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**THE IMPLEMENTATION OF ICTs IN THE
MANAGEMENT OF FOREIGN TRADE IN
ECUADOR (2010 – 2020)**

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DEDICATION

I dedicate this work to future internationalists who are willing to generate a change in the research that is currently being done in Ecuador, thus generating real support that will be used for the country's good.

To my parents, who have been the fundamental support for my academic education throughout my life. To my uncle Miguel, who has appreciated me as a son and welcomed me into his home throughout my university career. To the people who have supported me without asking for anything in return and have motivated me, giving me the strength to continue being a better person.

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I also thank my family for believing in me, for believing in the capabilities I can have, and for being my support for the decisions I have made because life is a learning process that from time to time anyone can lose their way, but from everything I have learned I have been able to recognize my mistakes and move forward.

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La implementación de las TIC en el manejo del comercio exterior en el Ecuador (2010 – 2020)

Resumen

El conocimiento y manejo de las tecnologías de la información y comunicación resulta fundamental hoy en día para los procesos y trámites logísticos que deben realizar los operadores de comercio exterior. En Ecuador, la utilización de las TIC resulta fundamental para conocer cómo desde la actualización desde el año 2010 al sistema Ecuapass, los tramites logísticos y aduaneros han sufrido un cambio fundamental. Es por lo que, además de la herramienta mencionada anteriormente, resulta fundamental indagar sobre el uso de otras que también estén relacionadas al mundo del comercio exterior, la cual estará contrastada por la herramienta SeaLand – Maerks. La metodología aplicada fue la Goal – question – metric, que mediante dos entrevistas semiestructuradas a operadores de comercio exterior se recopiló la información necesaria para determinar la utilidad de dichas herramientas, tanto pública como privada, en el contexto del comercio exterior en el Ecuador y su uso en el día a día. Este análisis destaca como resultados la utilización de software obligatorio para realizar las operaciones de comercio exterior en el país, siendo Ecuapass la herramienta predilecta. No obstante, el uso de software adicional, sumado al interés por la capacitación en integración de otras herramientas son necesarios para estandarizar los procesos logísticos.

Palabras clave

- Comercio exterior, logística, aduana, operadores de comercio exterior

The implementation of ICTs in the management of foreign trade in Ecuador (2010 – 2020)

Abstract

The knowledge and management of information and communication technologies are essential today for the logistical processes and procedures that foreign trade operators must carry out. In Ecuador, the use of ICTs is essential to understand how, since the Ecuapass system was updated in 2010, logistics and customs procedures have undergone a fundamental change. Therefore, in addition to this tool, it is essential to investigate the use of others that are also related to the world of foreign trade, which will be contrasted by the SeaLand - Maerks tool. The methodology applied was Goal - question - metric, which involved two semi-structured interviews with foreign trade operators, to gather the necessary information to determine the usefulness of these tools, both in the private and public sectors, in foreign trade contexts in Ecuador and their daily use. The results of this analysis highlight the use of mandatory software to carry out foreign trade operations in the country, with Ecuapass as the tool of choice. However, the use of additional software, together with the interest in training in the integration of other tools, is necessary to standardize logistics processes.

Keywords

- **Foreign trade, logistics, customs, foreign trade operators**

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1. Introduction

For many years, Ecuador's foreign trade has evolved through the adoption of technological standards that make it possible to overcome communication barriers to bring buyers and sellers together through digital and electronic means that facilitate procedures and formalities (Luna Alvarez, 2016). Although the Ecuadorian government has implemented some digital tools to create simpler ways of operating and connecting with foreign trade operators worldwide (Ordoñez, 2012), these are not always available for those who want to make use of global services.

For now, there are specific tools for foreign trade management at both, global and local levels. It can be mentioned the access to foreign trade data repositories such as TRADE MAP, Banco Central del Ecuador, or World Bank; as well as specific programs or applications such as Ecuapass, SeaLand – Maersk, etc. These tools are focused on creating a complementary mechanism for Foreign Trade Operators (OCE), as well as facilitating data collection and customs management.

When talking about Trade Map, it is necessary to understand that it was created to analyze trade flows on the web, starting from databases of national authorities from more than 225 countries and using the harmonized system of international trade, which is regulated by the World Trade Organization (WTO) up to the 6 – digit level for tariff items (Pizzini, F. 2017). In Ecuador, the official tool to have macroeconomic data are the trade balance indicators provided by the Banco Central del Ecuador, which through its official website publishes monthly both export and import indexes that TRADE MAP takes as a reference for its database. TradeMap, 2022. It is important to mention that the different means of connecting economic data information of the countries are often carried out by international organizations such as the United Nations on its UN Comtrade Database page where you can freely access to obtain world trade statistics and TRADE MAP takes as reference data (TradeMap, 2022).

Customs modernization processes are also taking place in other countries in the region. An example is the Mexican Foreign Trade Unique Window (VUCEM), which was developed to facilitate foreign trade procedures, thus creating a mechanism for the processing of documents as brief as possible through a single point of entry. The approach of this tool was to allow standardized information on customs processes to enter the single entity through digital means (Vásquez, 2022).

Specifically, Ecuador adopted the use of Ecuapass as the official software for government management of foreign trade to provide better efficiency and transparency in customs operations, thus facilitating trade and customs control (Aduana del Ecuador, 2022).

Among the most important commercial application is the Ecuapass as a mandatory system for customs operations, the Transport Management and Logistic Systems (TMS) for private use that is acquired by Foreign Trade Operators, and the systems used by shipping companies to issue B/Ls and track merchandise (Páliz, 2017).

Although Ecuapass is the mandatory software to make transactions, there is a need to investigate the use of additional software that facilitates the administrative, logistical, and operational management of foreign trade processes. It seeks to raise a technological framework that shows the digital and electronic applications that have been used for the management of foreign trade from 2010 to 2020 in Ecuador until conduct a case study applies to foreign trade operators to generate indicators that reflect the need, efficiency, and impact of using various software resources for the management of foreign trade.

1.1 Objectives

1.1.1 General Objective

Describe how Ecuador has been adapting technological tools to achieve efficient foreign trade in an increasingly technological world since 2010.

1.1.2 Specific objectives

Explain historically, since 2010, the country's approach to such technological media and its development over the years.

To describe how the Ecuadorian state has been offering to the population access to these tools over the years.

Examine how these specific tools have been used during the foreign trade processes by OCEs.

Evaluate the most important and popular tools used by companies in Ecuador, highlighting their benefits and improvements.

