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Trade in Services Agreement (TiSA), Opportunities for Colombia with the implementation of industry 4.0

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Gratitude and dedication

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We want to dedicate this internship report to all the people who has the time to read and share the analysis and proposals established for the Agreement on Trade in Services (TiSA) and the Fourth Revolution favoring Colombia.

Summary

The purpose of this internship report is to define what would be the opportunities for the exchange of services for Colombia, within its legal framework and implementation of industry 4.0 with the entry into force of the TISA agreement.

The methodology used for the development of the research is based mainly on the study of Colombian regulations on services, in addition, investigating the proposals established by the TiSA and suggesting opportunities for Colombia with the technological implementation of the Fourth Revolution; for this it will be necessary to use scientific and corroborated research sources, magazines and publications of certain knowledge; moreover, having the experience acquired in the internship to Panama City, all this in order to present a successful and purposeful report to the objective of research raised.

The main ascertainment found in this internship report is the little information officially published on the TiSA agreement, this is why they are still in negotiation by members of different countries, the private sector and civil society, as reported by the European Union; However, the general proposal for liberalization of service trade represents a great opportunity for developing economies, also incorporating the processes of industry 4.0 or Fourth Industrial Revolution. This statement concludes, a great opportunity for growth and development of the Colombian economy, that day by day opens up to international trade.

Keywords:

Agreement on Trade in Services, TiSA, Fourth Industrial Revolution, International Agreement, Industry 4.0.

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Introduction

The analysis and approach of international agreements has become a source of research for academic processes within international trade, in turn as an input for the development of the economies of the countries in order to try to emphasize which could be the opportunities and possibilities established by trade liberalization between countries.

That is why, in this internship report, we seek to analyze what would be the opportunities for Colombia in the analysis and study of the Agreement on Trade in Service (TiSA) and the implementation of the Fourth Revolution, all this under the current Colombian regulations

For the development of the research it will be necessary to use a methodological and conceptual framework that helps the reader understand the approaches established by the TiSA, the Fourth Industrial Revolution, the current regulations and the opportunities proposed in the Colombian services sector.

Starting from the analysis of current regulations of services in Colombia through the degree of development of industry 4.0, then, naming the services that are promoted at the Center of the Fourth Revolution in Colombia and its opportunities in foreign trade, and finally, analyzing the advantages that the TISA agreement and the Fourth Industrial Revolution would bring in the service development of the country.

All of the above, results in a favorable and assertive proposal for Colombia, which despite the fact that this agreement is still in negotiation, which generates lack of information for study, however, with the commitment of industry 4.0, they are established several possibilities that Colombia can implement to generate growth and economic development.

1. Project formulation

1.1 State of Art

This section's main objective is to present the state of the art of the Agreement on Trade in Services called TiSA. In the development of this document, we will deepen in those investigations that shed light on the benefits and risks to which Colombia as a country is exposed and other information about its operation, its rules and the guidelines that compose it.

The investigation of the current information on the TiSA together with its analysis is intended to determine the level of specific information that is really in a process that advances daily with the purpose of determining how beneficial this agreement is for the country, or by the opposite that so much risk represents for the services sector.

The methodology used for the state of the art was carried out by investigating articles that have been published since the TISA negotiations began.

The first article taken is entitled “The agreement of the Authentic Good Friends of transnational corporations” (Gould, 2014), written by Ellen Gould. In this article, the author refers to the great interest that transnational companies have, for the creation of a commercial agreement that privatizes and deregulates the services negotiation processes within the framework of the World Trade Organization. The Service Industries Coalition expects the participating countries of the TiSA (Trade in Service Agreement) can modify and eliminate regulations, where different companies can operate and offer services freely, without government intervention. However, these negotiations have been very discreet on the part of the members, as according to Ellen Gould “this extreme reserve and secrecy seem designed to allow trade authorities to negotiate without paying attention to national concerns and to free politicians of all responsibility in the establishment of the TISA” (Gould, 2014), likewise, has denied that there is a public discussion among the citizens about the processes and matters that are carried out.

In 1995, the General Agreement on Trade in Services entered into force, but this has not made much progress for service companies, because governments have placed obstacles for transnational companies, in order to benefit local companies; as it is the case with Fedex, which proposes that there be “equal conditions for public and private postal services and that the normative advantages that have historically been granted to national post offices” (Gould, 2014) be eliminated. Although the TISA is taken as the basis of the GATS, this new agreement wants to adhere clauses that guarantee the future of new services created by innovation and technology, which are offered in an automated negotiation, annulling any decision that the government plans. The Authentic Good Friends group intends to call on developing countries to allow transnational companies to enter their service sectors, with the benefit of improving national economic performance.

Although no official documents on the negotiation are obtained, Ellen affirms that there are leaked articles and documents that show that the TISA could be a danger to the public interests, since its purpose is to promote the privatization of the services.

