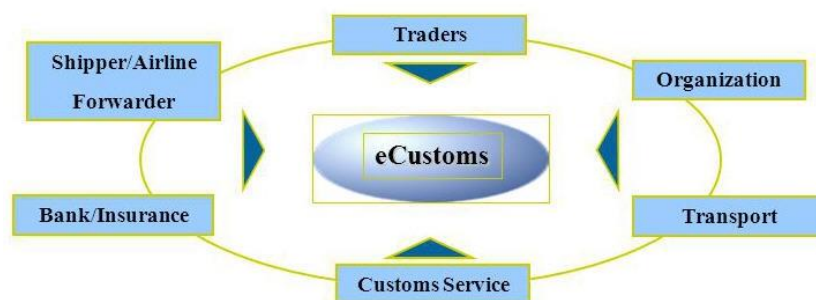7. Interconnection with other customs information systems

Figure 21: E-Customs

Figure 22: Single Window Gateway

The existed technological equipment, concentrating its efforts on facilitating goods, can also offer safe transit and specialized security controls. In particular, whatever it relates to the illegal movement of goods in vehicles or boxes or on persons when entering and leaving the Greek customs territory, which at the same time constitutes a Community customs territory, can be scanned with the help of modern devices, in order to detect illegal content.

More or less the devices used internationally in customs and generally at the entry points of a country, are X-ray scanners which ensure that the inside materials and goods are legal according to the legislation and at the same time are on the submitted statement transit lists.

4.2.1. Customs scanners – detectors devices

The process of making the usual controls of goods in vehicles or boxes or on persons when entering and leaving the customs territory is different from country to country. For example, especially after the 11th of September the security measures in USA are more advanced and more thoroughly[39].

Country or state requirements define the use of advanced X-ray detectors for trucks or heavy containers up to human bodies. In the 21st century technological development has presented modern content control systems with the use of computers. Those computers use information Sys-

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[39] https://www.theverge.com/2015/3/19/8259591/us-customs-iris-scanners-airports-border-fingerprint-biometric

tems which are enable fast and easy interconnection to databases making the control procedure precise and quite brief.

Below are some indicative ways (devices and procedures) which, with their capabilities, make their presence more than imperative.

4.2.1.1.   Full body scanner

Body scanners were initially used on the London Under-ground in 2006, after the bombing of the London Metro in July 2005. Later on October 2008, they have been tested for 6 weeks at Melbourne Airport in Australia, where volunteer passengers were required to go through the control system.

The body scanner reveals every point of the human body as though it is naked, passing through the clothes but reflecting the human skin, presenting its full shape. It even reveals medical inter-ventions. The face appears cloudy, but becomes easily revealed. The system uses low energy X-rays or radio frequencies that reflect the surface of human skin.

Figure 23: Body Scanners

According to statements from US authorities, who allowed the system to be introduced to US airports, the images are not stored, but as the human body passes, the "clear" sign, lights up and the image disappears after the control[40].
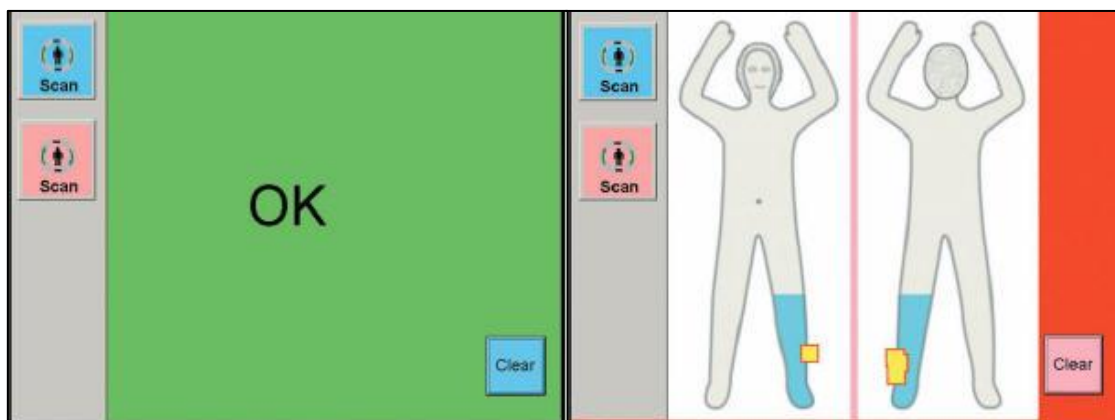

Figure 24: Display with No Alarm - with Alarm

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[40] http://www.elenaspiropoulou.gr/node/65

In this way, the full body scanner detects objects in a person's body for safety reasons, without physical removal of clothes or physical contact[41].