1.2 Theoretical Framework

Companies and users must make use of ICT to achieve connections with the rest of the world and reach internationalization. They must make use of these technological tools that are linked to electronic commerce and include its derivatives, where the case study taken in this investigation will be decisive to strengthen its feasibility on daily use. In other words, its importance offers an increase in the efficiency of foreign trade operators that use specialized software to improve international negotiation processes. (Rodríguez Cabrera N, 2019).

Before the arrival of digital media in Ecuador as a standard in foreign trade, the country already had an infrastructure of ports and airports that enabled it to meet the requirements of the World Trade Organization. The city of Guayaquil and Quito became the main centers of trade with the world. However, the country's productive metrics could not remain viable for the years to come because Ecuador did not diversify the primary exports that have always characterized the country into products such as bananas, cocoa, oil, tuna, etc. Thus, Ecuador had to learn to use digital media to take advantage of its benefits until it not only diversified its proposal but also was at the standards of the services offered by the new era. In 2002, the National Congress of Ecuador approved the law of electronic commerce, Electronic Signatures, and Data Messages, which establishes the rules governing commercial transactions on the Internet and consists of a total of 64 articles (Velín & Medina, 2011).

Therefore, the use of Information and Communication Technologies (ICT) Has become a fundamental part of the operations of public and private companies to carry out their activities. Thanks to these technologies, the processing and management of negotiations has been made agile.

There is a change in the policies applied to foreign trade that seeks to promote growth through the diversification of Ecuador's productive matrix. Likewise, there has been evidence of a high application of protectionist measures to counteract the exchange rate policies applied by neighboring countries (Alvarado Guzmán, 2019). Nevertheless, a new import substitution model has been implemented starting from the emerging industrialization and industry argument in a legal regulatory framework for Production, Investment, and Trade that aims to consolidate solid foundations for fair, equitable, inclusive, and framed long-term strategic policies term trade. The economic and technological development in imports is currently carrying out commercial and business transactions with the most distant places on the planet (Cano & Baena Rojas, 2015).

Following IDB recommendations and based on the need to modernize the customs information system in Ecuador, on February 22, 2010, the current Servicio Nacional de Aduana del Ecuador (SENAE) (National Customs Service of Ecuador) and the Korea Customs Service, with the approval of the President of the Republic of Ecuador, Economist Rafael Correa, signed the framework cooperation agreement for the establishment of the Electronic Customs Clearance System in the Republic of Ecuador (Velín & Medina, 2011).

In this way, the integrated system Ecuapass became a tool to facilitate the identification of these trade agreements. This function is performed using liberatory codes and/or numerical codes assigned by the SENAE, which are intended to be applied in the Customs Import Declaration (DAI), and thus be able to benefit from franchises or exemptions. The private sector points out that even though the application of these numerical codes will allow for greater agility in customs clearance and their correct use will avoid future administrative claims. The DAI is not the only one to be applied in the customs declaration, it is the only one that can be applied in the customs declaration. The private sector highlights that although the opening of Ecuador's trade policy has been brewing since 2017 with the change of government, the effects of this change are not yet perceived on a large scale since the process of design, implementation of the policy, and evaluation takes time; however, they claim that the competitiveness and superior

internationalization that competitors maintain internationally is due to the first trade opening that other countries presented, where trade agreements with strategic partners have been key to bring their products to international markets. and the attraction of foreign direct investment, long before Ecuador (Mtsweni et al., 2020)

It should be noted that the historical evolution of foreign trade in Ecuador has been slow but encouraging in terms of the use of digital media, both under strict state control, as well as a private enterprise that has the Ecuapass tool and its software for customs and logistics operations; this has been a success, but many of the protectionist measures discourage them from continuing to expand their digital media channels to an increasingly interconnected world. It is even stated that Ecuador's trade agreements are important for connectivity through ICTs with other countries in the region to be beneficial it is necessary to consider agreements such as the Andean Community of Nations (CAN) that are important for ECAs to be able to streamline intraregional customs procedures (Loayza, 2016). In terms of customs, there is a need to improve the flexibility of imports and exports since, although the Ecuapass system offers a better speeding up time in this type of procedure, improvements in the nationalization of goods must still be implemented to increase the use of this electronic channel.

According to Cano and Baena (2015), there are ICT tools for different purposes in the business world, which are divided into two approaches: the communicational approach which is those used for communications through emails, social networks, and mobile telephony, and internet, etc. But there is also the information management approach, which instead encompasses what are resource planning systems, specialized software for word processing, spreadsheets, scanning, and image editing, enterprise resource planning, etc. (Cano & Baena, 2015). The two approaches, which are useful for foreign trade, will be considered to analyze the tools of use for OCEs.

Thanks to the use of these tools, the structure of computer systems that are present for both public and private companies is of utmost importance from the perspective of improved relations. Coupled with the need to train staff to use them and the disadvantages and advantages that the use of these technologies bring to foreign trade processes, there is a need to identify the multiple channels in the experience of staff and infrastructure of companies, thus coming to determine their correct use (Cano & Baena, 2016).

In terms of logistics, it is essential to understand that the use of ICTs for improving processes in the supply chain has been important due to the constant evolutionary process that encompasses the improvement of information and communication systems, as well as the diversification of the supply of logistics and transportation services through digital channels and making use of private logistics platforms (Paola & Pablo, 2009). Logistics services that play a fundamental role in international trade will be considered for use as a trade facilitation tool.

In the same way, the structural change that involves the implementation of ICT is created based on the different business solutions that exist, since the factors to compete successfully in logistics tasks are based on the efficiency of the use of ICT techniques and methods of operation (Fonseca Pinto, 2013). It is not the same for a logistics company to make use of software that ten years ago was revolutionary but over time it has lost competitiveness with other software that is more recent and is not updated.

For Ecuador, SENA E is the official body in charge of controlling all customs and logistics operations that take place in the national territory, thus being the public company that must be at the forefront in terms of processing of this nature. Therefore, based on the regulations expressed by the Foreign Trade Committee (COMEX), the current regulations must always be updated to reflect the challenges of globalization (Arévalo et al., 2016).

Another key point to be described is the rapid increase in exports and imports that have taken place at the country level during the last few years. According to Velín & Medina, (2018), imports of goods have increased dramatically since 2010, which shows that the country must continue implementing new mechanisms that help streamline the consolidation processes of goods entering and leaving Ecuador (Velín & Medina, 2011).