The second document analyzed is an informative text entitled “The TiSA and State enterprises” (Barreto & Chávez, 2017), written by Viviana Barreto and Daniel Chávez in 2017, which is basically a text about the agreements in services called TiSA, describing that the agreement is composed, which is still under negotiation, as well as the countries that are part of this negotiation, the different actors within the treaty, such as, the State including transnational corporations, public companies and the rest.

The document also exposes some dislikes of certain States worldwide on the treaty, arguing that not all information has come to light and that there are interests from these transnational companies, in turn putting in context the examples of two specific countries, such as the case of Uruguay and the case of Mauritius, an African country, in which they disagree with some points of the treaty and refute that they wish to know the whole truth about agreement; reaching the point where Uruguay decides to leave the agreement to protect national sovereignty and protect public companies in the country that have been the engine of Uruguayan development.

With this article, what they intend is to give more general information about what the services treaty is about and to report on some irregularities that are being presented in it,

claiming that there are States in which they have some doubts regarding the agreement and that the only thing They want to know the truth to know if they want to continue in the treaty or defect from it.

This document is an informative writing on a specific topic, where they take as a basis some points of view of the different States and public companies that have doubts about the treaty and exposing the points where these irregularities are found concluding that, after an analysis in As far as the agreement goes, the negotiation rounds that have taken place, the member countries and the transnational companies behind this agreement, state their position stating that it is a treaty in which many companies and countries at a global level can benefit. , placing them is a global point of view where they can offer their services and thus generate growth among service companies.

In the same way that they somewhat praise the agreement, they also expose problems and / or irregularities that they find within it, citing that the agreement can show a clear interest on the part of the largest companies worldwide referring to the only thing What they want is that these companies want to venture into countries where they have not yet reached through this agreement and establish themselves in these countries without measuring consequences of what could affect the economy and internal development of the country.

The text described above was a point of clarification to understand more the magnitude of the TiSA agreement, the benefits that can bring to the countries that are part of it, but also understand that there we are exposed to malicious interests by the largest companies of services at a global level that want to expand more and more without taking into account that in these countries there are companies, not so large, that provide the same services and that if the transnationals arrive, it would be a very strong competition for these small companies unable to bear the burden they would do; The text analyzed above has been very useful for the work because it specifies that this treaty has its pros and cons and that as it can be a great benefit it can also affect the countries that are part of the agreement and the companies that provide services that play an important part in the economy of these countries.

In the following article entitled “Realities and determinants of the internationalization of services: a look at the organizations of Bogotá, Colombia” (López, Ligarreto, & Lombana, 2019), it is possible to highlight key factors that contribute to the study of the characteristics

that are they associate companies that internationalize their services in the city of Bogotá, Colombia. The author emphasizes the relevance of world trade in services and the changes that the sector is presenting in recent years in production and trade. “The services sector is the fastest growing in the world economy and represents two thirds of the world's production, one third of world employment and about 20% of international trade” (WTO, 2015).

The evident growth of the services sector worldwide has also been reflected in our country, since conditions have improved in its commercialization. The evidence is based on the fact that the services sector received 34% of foreign investment, represented 64% of GDP, and occupied 65% of the population employed in 2014, and indicates that the services sector compared to sectors such as Agriculture, agribusiness and manufacturing have generated more jobs.

The article mentions that the services sector is a fundamental part in the economic development of the most advanced countries and the field is rapidly opening up in developing economies such as Colombia. "In a first stage of development the agricultural and mining sectors dominate the generation of value of a country, in the later stages the development of the production of manufactured goods begins and then ends with the consolidation of services" (Bonet, 2007)

So, this sector should not be seen as competition against the other sectors, but as the missing factor to complete the gear that is needed to make Colombia an emerging country, it offers the opportunity to diversify the economy. The determinants for Colombian companies in the capital to internationalize their services are labor legislation, foreign language proficiency, investment promotion policies, and the macroeconomic context from the exchange rate, consumption and foreign investment.

Another of the documents analyzed on the TiSA services agreement is an explanatory text where the majority of the agreement mentioned above is questioned regarding the provision of public services by public companies and the negative repercussions that these companies would have upon entering In force the TiSA, the document was presented by the Public Services International, entitled “The TiSA versus public services” (Sinclair & Mertins-Kirkwood, 2014).

The text refers to the main problems that this agreement has had at a global level and refutes certain policies and certain measures that have been taken in response to this agreement alleging that decisions have been made in secret and that the main objective of the negotiations is to benefit to the large multinational service providers and to the more developed countries that are part of this agreement (United States, Canada and the European Union representing its 28 members).

The document shows the great disagreement with the treaty by directly questioning it, making reference that public services are in favor of the development of societies and that they cannot be treated as merchandise as well that they must be in equal conditions for the entire society prevailing above all meet the needs of people.

Another point of major issue in the document is where the TiSA negotiations, the writers refute, are outside the framework of the WTO (World Trade Organization) where they ensure that the strongest countries within the negotiations (United States and the European Union) have decided not to get involved in the WTO framework and focus exclusively on achieving their objectives and interests that are key in the negotiation of the agreement for their benefit and that of the multinationals of these countries.