4.2.1.2. Light cargo / Air cargo X-ray screening systems[42][43]

In 2013, air freight traffic between the EU and the US was more than one million tones, which accounted for more than 20% of all outgoing cargo from the EU. For this reason, the need for all international EU airports to have X-ray cargo screening equipment that meets all TSA (Transportation Security Administration) and ECAC's (European Civil Aviation Conference) standards and latest security regulations, has become imperative. The combat against prohibited goods between countries during world transport, while at the same time, the guarantee of national security against terrorist threats, have become obligation. Also, due to the great competition and the demands of the consumers, it is imperative that the speed and accuracy of the checked cargo remain high.

Figure 25: X-ray Scanners

Recently EU authorities have reached to an agreement with TSA and now the second recognize the air cargo control process in line with international standards. With this agreement EU meet their requirements, eliminating the possible influence of safety and the need to use different selection procedures based on the destination of the cargo. The cargo or the air cargo industry can now carry goods across the 27 EU Member States, the US and Switzerland, with a single safety directive. The agreement also has significant potential benefits for freight agents and air freight transport, in particular reducing transport costs and contributing to the development of faster timetables. With a standard for cover-

Figure 26: Baggage Control

41 https://en.wikipedia.org/wiki/Full_body_scanner
42 http://www.securitymanager.gr/sub_site/arxeio/contents_article/thema_50_1.php
43 http://www.sds.l-3com.com/products/xray_systems.htm

age (at least when it comes to US and EU transfers), these companies can now focus on how to effectively meet security control requirements without compromising performance.

4.2.1.3. Heavy cargo X-ray screening systems[44]

Customs control intends to mitigate security threats and incidents of cargo misdeclaration. Harmful products (drugs, guns, etc.) can be placed inside a container with legitimate cargo that can be used to mask the stowed one. The issue of using heavy cargo X-ray screening systems increased the cost of compliance. In addition, the facts ever since the advent of 'heightened security' – post 9/11 seems to remain a 'challenge' as trade development is necessary for the world economy.

X-ray cargo screening security systems for containers or vehicles have emerged quickly because of the solutions they offer to the combat against smuggling. The contraband interdiction, as it has been already mentioned, is fast becoming a common feature in ports throughout the world. In the past, these systems were adaptations of industrial inspection equipment, today's x-ray inspection systems are specially tailored for the inspection of sea containers, trucks, and rail cars within small confined areas.

Figure 27: Heavy Cargo X-Ray Screening System

A range of X-Ray Screening solutions are available. The modern systems allow the drivers or the passengers not leaving the vehicle. While the vehicle is driven through the system, two quite tall side pillars scan the cargo with precision. This process provides a high throughput of vehicles typically around 150 per hour, which means that it is not only valid but fast as well.

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[44] https://mpoverello.com

The existing software detects the prohibited items and the "alert" sign, lights up. The detection software compares and recognizes the contraband from prior data input, which are available to be customized according to the legislation. This system is appropriate to minimize the cost of the supply chain, to evaluate customs procedures efficiently and to have a history of illegality reports[45].
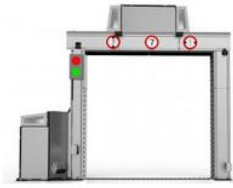

Figure 28: Cargo Screening Security System

4.3. Suggested interventions in existing services

The intention of the above mentioned devices is to provide a detailed presentation, with printouts and reports, of the content of the cargos. The fact is that all these methods can only find out the illegal items and not the sender of those. Certainly, the procedures define, the existence of a detail record of the sender, but there is nothing to identify the sender in case of smuggling.

This means that if someone deliberately pretends to be someone else, transport companies, by failing to identify the sender in any way, receive the parcel as normal and forward it for transportation to its destination.

As described previously, the screening security systems are able to detect the forbidden material and in addition to their basic procedures, can define the fines or let the officers to proceed with seizure. Seizure has the effect of preventing tax offenses but does not combat the root cause.

Bellow shall follow specific ways that generally connect the sender with his dispatched parcel or cargo. These ways carried out electronically, quickly and effortlessly.

4.3.1. Electronic identification systems

A lot of companies have developed electronic identification systems software to help justice to handle the tasks that undertake and especially in cases of violence and crime. However, none of them has developed software that is centralized only in customs control management.

Therefore, anyone who can manipulate his / her own identity or intercept someone else has the ability to send a parcel without being recognized.