Regarding of the diversification of exports and imports of Ecuador's goods and services, it is necessary to understand that the modernization processes, both in reforms to current laws and in restructuring processes of public institutions such as SENA E, has helped the Foreign Trade Operators

(OCE) to prepare themselves to value the management of the specific tools they need to understand the competencies of both tools to help e-commerce and the feasibility of using them to perform their functions correctly (Luna Alvarez, 2016).

Along with the technologies implemented by the public sector and of mandatory use for OCEs in export and import procedures, it is also necessary to analyze the other tools that help companies to get to use in other aspects. For example, digital channels are currently used for the promotion and sale of goods and services that Ecuadorian companies use in the so-called e-commerce, which has the necessary advantages to be even more efficient than traditional trade by representing less costly transactions and the eliminating the barrier of distance between users in the world (Uclés et al., 2016). Therefore, it is important to know the diversification that ICTs have created in terms of foreign trade facilitation tools.

Thus, under this logic, the importance of ICTs for companies and OCEs are fundamental to understand the modernization of foreign trade at a global level. Therefore, OCEs consider them as essential tools that are already part of the corporate strategies of companies oriented to the international logistics of goods and services. Knowledge of these tools is fundamental to include that the necessity for research and development of these tools will help to create a link of evolution that is standardized and credible in the market of the company (Cano & Baena Rojas, 2015).

2. Literature Review

ICT as tools for the processing and management of logistics and customs processes are necessary to respond to the need to be updated to the challenges of a globalized and interconnected world. It is essential to know that the incorporation of these tools for innovation, research and development in logistics processes are carried out through technological means, isolating that productivity and competitiveness must be based on these modern standards so that the satisfaction of users and customers is at the height of its competitors (Ballesteros, 2009).

The dynamism that is experienced today due to the use of electronic tools in its different channels is applied to the relevance that governments and their institutions give to its facilitation. For Muñoz (2019), this means that the socio-technical changes related to the development of foreign trade are paramount for companies to have an impact of recognition and participation in the implementation of new technologies and that distinguishes different elements that include their adoption and implementation from micro, and macro levels (Muñoz, 2019).

In addition to this, political and business efforts to keep pace with the demands of globalization have imposed a new standard of growth in the short, medium, and long term to have a developmental effect on exports and imports using technologies that show the modernity with which a country is positioned in international logistics. In addition, public-private alliances play a fundamental role in the adoption of systems that facilitate the user to know the benefits of the implementation of such technologies in foreign trade operations (María et al., n.d.).

Trends in the use of ICTs have been growing in recent years, with both SMEs and companies increasing the number of programs to increase work efficiency and generate better results in international negotiation processes and customs and logistics procedures. Similarly, business studies have shown that validating the relationship between technology and work helps to reduce time and costs and handle a greater volume of imports and exports to meet the main objective of these tools in different areas of use (Cano & Baena Rojas, 2015).

For Batalla (2015), part of the internationalization process of a company should be the adoption of technologies in basic models such as the use of web pages or accounting systems. But he also considers that the relevant strategy for the dynamism outside the country to be successful should be focused on internalization processes that already include foreign trade facilitation tools that are updated in technological models of specialized software in customs and logistics processes (Batalla, 2015).

As mentioned previously, competitiveness is a fundamental part of globalization. Foreign trade processes, the trends in the use of ICT are described in terms of a technological scenario based on mobility, the internet of all things, the standardization of connections, the reduction of 3D printing costs, the development of intelligent machines, the reduction of bandwidth costs and the application of voice and

video in real-time. Based on these tools, it is recommended to have at least four of the seven tools developed and integrated into the company's work plan with trained professionals who are attentive to the changes generated in the environment so that companies that invest in technology are more likely to succeed (Barragán Codina et al., 2015). This is mainly necessary to be applied in emerging economies where competitiveness is co-dependent on the development of the country as such.

Knowing those important aspects such as boosting the companies' international expansion, it is necessary to recognize the importance of human capital as essential assets in foreign trade opportunities. In addition, access to new international markets must be carried out by the management and marketing systems of companies and cooperative societies using such technologies as a fundamental role in the international expansion (Jesús Medina Viruel et al., 2016).

However, the digital divide that exists in Latin America is a problem that needs to be solved so that ordinary people can learn about the technological tools that are available since the processes of social and cultural growth focused on offering ICTs to a select group of educated people is not the same as offering them to society in general and to foster citizen participation. On the other hand, guaranteeing access to and proper use of ICTs will provide the knowledge that is needed so that people who wish to trade abroad can use the tools that come with belonging to a globalized world (Grajales & Osorno, 2019).

It should also be noted that ICT management varies depending on governments' capacity to keep technologies as up to date as possible. Therefore, public-private contact and cooperation is fundamental for companies to be increasingly less constrained and for the communication gaps between clients and suppliers to be increasingly narrower. For example, the use of technology to make better use of systems dedicated to foreign trade to detect problems, foster relations with foreign entities, and support information analysis decisions require challenges to use technology for the benefit of all. Based on the implementation of ICTs in Ecuador, the implementation of systems dedicated to foreign trade will be observed (Montegut Salla et al., 2013).

It is also important to emphasize that there are different levels of processes in which ICTs play a part in creating electronic foreign trade, since customs processing and logistics processes are mixed, i.e., both public and private. When speaking of the former, it is considered that the use of mandatory processing tools such as Ecuapass are used to mimic what other more developed countries have created and that over time such software has become a new standard for the participation of export and import activities. The link that is created with the use of these tools also forms a closer connection with the country's citizens, businesses, and related organizations (Perez, 2021). The constant dynamism of globalization and the use of ICTs has allowed Ecuapass to become a necessary tool for OCEs since operational procedures are carried out through an electronic-based clearance model for import and export activities (Vélez, 2014).

The inter-institutional cooperation of electronic media in Ecuador allows operational processes to be carried out by the Ecuadorian Single Window, a tool that has been necessary for production operations in Ecuador since March 25, 2013. Together with the Ecuapass system, the control, and management of processes are described through the services of acquisition and processing of INEN licenses, certificates of origin, and processing of phytosanitary permits, among others, which previously took time of paperwork and physical processing that delayed the processes of merchandise dispatch.