On the other hand, the multinational service providers emphasize that over time there have been many unfavorable conditions regarding the provision of their services in foreign countries where they cannot operate freely, in the fact that the TiSA enters into force these companies they would have the power to question the regulations in the countries that are part of the agreement to handle the provision of foreign public services in an equitable way for national and foreign companies, thus restricting national laws and regulations giving equal treatment to companies of the country As to foreign companies.

In another section of the text it is said that the agreement will be in favor of improving data flows and cross-border data privacy by organizing new disciplines with internet management, arguing that "free exchange of data is necessary for trade operations worldwide on the issue of services " (Sinclair & Mertins-Kirkwood, 2014) thus compromising the privacy of users globally exposing in an excessive way the data of millions of people who inhabit the states that are part of the TiSA.

In amount, we talk about the protection of public services where they highlight that these services are slight in the development of the economies and that they should not be privatized by foreign companies, just as each nation must make the respective complaints to prevent the access to the institutional bodies in order to repel the pressures that the large multinationals are exerting on the different states to accept the agreement.

In conclusion and regarding the issue of public services there are still many discrepancies and irregularities within the agreement because public services are in too much danger in TiSA and that the only thing that is wanted to achieve with this agreement is to benefit the large multinational providers of services pressing states to sign said agreement without taking into account the social repercussions that these could have.

Finally, this article entitled “The TiSA and the threat to public banks” (Marois, 2017) it can be observed that, although the purpose of the agreement is to benefit the economies of the countries concerned, there are sectors that could be damaged such as services Financial This sector would become one of the most important in these negotiations, since in the agreement, any national and worldwide financial activity would be included.

The TISA is a neoliberal agreement, which aims to generate lucrative benefits in all sectors, therefore, “proposes to treat financial services as if they were another service of the Agreement” (Marois, 2017), this was leaked from Annex X of the TISA. If this perspective is analyzed, there would not be much logic among all entities, since they all have policies and work in different ways, for example: private banks work for a lucrative purpose, instead, public banks aim to contribute to development in Pro population.

It can be seen that the TiSA has two faces; the contribution it could provide for global economic growth, but "the Agreement poses a clear threat to democracy and the general interest of the citizens of the world" (Marois, 2017). Despite the secrets that are handled in the negotiations, Marois states that the agreement would negatively affect financial services, since these make up a substantial part of the TiSA, it would also impact the way of life of thousands of people.

Indeed, public banks and especially the population, with the exception of the rich, would be in great threat with this agreement, given that state banks have for years promoted growth in

various sectors in many countries. Although corruption cases have been demonstrated in these banks, Marois states that all banks have errors, but there are “civil society organizations that do an important job to improve them” (Marois, 2017), in addition these state organizations have helped small and medium enterprises with their growth. Also, it can be analyzed that the defenders of the agreement intend to end the protection that public banks have received from governments. Since banking began to be privatized, there has always been a threat to these banks, which is why it has tried to shield them for the general interests of the population.

Currently, Annex X.9, intends that governments allow foreign financial providers to perform services in the country without restrictions, or at least when denying a national authorization, is for “prudential reasons (that is, for normative reasons)” (Marois, 2017). In other words, the national market could be dominated by high international competition, causing state banks to enter at risk, forcing them to act for profit, and allowing private actors access to public regulation without conditions.

In short, if the hypotheses that several people have analyzed after each negotiation of the TISA are true, as the author of this article, it could be said that the developing countries together with the population that most needs resources would be mostly affected. Small and medium-sized companies, in addition to vulnerable sectors such as agriculture, are the ones that receive the most help from these entities, therefore, they would be easily threatened if public banks start operating privately.

Based on this information and the search carried out, it could be said that this agreement still has many investigative gaps, since the secrecy handled by the countries concerned has not allowed clarifying or being sure of what the TISA will really generate.

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1.2 Problem Statement

In recent years, trade in services has generated a lot of interest from governments and transnational companies, as they see in these intangible products, a great opportunity to strengthen their economy. Today there is a wide variety of services offered; education, health, tourism, labor, among others, therefore, it is necessary to have a legal framework that controls all these actions, this so that there is a transparent procedure between the parties involved. That is why the World Trade Organization (WTO) created the General Agreement on Trade in Services (GATS) in 1995, which removes barriers to market access, monitors and governs all operation of services carried out by member countries. However, countries such as the United States and Australia have taken an initiative to negotiate a new agreement called TiSA (Trade in Service Agreement), since they assume that the previous agreement does not respond with technological changes such as the arrival of the Fourth Industrial Revolution. In this new industry, the need to improve processes more efficiently, forces companies to update the way they do business, because no matter if it is small or large, to achieve sustained growth, creativity and innovation are needed. In addition, industry 4.0 has represented a technological transformation, merging the physical, digital and biological, thus facilitating production processes requiring less labor. On the other hand, the internet of things has made possible an increase in the use of robots, and consequently, these can replace human labor being more effective and productive; they are also throwing high-value data that allows for more accurate decisions moving away from human error and obtaining predictive analysis in ways that were not previously thought possible. The connections generated by the IOT (Internet of Things), are already a reality, since, these objects that generate data serve to improve the process in which the company is involved, allowing this system to collect, store and interpret information from its Real-time environment and management, in addition to being economical and sustainable. The arrival of the Internet of Things has brought about the interconnection of services through computers, robots, machines, software, etc.