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[45] https://www.wi-ltd.com/solution/vehicle-x-ray-screening/

At the moment, a lot of electronic identification systems can be used at the service of customs, for the needs of this study; the following will be analyzed and described:

1. Identification by biometric methods (Fingerprint, Facial Recognition).
2. ID scanner and ID reader for identity cards.
3. Bank account number verification

4.3.1.1. Identification by biometric methods

The identification process using biometric technology systems is generally recognized as one of the safest methods of identifying the logical subject by an information system. This method is based on the physical characteristics of the human body. Fingerprints, hand or face geometry, eye iris or retina, voice and DNA are mostly the main evidence in the authentication process.

This authentication technology is based on unambiguous features of the logical subject and hardly fails. That is why it was initially designed and developed by government agencies to be implemented in applications that control access to critical facilities for national security.

In the early stages of implementation it may has experienced some problems, but technological progress has surpassed them and now this is an integral part of the security of several of the world's largest secret services. There is also a thought for their possible placement at the Greek Ministry of Defense to protect top secret operation plans.

Subject's authentication using fingerprints is one of the most common identification techniques. The first automated method was used in the US in the 1960s to clear up crimes. The next step is to collect the sample. Traditional methods use ink to imprint the sample on paper and later on a scanner is used to digitize the sample. Modern systems include readers, single or composite

Figure 29: Fingerprint Authentication Device

receiving / sensor devices. Eventually, the identification is achieved by using a combined algorithm (mathematical equation), which on the basis of specific biometric information produces a single result[46].

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[46] https://www.dhs.gov/biometrics

With regard to its use in the customs control procedures, this technology can play the most important role, which is no more than identifying the sender at the moment of giving the package to the transport company.

The employee who is called to receive the parcel to be dispatched will have with him a fingerprint authentication device, for the sender. The latter will agree to give a sample of his fingerprints together with his full ID details, which can be checked on line, at the same time by the police authorities, through a large database. If the sample turns out to be true to the name of the sender, then the green light for the receipt of the parcel, by the employee, lights up and the transaction takes place. If the specimen is not vetted, then the employee refuses to pick up the package and informs the customer kindly, that he has to go to the company, by himself, in order to proceed the shipment. Back to the company with the simultaneous notification to the police authorities, there will be a control team in order to check the sender's data.

Moreover, a similar situation can be happened by using facial recognition. In this case, in order the sample to be taken, the user stands at a specific distance from the camera and looks toward the camera. Initially, the software undertakes to locate the face in the photograph and then the facial features (eg the position of the eyes, the nose, the mouth, and the distance between them), finally all these characteristics are exported to a database, where they are linked to the owner and stored. Face Detection Systems are especially suited to control user access to areas with high-level security systems.

In recent years, the accuracy of facial recognition systems has increased significantly, but it lags behind other methods. The main disadvantages are first of all the difficulty to distinguish between people with a high degree of similarity, like twins. Secondly, the accuracy of the system is influenced by exogenous (lighting) and other factors (age, wounds, hair change, glasses). In addition, face recognition systems often give rise to reactions as fingerprinting can take place without the subject's consent. Finally, in cases where the identification system is not assisted by security staff, the system is vulnerable to being deceived (photo demonstration). In the context of a life-sensing mechanism, the user is usually asked to alter some of his face's features (eye closure, mouth movement, grimaces). Alternatively, a second camera may be used to photograph the subject's profile.

By associating the process with the sender's recognition, the employee who receives the packet will take a sender's photo and send it for storage and check if the contents of the package prove to be illegal in the customs.

According to the above mentioned biometric ways, the sender will be identified and registered with his / her full details of any irregularity arising regarding the contents of the package. If the e-customs, during the parcel inspection, discover with their scanning systems some illegal content, then in addition to committing the cargo, they will inform the authorities of the arrest of a particular person who is

Figure 30: Facial Recognition

responsible for the action. Something that so far could not be happened, with the same speed or accuracy.

The fact that photographs or fingerprints are proof of subject's identification the organizations or the companies that manage them, should be required to obtain human consent in accordance with the new European Union Regulation 2016/679 for the collection , processing and managing personal data of any kind[47].

4.3.1.2. Electronic identities

Regulation 910/2014 sets out European rules on confidence services and e-services. With the implementation of this regulation, a legal framework has been created for electronic signatures, electronic seals, electronic time stamps, electronic documents, online registration of delivery services and, of course, electronic identities, which ensure the authenticity of electronic transactions.

With this regulation as a guide, countries can be protected from the illegal distribution of goods. Therefore, in order for an electronic document and its cargo to be transported and trusted, the electronic identity of the sender and possibly the recipient should be established. By extending the wide use of the regulation, the overall objective is to enhance confidence, exploit e-identification and finally, to promote the easy, fast, seamless cross-border transactions and trust services.