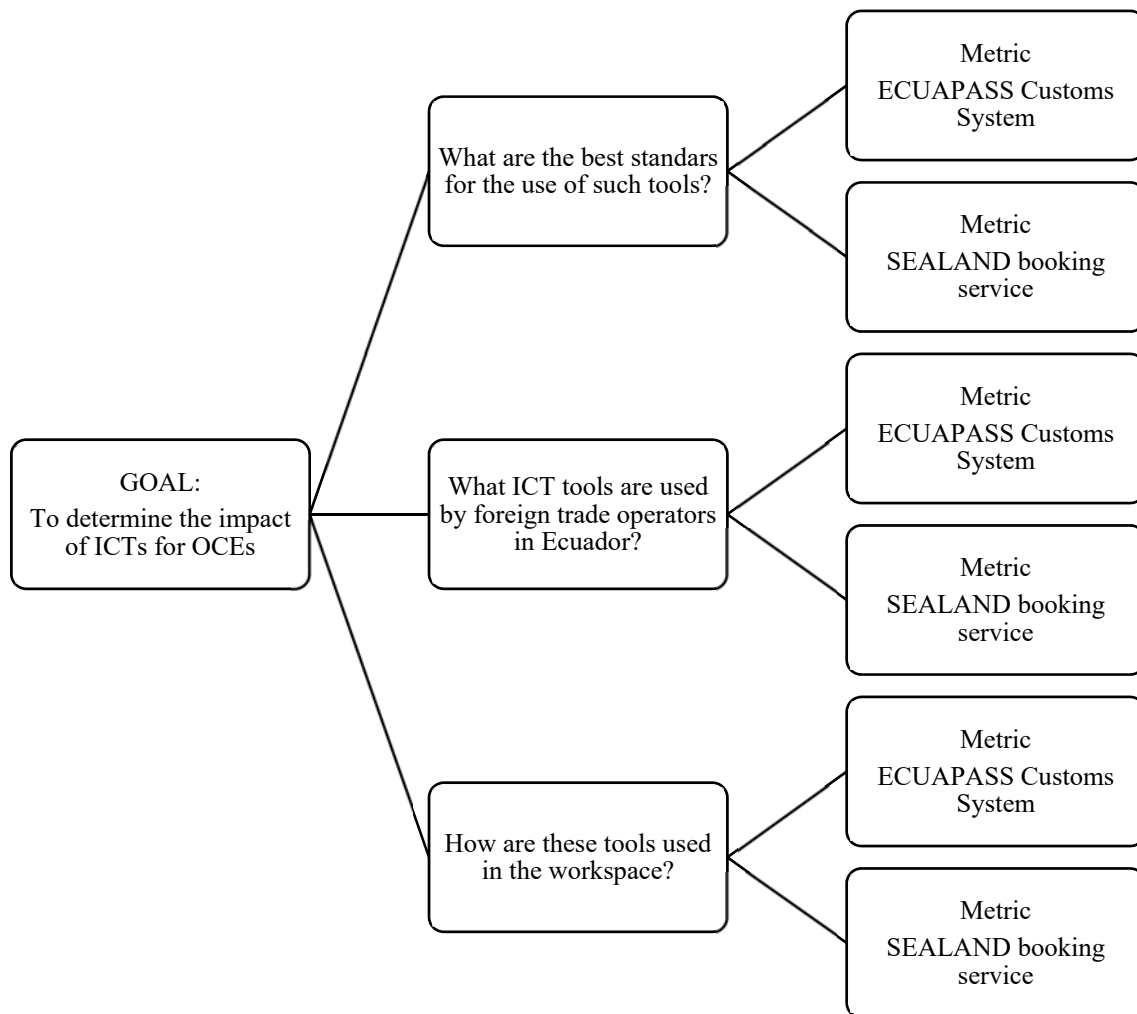
3. Methodology

The research problem was determined through the review of academic research contained in scientific databases from universities and publishing houses, as well as official documents on Ecuadorian law regulating technologies for foreign trade. When using the search fields and definitions of ICTs, all the options of documents in both English and Spanish were considered. It was determined through the review of documents that the use of ICTs was the central axis of the research proposal, thus understanding that the depth of the articles was the correct one to use in this scientific article. Therefore, a series of outlines were created based on a historical analysis that was necessary to interpret the studies already corroborated, starting from a proposal that was based on a review of the literature of specialized works already on the subject.

Determined by the scope of the research and to investigate in greater depth, a qualitative inquiry was deemed appropriate, because investigating issues where the background of the processes of integration of

both regional and global trade and its development have been extremely useful for the creation of new commercial markets. The alliances, and the fruits of acquiring new technologies that facilitate trade for both the State and foreign trade operators. The use of qualitative documents, therefore, interpretative, and critical, helps in the recognition and transcription of the data collected. These previous research works were based not only on the Ecuadorian framework but also on the mechanisms used to trade globally, taking examples from other countries and logistics management tools.

The methodology was used to understand how the tools are needed and determine their usefulness for OCEs, through the Meta-Question-Metrics method, which was developed by Basili and Weiss in the 1980s, but later extended by Rombach. This method consists of four phases: planning, definition, data collection, and interpretation (Basili et al., 1994). The planning was taken based on the project protocol of the scientific article, where it is explained that the study phases will be given based on the influence of ICT in Ecuador's foreign trade and its subjects of study which are the Foreign Trade Operators will be taken for data collection. As for the definition, goals were determined taken from both the studies of previous authors about ICT management and the experiences of the use of specialized software by the OCEs. Followed by this, the questions were formulated from the uses of foreign trade tools taking complete aspects on their experience, manipulation, and classification; the metrics will create a more specific analysis of the case studies based on Foreign Trade Operators. Next is data collection, which was through qualitative interviews with the OCEs, using structured questions based on the previous literature review. Finally, the interpretation phase was explained in the results obtained from the interview.



The four phases determined the results of the questions posed and analyzed through case studies employing interviews, complemented with the information presented in the theoretical framework that covers concepts related to the Ecuapass and SeaLand -Maersk systems; this will understand their use, influence, and usefulness for foreign trade focused on the use of these as fundamental mechanisms in the day to day of the OCEs. As for the state of the art, it will be explained by comparing with other authors how ICTs have been taking their role of importance in trade transactions and customs processes in the different areas of use under the legal framework.

Subsequently, the selected tools were investigated in-depth within electronic commerce in Ecuador, of which both public and private tools are part, and which are necessary for the international negotiation process, considering that since the implementation of the Organic Code of Production, Commerce, and Investment (COPCI) in 2010, the tools have been regulated under the rulings that the code implements (Palma, 2015). Therefore, it is necessary to publicize these tools that are used by OCEs. However, subsequent works have taken as a reference specific sector linked to the production of goods and services, which do not delve deeply enough into the use of ICTs and rather cover the case study in that area as a central axis. Therefore, this article aims to complement the studies previously carried out with a systematic review of the literature, through the collection of information to provide a new point of view of the operations carried out with these tools in Ecuador.