Therefore, the purpose of the members of TiSA (50 Countries), and of the Service Industries Collision, is to have a new regulation that allows suppliers to carry out their activities more easily, promote investment, generating improvements in the service infrastructure, and thus have a broader technology transfer.

According to the Public Services Sector (IPS), services have had a higher growth rate than trade in products, representing 70% of world GDP and about 20% of global trade. In the same way, this reflects that many economies would have long-term opportunities, offering a favorable environment that attracts foreign investment. Otherwise, maintaining protectionism or barriers would be to offer services “inaccessible, prohibitive and / or of poor quality, not appropriate to meet the needs of consumers and producers (WTO ecampus, nd)”, and generate a delay in economic development of the countries.

In this sense, the benefit of this treaty is to improve the internal market for services, since, with a total liberalization of these intangible products, people may have a broad portfolio of services in order to improve them, resulting in more internal markets. Strong and therefore greater competitiveness in the provision of services globally.

In the hypothetical case in which the TiSA service agreement represents a greater number of risks and disadvantages for developing countries compared to the large powers, rules and guidelines that allow a balance in balance to compete in equality should be established. of conditions, because if factors such as technology are analyzed, more developed economies would have advantages in services that require artificial technology, such as robots that handle millions of algorithms to facilitate searches, data management and customer service.

If the current state is reviewed, not only at the economic level, but at the cultural and social level in which Colombia is located and that additionally we take into account the diversification of the current services that are emerging in our environment, the question arises.

Within the Colombian legal framework, what would be the opportunities for the exchange of services, implementing industry 4.0 processes with the entry of the TISA agreement?

1.3 Justification

The present investigation wishes to focus on identifying the advantages and disadvantages that the TiSA agreement can bring in Colombian companies where companies can have a clearer horizon by fully knowing the aforementioned agreement in order to take advantage of what the services treaty can offer for the growth and expansion of the company inside and outside the national territory. That said, companies can learn and deepen more in the issue of services that has been so important at the global level as well as contributing to decision-making within the organization that aims to improve processes and take advantage of the opportunities that this new treaty intends offer to service providers.

Likewise, this work, in a short term, can be of help and / or support for future research because the subject is relatively new and there is not much research related to the TiSA services treaty. In addition, the work can contribute or feed a line of research, which if the agreement is signed can be a guide to understand and delve into an issue that can be of great interest to companies and people who wish to venture further into the theme of services.

In addition, this research work can be help for companies or people who wish to venture into the subject of services and therefore can be starting to generate a business idea or help direct a company that wants to take advantage of the benefits it can get to offer the services treaty, adding to this the investigation can be of support or help for people who want to deepen more in the subject as it can be an investigation of masters or of postgraduate, because the agreement has not reached sign and in the event that this happens, there are many fields in which you can investigate and then leave to generate more research ideas and / or projects to learn more about TiSA, summarizing a topic that can come to be of high importance to future generations because the services at a global level are gaining more and more strength as the years go by and can become the object of study in carrer with a view to business internationalization focused on the services that each country can offer.

Finally, this research to us as researchers opens a big door to a world that is relatively new and unknown to the national and international community due to the recent nature of this treaty, could also lead us to a business idea that is revolutionary and innovative in the face of what are the treaties and how to put them into practice for the good of Colombian companies

along with the idea of deepening or leading in a professional exercise focused on the globalization of services and how they can be benefit for the nationals. Already in the not too distant future and after the TiSA has been implemented, this research can help us to continue with research at levels higher than the profession, as an idea of postgraduate research or even in doctorates and masters.

1.4 Theoretical framework

Over the years, the world has had many changes; technological, cultural, political, economic, among others. All this is aimed at "Globalization", a term that is difficult to explain exactly, also describe its origins, as several criteria are used to describe its emergence.

Manuel Castells, a sociologist and professor at the University of California, points out that it is "a transformation of everything we do in our lives produced by a revolution focused on information and communication technologies" (Castells, 1997). Meanwhile, Anthony Giddens (Giddens, 2000), developer of the structuring theory, affirms that it is the integrity of societies around the world, where the events of some country have repercussions on others.

In other words, it could be said that everything starts from the time of the discovery of new lands such as America and Oceania. This allowed the creation of the first seaways by the conquerors, which in one way or another connected the entire world; however, the truth of this term is that, in the current era, it has allowed interconnection, development and openness to the outside.

According to the Theories of Globalization, written by Octavio Ianni (1996), the world is no longer taken as a group of countries, where there was no interdependence, bilateral or multilateral relations. Today, economic development, consumption, and other variables, have generated that nations are closely interconnected, working for a free economy, in order to promote production, consumption, the growth of international trade, the extension of financial markets, etc.