Figure 31: E-IDAS

[47] http://www.eugdpr.org

Electronic identification can easily be happened, by using the new smart digital identities (cards that are worn in a wallet as a common credit card) that will contain the Public and Private keys. These cards may be used in addition to an Identity Card and optionally as an entrance card, apparently displayed by staff, recording access to areas, computers or printers.

With the implementation of eIDAS, digital rights, which are already a big part of people's lives today, will be an integral part of the everyday life of "netizens" (Internet citizens). In this way, a citizen will be able to support the obvious, that it applies to the analogue world (human, political, etc.) has exactly the same power in the digital world. Part of this ongoing digitization process of the analogue world is all the processes that exist and occur in everyday life. Public services, trade, cross-border transactions and everything in the physical world are slowly getting their electronic / digital counterparts.

By connecting the process with the sender's recognition, the employee who receives the packet will take the sender's smart ID card and scan it for storage and check if the contents of the package prove to be illegal in the customs. Electronic Identification (eID) is one of the tools to ensure electronic and non-electronic transactions in a safer way. Secure electronic identification is an important catalyst for data protection and the prevention of online fraud.

Figure 32: IDs Card Reader

4.3.1.3. Identification by a trusted provider

With the gradual development of the world economy and the banking system, the banks recognized the need for access to accurate economic behavior data, since it became clear that such information contributes to the protection of credit and the reduction of bad debts for the benefit of the banking system, the banks themselves, the traders and, ultimately, the national economies. To this end, almost all of the banks have developed and run a reliable financial data sheet for their clients.

Banks keep a record of economic behavior data including identity, tax records, residence addresses (permanent and temporary), social security records, working environment. Only with all these data can someone become a client of a bank.

Figure 33: Financial Data Sheet

If such a system of compulsory bank transaction, by the transport companies is adopted, then all shippers will be listed in the bank's clientele. This means that in the case of an undue content in the cargo, the e-customs will have online access to the bank's data for the sender's search. The only problem that may arise is the case when the package states that the shipping costs (including taxes) will be paid by the recipient. In these cases, carriers should insist on exchanging data through a bank system and printing of a zero-valued invoice.

Finally, it should be noted that the use of encrypted currency, such as bitcoins for financial transactions, cannot be accepted. The international banking system cannot be sure of its origin, nor of its owner. That's why all the financial transactions should be conducted based on the recognized official national currency.

5.   Conclusions

Today there is a great choice of different technologies and software / hardware may be used as it is required. Many software users prefer computer tools with much lower setup time. They want to forget about installation, implementation, training and maintenance efforts.

Since the information systems are properly installed and used with the cooperation of the users, the benefit of national economies is quite large. The increase of profitability will be felt in a very short time depending on the management's willingness.

It is true that many national authorities don't feel confident to adopt Information and Communication Technologies (ICT), as they are reluctant to develop new software to implement their business. They do not even want to discuss any plan to convert them into digital in the future. Indeed, this negative attitude towards Information and Communication Technologies still exists, even if they have to follow European regulations. Some countries, including Greece, are fined with enormous fines because they do not apply the European regulations.

However, the adoption of modern IT systems by customs authorities combined with the cooperation of the transportation companies, provide with valid, up-to-date and sufficient data of the cargo, which is an huge advantage for them. Joint collaboration between all parties not only assists in better understanding of the broader supply chain landscape but can also contribute to positive measures on the 'ease of doing business'.

The implementation of e-Customs is able not only to reduce the operating costs, but also simplify and automate their processes. Having reduced its operating costs, a public services authority can reduce the taxes charged to its customers. Reduced taxes coupled with increased service quality make the port services very competitive in a port market environment where competitors continue to move forward and the less competitive remain behind and are at risk of extinction.

Meanwhile, the main objective of electronic customs, which is the fight against smuggling, is not fully achieved. The solutions currently offered; end up in the encroachment of illegal content and not always on the acknowledgment of the sender. The fact is that the authorities are seizing the content, but they do not, always, arrest the senders.

For this reason, in the present study, there is a talk about implementing measures that electronic customs can implement on the one hand, and on the other hand the authorities will achieve something that will lead to secure cross-border transactions, with speed, trust and profit.

The identification process using biometric technology systems is generally recognized as one of the safest methods of identifying the logical subject by an information system. Electronic identities are almost required by the eIDAS regulation and identification by a trusted provider, such as banks, can make the transactions fast and safe for every stakeholder.

E-Customs, together with some of the proposed interventions or a combination of these, can successfully deal with smuggling and can lead the national economies to growth. What remains to do is to implement the measures even if they are in a trial mode, and check their results, in order to make the necessary corrections in the future.

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