On the other hand, the results of the analysis determined the usefulness of the tools used by the OCEs, highlighting their most important aspects, their functionality, their complements, and aspects to be improved, as well as the complexity that the OCEs encounter. Once the results were obtained, the information gathered was presented clearly and concisely on the importance and results of the implementation of electronic tools in Ecuador's foreign trade, and how their use will be decisive for the country to continue implementing these technologies in simplified processes.

4. Results

The first OCE states that currently, it is necessary that due to the competition that exists in the work environment, the company's workers are trained to be at the forefront and offer the best service, because other tools, in addition to the Ecuapass, other tools have been born to complement the use of this. Pudeleco is a private tool that provides calculation tools, especially for changes in the national customs legislation. An example is household goods. The OCE states that the program is only referential since many times the information is often outdated. On the other hand, the OCE 2, affirms that constant training is necessary to be competitive, since every month the shipping companies implement new processes within their platforms, which the OCE must know how to handle since ignorance will make it more susceptible to making mistakes that in the world of foreign trade involve substantial losses of money.

The OCE states that training for a company staff is important, although it declares that staff from its company do not attend training. The OCE explains that training is provided by private companies and that Customs agents must regularly attend such training. It also states that Customs as a regulatory body endorses the training provided by private companies to the OCEs, and with this endorsement Customs agents can complete their training hours. The OCE knows that this training is for the use of ICT in functions such as merchandise clearance, transfers, cargo corroboration, etc. Regarding administrative management, the customs agent affirmed that the company's workers must be trained in the use of Ecuapass, specifically in the section that corresponds to the customs agent, since he argues that the program has a category for the customs agent, one for the shipping company, one for the importer, and one for customs as such; therefore, in the company, they are trained only in the area that corresponds to them. Similarly, he recognizes that due to the workload and the workload, there has not been the necessary importance to ICT training, pointing out that in the city of Cuenca such training is not given regularly. OCE 2, believes that companies must be trained in customer service so that they also acquire the fundamental knowledge about the management of these platforms, as is the case of Sealand - Maersk, to obtain rates, freight, and itineraries, which are the most basic operations that the customer should know about their merchandise. He argues that the risk is minimal because it simply obtains information but does not take over the customs processing processes. In addition, this information is mandatory for the customer to obtain some offers and thus choose the best option based on the budget handled, both in Less Than Container Load (LCL) or Full Container Load (FCL).

According to the OCE, he considers that Fedexport is an institution that has been interested in holding fairs to make connections with exporting companies in a negotiating environment. He knows that exporters' guilds have received training from Fedexport so that they can make their negotiations in the international arena and especially achieve negotiation links that would be impossible individually. It also argues that the Chambers of Commerce organize training, where they bring people who are internationally recognized for their work in the creation of customs logistics systems, finally, the OCE does not know of other training or interest of international organizations in this aspect. OCE 2 argues that public-private cooperation is minimal since the Ecuadorian State, as a tax collector, limits foreign trade operators to simply following the established steps and does not open the door to integration by the private sector.

Regarding the use of tools, OCE 1 indicates that Ecuapass limits customs agents in certain functions such as cargo manifests and control of import and export declarations. He argues that declarations processes before the implementation of Ecuapass used to be paper-based and hand-signed by the customs agent, processes that today are done with electronic signatures, and that he considers it a great advance that customs declarations can be controlled from anywhere through a mobile device. That said, the OCE 1 believes that Ecuapass has facilitated this type of management to make them more agile. He even argues that due to the physical procedures before the implementation of the Ecuapass system, the office had to be close to SENAE to save time in the delivery of physical procedures. On the other hand, OCE 2 argues that the focus of the Sealand - Maersk tool is partly operational and partly administrative, together with customer service, since once both the OCE and the client are aware of the portfolio of services that the platform can offer, they have the power to choose whether to use it or not. In addition to this, in the operational section,

it is possible to know the status of the B/L and it can combine the services of operations and communication management, making it a mixed tool.

The OCE asserts that in the beginning it was complicated to adapt to the Ecuapass platform due to the issue of training since the implementation was at a bad time because the changes from a physical system to a digital one led to many losses in imports and exports that customs agents carried out. He considers that Ecuapass had flaws that took about a year to be corrected; but after the transition period, an improvement in the speed of processing and logistics of goods and declarations to the regulatory body SENAE was perceived. He also affirms that the intermittency that exists in the system makes it impossible to speed up the procedures that they carry out daily. He considers that the precedent tie-up, a process that should consist of the regime, destination district, sequential code, and year of processing, does not work the way it should speed up the logistic processes. He uses as an example the import regime 70, which is a temporary import regime where you can leave the cargo in the warehouse for a year with the proper suspension of taxes, and this regime benefits importers because at the time of withdrawal of the goods only must pay 50% tax. However, when moving from regime 70 to regime 10 which is the commercial regime, it is necessary to make a precedent tie in Ecuapass of each of the items, which for the OCE is a cumbersome procedure that should be improved so that the system does it automatically and not manually as it is currently done because if you make a mistake in a dispatch of 1000 items this must be searched manually, leading to the time spent in the processing is extended even for days. In addition, the OCE argues that the warehouse could previously access its own to the process of release of goods once a customs official gives the go-ahead in the process of gauging carried out. However, SENAE has removed access to the warehouse so that they can see the message of authorized exit of goods, thus resorting to the customs agent to facilitate the process that the warehouse could previously do on their own. Finally, he points out that the problem only happens in the city of Cuenca, since he also operates in the city of Guayaquil, and there this type of problem does not occur with the dispatch of the warehouse. Regarding Sealand - Maersk, OCE 2 considers that the platform is extremely friendly and easy to operate since all the shipping processes are shown concisely, he also argues that the improvement of the platform would be based on the management of the issue of the type of B/L that the client needs in a new tariff. Exemplifying, in the short mobilization of the goods in a range of two to four days, it is possible to perform a Sea Waybill to nationalize the goods, But the problem arises when the majority of OCEs make an original B/L that takes more than six days to be issued and causes the goods to be stranded in port until the original B/L is issued and the lack of knowledge that a Sea Waybill can facilitate this type of process should be clearer so that everyone can perform the processing of the goods in much less time.