Nations see globalization as a way of seeking competitive advantages to meet needs, as people's trends and habits are changing in the short term. Similarly, transnational companies have taken advantage of different commercial agreements opting for outsourcing or

outsourcing in countries, where labor is considerably economical, seeking to minimize costs and generate higher profits.

Its main features are: the implementation of different free trade agreements for goods and services, with the purpose of expanding markets, making the world economy grow. Also, there is industrialization, which has helped the progress of developing countries, generating new jobs in Latin America and Asia. In addition, the financial systems were internationalized, with institutions (World Bank and IMF) in charge that make decisions and formulate financial policies, controlling the capital market.

On the other hand, technological development, communications and the internet have allowed interconnection without border, in addition to more efficient business processes. Likewise, the emergence of new jobs in various parts of the world has resulted in a broader migration movement.

In addition to the above, companies from different sectors have been forced to innovate, create strategies and update themselves technologically, in order to obtain products with added value and thus compete in the international arena. For this, many organizations have implemented the services in their productive chain, in order to be more competitive and generate value in the markets.

The more technology advances, organizations are forced to create new business ideas, providing consumers with different types of alternatives that can meet their needs.

The new consumer generations demand that the processes be more efficient and faster, where quality is no longer part of the added value, it is an obligation. That is why innovation and business creation, integrate a set of services, which have allowed a better process optimization; However, it is an area that needs to be studied and researched (Ventura- Dias, Acosta, Durán, Kuwayama, & Mattos, 2003), since services is an issue that despite its great potential, still needs more structuring in all its categories, in order to “understand the transformation that is being processed in the nature of international trade” (Ventura- Dias, Acosta, Durán, Kuwayama, & Mattos, 2003).

It is necessary to emphasize that, the services were added to international trade with each of its modes of supplies since the 80s, by the GATT (General Agreement on Tariffs and Trade)

and GATS (General Agreement on Trade in Services), as the motivation of this inclusion, it was “the promotion of the liberalization of international transactions” (Ventura- Dias, Acosta, Durán, Kuwayama, & Mattos, 2003). Prior to this, the services were not appreciated as a good that could be consumed in the economy, however, the members of these agreements, at that time, identified the great benefit that the use or export of services could, since these , could be digitized or integrated into material support.

Since then, the GATS has defined four modes for the provision of international services; cross-border trade, consumption abroad, commercial presence and presence of natural persons. This is so that there is better traceability, ensuring transparency, as well as being a basis to boost the development of trade in services at a global level.

The introduction of services in the production systems has not only generated that companies have economic benefits at scale, it has also made them have appropriate technological advances for the incursion into new markets. However, economic development has not been so favorable for small and medium-sized enterprises, since the high competition that exists through transnational companies has meant that many of the SMEs have a negative end, due to little financial, technological support. And policies that protect them from the mass offer that multinational companies have.

To sum up, services have a high growth potential, which could help with the economy of many countries and the development of companies. Although, in order to be a transparent trade, the service sector still requires that the competent entities have new ways of controlling and promoting their provision internationally.

1.5 Conceptual framework

Because the problem of this research is oriented to the benefits and harms that the financial sector could have with the implementation of the TISA, the conceptual framework is constructed in order to highlight relevant aspects that were mentioned in the theoretical framework

First, the concept of Service Modes refers to a term established by the World Trade Organization, which is broken down into four variables to identify the position of the service offered.

According to the “practical guide to export services” of Procolombia (2018), the Modes are classified as follows:

MODE 1: CROSS-BORDER SUPPLY

The service is produced in Colombia or in the country of origin; the exporter does not need to travel to deliver the service or the buyer to come pick it up. The one that moves is the Service itself, through technology. Example: E Mail, SAAS (Software as a Service) or also called cloud services, IP Voice

MODE 2: CONSUMPTION ABROAD:

It takes place when a consumer travels from his country to receive the service in another country. For example: foreign patients receiving medical services in Colombia; Students from any country traveling to another to study.

MODE 3: COMMERCIAL PRESENCE:

When Colombian service providers establish their subsidiaries, branches or representative offices abroad to serve their consumers directly. For example: a group of Colombian architects who settle in another country to provide their services abroad. It also occurs when a company sends an employee to live and work for the company in the country of destination or when a Colombian is hired abroad.

MODE 4: MOVEMENT OF PEOPLE:

It takes place, when the natural persons providing the service to the consumer's country temporarily move to provide their services, either in their own name or on behalf of the

employer. In this sense, this mode encompasses two categories of natural persons: independent workers and employees. For example: a fashion show with Colombian models that takes place in Milan.

The next concept, interdependence, "subtly obscures national capacity inequalities, pleasantly points to reciprocal dependence and emphatically suggests that all states participate in the same game" (Tokatlian & Pardo, 2011). Although this term has different interpretations, it could be said that it is the interrelation between two or more actors, whether national or international, since the focus is to exchange factors in which each party stands out.