The OCE points out that the technologies currently used in foreign trade are favorable in the processes of delivery of goods and customs logistics. He considers that the token was fundamental to streamline the processes of goods clearance that do not have to be done in physical gauging and these can be transferred to other operators of the company if the customs agent is not in place for the clearance of goods. The OCE 2 stipulates that the Sealand tool is necessary so that the logistics processes concerning the information of the dispatch and shipping of containers can be processed and delivered to the customer, therefore your company uses this tool for this type of logistics procedure (Customs of Ecuador, 2022).

The OCE mentions that one technology he knows about but does not use is the satellite padlock, which is responsible for tracking the cargo unit, observing the entire process of locating the goods and acting as a GPS. He believes that since they're used to be loss of merchandise on the route, the padlock works as a very effective control tool for tracking the merchandise. Another tool he knows is Pudeleco, which is a program that facilitates the use of tax management in a referential way, he states that it can be used as a guide to some extent. He also knows that TradeMap is also of important use to obtain import and export statistics on the different countries of the world. The SENAE mobile application is also considered useful to review declarations when the customs agent is out of the workplace. Also, the Verify Me tool is used by SENAE to control the correct importation of goods and thus avoid smuggling. OCE 2 states that it is aware of other tools that it does not use, such as Quipux, which is an intergovernmental electronic mailbox that can be linked to third-party mailboxes to receive notifications. Another tool is the service desk, which serves the same function as Quipux but lengthens communication processes that would be expedited if done through a standardized or corporate email.

The OCE states that it is not aware of any system that encourages public-private integration to streamline logistics processes. However, the OCE is aware of other systems in place that streamline customs declaration processes, although they are not standardized. For example, he considers that a private concession would help to improve this standardization of systems for all customs agents. OCE 2, considers that there should be an option for immediate assistance on the public platform when there are problems with the processing of goods, something that exists and is immediate on the Sealand - Maersk platform.

The OCE states that this public-private integration does not exist and should be implemented to obtain processes like the Sealand - Maersk platform. The perception that the OCE has about the use of Sealand - Maersk concerning Ecuapass is much better in terms of management, while in the first one for its use it is not necessary a training endorsed by the SENAE, in the second one it is essential to access an authorized course that specializes the OCE in its management.

He knows that the Ecuapass tool has provided a streamlining of procedures, greater control by customs agents, digitization of documentation that was previously done on paper, and opening foreign trade to people who previously could not do it because they did not have a large capital that would allow them to access international fairs to do business. Today some platforms connect sellers and buyers around the world thus reducing investment costs to do international business, although he believes that doing this type of business can also become dangerous because of the risk of delivering both data and the investment of the import to strangers is quite high. Finally, despite the flaws that the Ecuapass system has, the advantages that today are found in the streamlining and simplification of the processes of logistics and customs processing is quite favorable in terms of the processes that used to be born previously thus cataloging the tool as useful. On the other hand, the Sealand - Maersk tool has been able to be innovative in terms of online cargo tracking, since previously an Excel sheet was needed with the data of the import or export processing of the goods that were sent by mail to a real person, but today the Sealand - Maersk system does it automatically in an almost instantaneous time. Therefore, the OCE's perception of the system is that the platform is practical, concise, and accurate for use by anyone who needs to use it.

5. Discussion

The influence of ICT has been important for the implementation of mechanisms for both negotiation and customs logistics since the adoption of these tools has helped the parties that are part of the world of foreign trade to adapt to technology that is always evolving. In the processes of technological adaptation, not only is the obtaining or access to clear and concise information but it is focused on the use of these tools to obtain competitive advantages and simplify processes both nationally and internationally.

In conducting the study it was determined that the dynamism of electronic tools has been quite significant for the changes related to the development of foreign trade and that according to (Muñoz, 2019) the study, these changes have been useful for the streamlining of logistics procedures that the OCEs carry out day by day, therefore, the implementation of these tools is essential for companies to be part of this world.

On the other hand, customs processing and logistics processes have benefited from the reduction of time and costs that physical procedures previously represented; for being a fairly heavy burden and that currently facilitate the processes, reducing the use of physical resources such as paper and resorting to customs agencies, according to (Montegut Salla et al., 2013) these systems have been implemented correctly and encourage the use of the same requires that the technologies will be the most updated possible. According to the above, it is added that the processes of adoption of these tools in Ecuador have been successful.

Also, the internalization of companies should be using the adoption of different ICT mechanisms so that the processes of adopting these tools facilitate foreign trade at different levels, which has been used by Ecuadorian companies to obtain the best results in the specialization of customs and logistical software (Batalla, 2015) This has been used by Ecuadorian companies to obtain the best results in the specialization of customs and logistics software, which is essential to effectively manage foreign trade processes.

Regarding the training of staff of companies engaged in logistics, the development and integration of the work plan of the company to know how the changes generated in the environment are important for investment in new learning mechanisms to obtain a staff training in ICT tools, for (Barragán Codina & Vela, 2015) This should be fundamental for the competitiveness of each country is at the height of constant technological changes. Findings in the study suggest that it is also fundamental to the constant training in these tools, with the objective that the OCEs integrate the ICT as a process of modernization.

Consequently, according to (Montegut, 2018) public-private cooperation is one of the key cards that will help the capacities of companies in Latin American countries and Ecuador to achieve their maximum potential by using ICT tools in coordination that is fundamental to overcome the limitations that exist in the region. However, the study found that in Ecuador there is minimal public-private cooperation.

According to the OCEs, training is simply based on Ecuapass, while third-party tools are not as relevant as they should be because they are obsolete and do not represent a fundamental help that requires training.

6. Conclusion

Based on the implementation of new technologies that are adapted to the logistics processes of foreign trade and international negotiation that Ecuadorian companies adopt, it is necessary to understand that these processes have created new standards of modernization that drive the competitiveness and training of these companies to meet today's standards.

In Ecuador, these tools have been adopted in the logistics, operational, administrative, and control processes by both the OCEs and the controlling entities such as SENAE. Although their implementation has been adequate in terms of modernization based on the standards required by foreign trade, over the years these tools have had a greater impact than Ecuador has not been able to continue improving on par with other countries in the region. Therefore, it is necessary to understand that logistics processes will continue to be linked to the use of ICTs that are constantly evolving.

Another fundamental aspect is the training of technicians and professionals in foreign trade, which is related to education and training in the use of these ICT tools for the management of foreign trade itself. The adoption of technologies by the different actors is essential since, without this knowledge, the different processes would be limited, and Ecuador would not be aligned with international logistics based on the use of ICT tools. Due to this, it is considered that the approach of public entities should be greater towards private entities to strengthen the understanding and adoption of ICT tools at different levels of use; it should be considered that Ecuapass should be a tool that is easy to understand and use for the OCEs. On the other hand, the private tool SeaLand - Maerks is the perfect example to replicate its management in terms of automation and software compression because it has a simple and agile use.

Finally, through this research, it has been determined that the use of ICT tools in the world of foreign trade is practically standardized and that these tools will continue to evolve and adapt. This is based on the new standards that the globalized world constantly demands according to the demand for logistics processes that need to be modernized in an increasingly growing world. Therefore, it was determined that in Ecuador the use of ICT has been essential to meet these standards for the processing of logistics processes that OCEs use every day, and knowledge of these tools is essential for both companies and government institutions that are responsible for controlling export and import activities.

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8. Annexes

8.1 Annex 1

Question	Metric	Author
What are the best standars for the use of such tools?		
Is competitiveness necessary to become skilled in the use of ICTs?	Open question	(Estrada López, 2009)

Knowing the modernization processes of globalized companies, is it considerable to adopt strategies that already specialize staff in the use of ICT?	Question based on: Administrative management, technical management, intervention in I+Q	(Barragán Codina & Vela, 2015)
Do you consider that public-private cooperation has fostered the relationship with foreign entities that are focused on using ICT tools for foreign trade management?	Open question	(Montegut Salla et al., 2013)
What ICT tools are used by foreign trade operators in Ecuador?		
What is the intended approach of the tool?	Communicational Information management	(Cano & Baena, 2015)
What is the perception of use with respect to the service provided by the ICT tool?	Open question	(Pérez, 2021)
Does your company consider that the implementation of the tool is favorable for customs and logistics management focused on foreign trade?	Concise explanation of their use	(Fonseca, 2013)
Which ICT tools do you know about, but do not use?	Open – ended and exploratory question	(Kersten & Lai, 2007)
How are these tools used in the workspace?		
Does the connection between public and private platforms help to increase the integration of logistics processes?	Open question	(Thorrens, 2020)
What are the advantages and disadvantages that the tool offers with respect to the traditional procedures that were carried out before?	Open question	(Sharma et al., 2022)

8.2 Annex 2

Unstructured interview questionnaire 1

Question 1: Is competitiveness necessary to become skilled in the use of ICTs?

Answer: I would say yes because nowadays who wants to be at the forefront and give the best service, at least in the field of customs brokers. Due to competition is that certain ICT tools have been implemented, such as Ecuapass and other separate systems that help the use of Ecuapass. To mention a few, Pudeleco helps to classify products by codification, but Pudeleco helps you with calculation tools linked to all the existing legislations and tries to be up to date with all the changes that exist in foreign trade.

Question 2: Knowing the modernization processes of globalized companies, is it considered to adopt strategies that already specialize staff in the use of ICT?

Answer: Yes, totally, and that there should be a more in-depth training in these aspects since there is training that is carried out for the management of Ecuapass but not for other tools. I also believe that public-private cooperation is essential to train customs agents since they must compulsorily attend training on Ecuapass throughout the year and complete hours that enable them to continue using the tool. Moreover, customs endorse private companies to carry out this type of training for customs agents.

Question 3: Do you consider that public-private cooperation has fostered the relationship with foreign entities that are focused on using ICT tools for foreign trade management?

Answer: The closest thing that I could consider for there to be public-private cooperation in the aspect of foreign trade in Ecuador, are the courses that I mentioned before given by private entities since many times these were carried out by international organizations. Although I believe that there is not much interest, the ones given to the guilds that wanted to export their products abroad and that made contacts with people in other countries so that they can do their business and send their cargo. Train them how to do that procedure, they guided them how to do that process because each country has its own rules of entry for different types of products, quality standards, and rules of origin. From the last I have heard, the chambers of commerce have been involved in the training of customs agents through people who have had a hand in the creation of Ecuapass, but in the training on the use of computer tools focused on foreign trade, I have not heard the truth that there is any kind of cooperation.

Question 4: What is the intended approach of the tool?

Answer: As customs agents, we have access to a certain part of Ecuapass, we can enter cargo manifests and import declarations, and we have control of all the declarations that we send; because before sending them, they must go through the customs agent's approval. This is good because before it was basic to manage the declarations because they were made by hand, and this generated a lot of problems when the SISE was used before. Formerly we had an office in front of SENAE because we needed to be there, and in that sense, Ecuapass has facilitated the procedures to be faster.

Question 5: What is the perception of use for the service provided by the ICT tool?

Answer: In the beginning, it was complicated by the issue of lack of training, yes, we were given training in 2012 when they changed the entire system, but it was poorly implemented. The time in my opinion was the worst. When imports were in very high demand, and when they changed the system loads were left in the port abandoned, even abandoned for months at a time and this was chaos. In addition, at the beginning a program does not work perfectly, it has shortcomings that were solved in a year. Once the transition from SISE to Ecuapass was completed, things did improve. I must also add that the fact that nowadays everything is done with an electronic signature is an evolution that has helped the country to modernize. The system has flaws, it is intermittent, it is not perfect, but it is functional. On the other hand, the precedent tie, which is essential when we put a customs declaration in a special regime such as the seventy, is a temporary import regime in which you can leave the load in the warehouse with a suspension of taxes. This

regime is used by many importers when they still do not have the money to get their merchandise out immediately, so what they do is use regime 70, and they first make a partial withdrawal of 50% of the cargo, and thus they pay only 50% of taxes. When they sell the first part of the cargo, they do the same procedure with the other 50%, but to move the cargo from the regime 70 to the regime 10, which is the commercial regime of the consumption regime, a tie-up must be made in the Ecuapass, but for each product. For example, if it is an invoice of 1000 items and you want to make a tie of precedents, you must link the items with the regime to which they belong one by one, and if the customs agent makes a mistake, the system will recognize as an error in the processing of products making the customs agent has to look for where he made the mistake manually. In the precedent docking the customs agent must put where the products are going, to which district they are going to, the sequential code, and the year. I believe that the modernization of this tool must be continuous because it must be continued forward.

Question 6: Does your company consider that the implementation of the tool is favorable for customs and logistics management focused on foreign trade?

Answer: Yes, it is an advantage. To mention a favorable change that is standardized with the use of Ecuapass is the electronic signature.

Question 7: Which ICT tools do you know about, but do not use?