The third concept refers to the Free Trade Agreement, which "is a regional or bilateral agreement through which a free trade zone for goods and services is established, in which tariffs are eliminated" (Mincomercio, 2019). Its purpose is to increase trade in goods and services in different countries, minimizing barriers to entry, where each of the parties have an optimal development in economic, political, social, etc.

Finally, the General Agreement on Trade in Services (GATS) of the WTO has been "the only set of multilateral rules governing international trade in services. The Agreement reflects the gradual transfer of many services by state providers to the private sector" (World Trade Organization, 2015). In this order of ideas, one of the greatest possibilities presented for trade in services is focused on technological advances in information and communication.

1.6 Objectives

1.6.1 General objective

Identify within the legal framework of Colombian services, what would be the opportunities for the exchange of services, implementing industry 4.0 processes with the entry into force of the TISA agreement.

1.6.2 Specific objectives

- Analyze the current regulations for trade in services in Colombia through the degree of development of industry 4.0.
- Name the services that are promoted in the center of the 4 revolution in Colombia and its opportunities in foreign trade
- Analyze the advantages that the TISA agreement and the Fourth Industrial Revolution would bring in the development of services.

1.7 Methodological Framework

1.7.1 Research method

The present investigation of the Agreement on Trade in Services (TISA), is of a mixed approach, because it needs more than one method to obtain results, that is: the combination of a quantitative and qualitative methodology, which will allow obtaining more extensive results and successful, because the error factor that both methods have when they are implemented individually is eliminated.

On the one hand, it will be qualitative, because information will be extracted from magazines, internet, and reports, among others. Which describe important aspects on the subject to investigate. On the other, it will be quantitative because numerical data, statistics, percentage and figures in general will be collected

1.7.2 Type of study

The research is applied, since all the information collected is obtained by various secondary sources such as articles, theories of different authors, internet, books, among others. On the

other hand, the level of depth of the present study is descriptive, because it analyzes the benefits and risks that TISA has in the services sector in Colombia

1.7.3 Research methodology

Depending on the specific objectives, the techniques to be used are conversational, documentary and surveys. To obtain a more concise search, a semi-structured interview with a professional would be carried out, in which it provides information related to the three objectives embodied in this research work. In addition, books, reports, videos, laws and other documentary variables would be investigated to obtain specific figures on the growth of the services sector and additional interest data. Finally, questions would be raised with emphasis on the services sector, segmenting a group that can contribute with more knowledge on this topic

The information collected through the aforementioned techniques would be synthesized by means of tables, graphs, images and a DOFA matrix.

1.7.4 Bias control

In order to give accurate and concise information in this research, secondary sources validated by the university, scientific articles, and reliable books would be used. In addition, recordings would be made that are allowed by the interviewees themselves, to give credibility, without any alteration to the information.

1.7.5 Information processing

Researchers agree to be ethical with the investigation and not to alter and modify any data. Also, the copyright and intellectual property rights of each of the secondary sources will be respected, naming them at the end of the degree work.

1.7.6 Methodological synthesis table

Table 1 Methodological synthesis

Specific goal	Dimension	Indicators	Type of information source	Type of information and / or instrument
Analyze the current regulations for trade in services in Colombia through the degree of development of industry 4.0.	Growth of the service sector and its subsectors in Colombia	Growth of the last 5 years of the service sector -Main Subsectors	High school Primary school and high school	National agency reports: DANE, Mincit, etc. Expert interview. Reports of national organizations
Name the services that are promoted in the center of the 4 revolution in Colombia and its opportunities in foreign trade	Subsectors most benefited with the TISA	Norms imposed on the TISA -Subsectors included in the TISA -Restrictions imposed by the TISA	Primary school and high school Primary school and high school	Expert interview. Progress of the TiSA-Mincomercio negotiations

			Primary school and high school	
Analyze the advantages that the TISA agreement and the Fourth Industrial Revolution would bring in the development of services.	Subsectors most affected by the TISA	-Norms imposed on the TiSA -Restrictions in the TiSA -subsectors with little growth	Primary school and high school Primary school and high school High school	Expert interview. Progress of the TiSA -Mincomercio negotiations Reports of national organizations

Source: self made

1.8 Reach

La investigación tiene límite geográfico y sectorial, debido a que el punto de interés parte las repercusiones y efectos que tendría el TiSA en el sector de servicios en Colombia.

2. Investigation Development

Then, the specific objectives set out above will be developed, this in order to comply with the research formulated, for this purpose scientific bibliographic sources, research papers for academic purposes and reviews of the corroborated journalistic sector will be used, all this in order to give a support and justification to the raised in this investigation.

2.1 Analyze the current regulations for trade in services in Colombia through the degree of development of industry 4.0.

For the development of this objective, the existing regulations of Colombia in trade in services in relation to the development of industry 4.0 will be mentioned and analyzed, for this, it will be necessary to mention the main service sectors, such as: energy, telecommunications, transport and education, and its due regulations in force, additionally the relationship of said regulations with the development of industry 4.0 will be sought.

Currently, different regulations established for Colombia in the field of services can be analyzed, to begin with, the regulation monitored by the Superintendence of Public Home Services under Law 142 of 1994, which is established in article 8, will be mentioned. Competence of the Nation for the provision of public services, in textual form the following:

Law 142 of 1994:

“Ensure that the generation and interconnection activities to the national electricity networks, the interconnection to the public telecommunications network, and the commercialization, construction and construction activities are carried out in the country, through official, mixed or private companies. Operation of pipelines and networks for other services that arise from technological development and that require interconnection networks, according to the previous concept of the National Council of Economic and Social Policy.”(Art 8.3)

From the above, several premises can be established to analyze within the regulations; Initially the obligation of the Colombian State to guarantee the public services of Colombia, such as; Electricity, telecommunications, and others, however, the concession of said obligation is also determined through official, mixed or private companies, and it is here that the proposal offered by TiSA is not so remote or unreal from public services for Colombia , since the liberalization of these services is denoted under Colombian regulations.

Now, to support what is stated by law, we can mention great examples where Colombia, as a government, has sold state-owned public utility companies such as ISAGEN and ISA, which were companies that for many years were within Colombian heritage, but today, private equity companies are determined.

Other regulations that apply to trade in services in Colombia, regarding telecommunications, and which are in charge of the Ministry of Information Technology and Communications (MinTIC) through the Communications Regulation Commission (CRC) given by Law 1341 of 2009 and which in article 19 states:

Law 1341 of 2009:

“Promote and regulate free competition for the provision of telecommunications networks and services, and prevent unfair behavior and restrictive business practices, through general regulations or particular measures, being able to propose differential rules of behavior according to the position of the providers, previously has determined the existence of a market failure ”(Art. 19. 2)

According to this Law, several regulatory factors for telecommunications in Colombia can be analyzed. Initially the obligation acquired by the Colombian government, where it undertakes to promote free competition for the provision of networks, which establishes a guarantee of supply of the telecommunications service for the country, in turn, this law

regulates and prevents unfair conduct and / or restrictive exercises, which allows a favorable environment and guarantees for the execution of the companies that provide the telecommunications service for Colombia. Another of the regulations established for the telecommunications sector, also declared in Law 1341 and related to the development of industry 4.0, indicates that:

Law 1341 of 2009:

"Determine standards and certificates of international and national approval of equipment, terminals, goods and other technical elements essential for the establishment of networks and the provision of acceptable telecommunications services in the country, as well as indicate the national entities or laboratories authorized to homologate goods of this nature."(Art. 19. 8)

Referring to the functions established by the CRC where it determines the guarantees of international and national approval of equipment, terminals and / or the infrastructure used for the execution of telecommunications activities; Promoting and regulating, in this way, a technological development within the sector, since it establishes and orders minimum requirements for the exercise of the companies of said sector. A clear example of this is the requirement of the Colombian government through the Ministry of ICT with mobile phone operators, where they issue regulation to improve quality through the implementation of broadband or 4G and additional healthy competition when providing these services. (MinTIC, 2012).

Continuing with the existing regulations in Colombia for services, now in the applicability of transport, the Colombian government, at the head of the Ministry of Transportation, presents a great variety of agency attached to its Ministry, some of them are: National Road Institute (INVIAS), the National Infrastructure Agency (ANI), the Special Administrative Unit of Civil Aeronautics (Aerocivil) and the Superintendence of Ports and Transportation (SUPERTRANSPORTE). (MinTransport, 2019).

However, to clarify, the government through INVIAS has as its objective the execution of the policies, plans and strategies of the non-concession infrastructure of the National Road Network, which represents that INVIAS has the power to execute the established policy by the government for the development of roads, collect charges generated in tolls and other profits derived from the use of the country's roads and enter into all types of contracts and / or agreements that are required for the fulfillment of its objective; All this according to Decree 2618 of November 20, 2013 (INVIAS, 2019).

On the other hand, the Superintendence of Ports and Transportation has as its objective the surveillance, inspection and control of the public, maritime, river, land, rail and air transport services of the country, in turn, the SUPERTRANSPORTE, supervises the information and constitution of land transport companies, (passengers and cargo), in addition to the formations and constitutions of port companies and concessions granted to companies for the development of roads (SUPERTRANSPORTE, 2019).

All the previous agencies attached to the Ministry of Transportation have the premise of generating a favorable environment for the development of the transport service in Colombia, from the concession of roads to the implementation of new technologies in the operations and / or activities required within the sector, A clear example on the subject, the newspaper *El Espectador* indicates in its publication "Technology in transport" where it refers to the facility generated by the use of new technologies in cargo transport operations, where through the use of satellites You can know the precise location of a specific load. (The Spectator, 2010).