Answer: I don't use the satellite lock, but I know that it is a GPS device that is used for moving cargo. This device tracks the cargo unit all along the route, to control the exact positioning of the cargo and in the past, they used to steal it. Importers are adept at hiring this type of tool to protect their investment. Another I know is the Pudeleco, as it helps to simplify the issue of taxes for the importer to know them in a referential way. Also, the SENAE mobile application is quite useful for the importer because he can review declarations on his phone. Another is the mobile application "verify me" of tax labels, used by customs to control import procedures, prevent smuggling, and validate the products that are traded in the domestic market.

Question 8: Does the connection between the public and private platforms help to increase the integration of logistics processes?

Answer: In my opinion there has not been this connection between public and private platforms, but I know that there are private systems of other customs agents that help them to make their customs declarations and then upload them to Ecuapass, which I know helps them, but it is not standardized in a general way and that somehow should be implemented by SENAE with private cooperation through a concession; I also believe that when a private institution assumes public responsibilities things are done better.

Question 9: What are the advantages and disadvantages that the tool offers to the traditional procedures that were carried out before?

Answer: The agility in the processes, shorter times, and the controls by the customs agent are much better today. For example, I can be in Quito, and I can have 20 declarations to clear in Cuenca, with the electronic signature through my cell phone I can authorize the clearance remotely. In my opinion, trade has opened for more people, because before to be in this world of foreign trade people needed to have considerable capital to go to international fairs physically and do business in different parts of the world. Today you can get suppliers through the internet, where there are platforms that connect suppliers with importers, and exporters with people from other countries, and the gap has opened quite a bit in that sense. Also, previously we used to have checkbooks of sheets that today use a digital format and I think this has helped the environment. On the other hand, I also know of clients who have gotten suppliers on the internet, but I consider that it is still dangerous because you never know who is behind the screen and the risk of giving

money to someone you don't know is quite high. Ecuapass is a useful tool that despite its flaws has helped to facilitate the processes of cargo processing.

8.2 Annex 3

Unstructured interview questionnaire 2

Question 1: Is competitiveness necessary to become skilled in the use of ICTs?

Answer: Indeed, you need constant training to be competitive. every month the shipping companies have the power, and they implement new processes within their platforms, which you must know how to handle, otherwise, you are very prone to make mistakes that in this world of foreign trade involve a lot of money. Indeed, the company must have constant training all the time to improve its internal process, jointly talk with shipping companies or other entities with which you use platforms, have excellent communication, and you are not prone to make mistakes.

Question 2: Knowing the modernization processes of globalized companies, is it considered to adopt strategies that already specialize staff in the use of ICT?

Answer: It is obvious to have constant training, but it is also necessary that this goes hand in hand with customer service so that they have all the necessary knowledge to handle these platforms, and if necessary to obtain rates, freight, itineraries; since it is the most basic thing they should know about the content of each platform and how you should handle yourself within them. Obviously in Sealand - Maersk the risk is minimal, since simply what is done here is to obtain information, since that information is precisely essential to be able to make an offer to the customer and so that he can analyze some offers and can decide on the best option based on your budget to make both imports and exports in different types of containers.

Question 3: Do you consider that public-private cooperation has fostered the relationship with foreign entities that are focused on using ICT tools for foreign trade management?

Answer: The cooperation is very minimal since it is purely based on the state as tax collector and the exporter or importer are the ones who pay, really the collaboration that exists is null. I think it is better to leave things as they are since the state is a regulatory entity and that obviously should give the facilities, but jointly to do something I would say no, since the private entity charges you a value for giving you an excellent service, but not in the public.

Question 4: What is the intended approach of the tool?

Answer: The approach we give to Sealand is purely operational and in the administrative part, since within this administrative part is the part of customer service, where they are responsible for providing our customers all the necessary information on freight, rates, storage at destination, values, origin; to offer a portfolio of services to customers. The operative part is used for the elaboration of the B/L, of the bills of lading. I consider that this platform is very friendly and personally for me is the best because it is very easy to use and gives you all the necessary options so that you can make an accurate bill of lading with precise and concise information.

Question 5: What is the perception of using the service provided by the ICT tool?

Answer: The platform is extremely user-friendly since you have at your disposal all the information concerning the processes of embarkation and disembarkation of your merchandise, and the things to improve I would say are very few, let's say the fact of a little more information at the time of issuing the type of B / L what the customer needs, whether Seaway Bill or other. Let's say that when they are short trips, the way to issue a B/L to nationalize it immediately would be like a Seaway Bill, but most people request the issuance of the original B/L at the destination, then that involves printing the document and this procedure takes two to three days more than

what would be achieved with a Seaway Bill. Since this option, once the container arrives, you copy the document, print it and the cargo leaves customs in a shorter time, then this type of thing are the ones that not everyone knows, unless you are a professional and have been using this platform for years; and I consider that this would be a point to improve since a small banner could be placed when you select this option and explain how long it takes to nationalize your container and that it is no longer necessary to request the issuance of original B / L.

Question 6: Does your company consider that the implementation of the tool is favorable for customs and logistics management focused on foreign trade?

Answer: The Sealand tool is essential for the logistics management of containers that the company must handle according to what the customer requires and that we as a company allow us to have control over the information of the cargo both at the port of arrival and port of origin.

Question 7: Which ICT tools do you know about, but do not use?

Answer: I am familiar with Quipux, which is an email that links the public part with the private part. It is usually used when you are interacting with customs officials or processing some special permit, or you want to qualify as a customs agent, all the information or any requirement that a public official asks you for is done through Quipux. I consider this to be poorly implemented since nowadays we all use a corporate email and entering the Quipux system to use the same function that would be used with a normal email is a waste of time since its efficiency of it leaves much to be desired because of the time that public officials take to respond to emails.

Question 8: Does the connection between the public and private platforms help to increase the integration of logistics processes?

Answer: I think that there is no integration as such because they do not replicate mechanisms that exist in private platforms and should do so in public platforms, for example, in Sealand, there is a section called "chat with us", where if you have any requirement or problem you start chatting with someone from the company and they attend to you immediately, often solving your problem at that moment. On the other hand, Ecuapass could work in the same way as a section that is like Sealand but does not exist.

Question 9: What are the advantages and disadvantages that the tool offers to the traditional procedures that were carried out before?

Answer: Sealand has always been handled more practically, before they sent you an Excel sheet, where they notified you about the fields that required information about your cargo that you had to fill them, they sent you a scanned copy of how the B/L was going to be; once you reviewed them, you forwarded the information by email and they immediately responded right away. The difference today is that everything is in the Sealand platform, and if you made a mistake in something you do it again immediately and the automated system immediately accepts your request for loading or unloading of cargo. Previously a person answered you virtually, and nowadays the system does it.