Finalizing with the regulations applied to Colombia in the services, the ones specified for education will be indicated where the Colombian government, at the head of the Ministry of National Education through the single regulatory decree 1075 of 2015 of the education sector establishes the functions and / or activities required to regulate the national education of the country. The mission declared by the Ministry of Education indicates:

“Lead the formulation, implementation and evaluation of educational public policies, to close the gaps that exist in guaranteeing the right to education, and in providing a quality educational service, this within the framework of comprehensive care that recognizes and integrates the difference, the territories and their contexts, to allow complete educational trajectories that drive the integral development of individuals and society” (MinEducation, 2019).

Proposing a scenario of development and liberalization of education for all people, through the promotion, promotion and guarantee of the right to education, the government being the main agent of impulse for this mission.

To conclude this chapter in general, it can be described that the Colombian regulations used in the regulation of services and in relation to industry 4.0, in general, provide an optimal and paid scenario for the release of services as proposed by the TiSA since in said Colombian regulations it is obliged to provide services such as energy, telecommunications, transportation and education, among others, however it does not restrict the origin of the company that offers said services generating a competitive space for foreign investment with the appearance of TiSA.

On the other hand, the business opportunity with the implementation of industry 4.0 also represents an important factor for the development of the Colombian economy and society, since currently new information and growth technologies are being implemented in the execution of service activities. An example of this is the economic and environmental proposal generated with the use of electric buses, friendly to the environment, which are supplied by private companies for the benefit of the community; For this reason, the relationship between industry 4.0 and Colombian regulations represents a business and investment opportunity for services.

2.2 Name the services that are promoted at the center of the 4 revolution in Colombia and its opportunities in foreign trade

On Tuesday, April 30, 2019, the Center for the Fourth Industrial Revolution was inaugurated in Medellin, the capital of Antioquia being the core of the new technologies that are being developed in Latin America. All processes derived from disruptive technologies are carried out in the spaces of Ruta N.

Since the city was chosen to be part of this network where important cities of the world are part such as: "San Francisco (United States), Tokyo (Japan), Beijing (China) and Mumbai (India)" (Money, 2019) , has aroused interest from various foreign companies, as it shows itself as an innovative city where projects are exposed in the use of technology.

In this center different services are promoted in order to improve the economy of the city and the country, through “emerging technological advances in fields that include robotics, artificial intelligence, block chain, nanotechnology, quantum computing, biotechnology, internet of things and 3D printing, among others ”(Money, 2019).

Illustration 1 Countries in which the centers for the Fourth Industrial Revolution are located



Recovered from RutaN Medellin, Courtesy Minsit (2019).

Source:<https://www.rutanmedellin.org/es/industria-4-0/item/4revolucion-internet-de-las-cosas>

In the Center for the Industrial Revolution four services are developed that provide an improvement in technological processes for both legal and natural persons:

- **Big Data:** This is intended to modernize national companies, where they can be more competitive, improve their performance and have outstanding results through good information management minimizing errors. “Managing massive amounts of data requires an automated registry whose sophistication goes beyond traditional methods” (MICROTECH, 2019), since, in order to achieve a good operational exercise, some technological tools are necessary such as: software, mining, cloud computing, among other.

This Center aims to involve companies from different sectors that can introduce good management of big data in their operating systems so that there is a thorough control of the supply chain, optimizing processes and improving the cost-benefit ratio, leading to greater competitiveness in the National and international market.

- **Blockchain:** in the midst of the digital transition that companies are having, Blockchain is qualified as one of the most important technologies of the Fourth Industrial Revolution and that should be integrated by organizations, since “it allows to register transactions permanently within a decentralized network, with distributed registration technology, meaning that all network participants own the information” (Olea & Vega, 2018).

Although its most popular use is cryptocurrency, the idea of the Center is to empower entrepreneurs and people that the Blockchain can be applied in many sectors, for example: transferring money to other countries is often expensive, however, with This technological resource is intended that "these movements of silver can occur more quickly and much cheaper than they have been given so far" (Bernal, 2019).

- **Internet of Things:** In spite of being a difficult topic to interpret because there are different meanings, it could be said that it is a system that “involves devices, innovation protocols and those who develop hardware, who have communication technology, who integrate solutions, who develop the product and those who analyze the data” (Salazar, 2019). All these indicators come together to provide solutions and process improvements in the provision and sale of services.

Illustration 1 the IO chain.



Recovered from RutaN Medellín (2019). Source: <https://www.rutanmedellin.org/es/industria-4-0/item/4revolucion-internet-de-las-cosas>

- **Artificial intelligence:** This technology every time gives us a different way of living, making many activities we do every day easier. Through algorithms, sensors, robots among others, you can obtain machines that think or simulate activities that humans do. That is why Colombian companies are beginning to integrate machines that are more effective that can work 24 hours a day with the same resources in less time.

This Center for the Fourth Industrial Revolution, in addition to providing training and modern alternatives for business development, would also bring many benefits in the foreign trade of services. Nowadays many business processes have been automated, including robots, advanced software, remote customer service centers, etc.

Colombia has a great opportunity in trade in services, as there is a group of activities that can be promoted. Although Colombian businessmen have not fully explored new means of conducting business, places like the Center for the Fourth Revolution would help businesses that form in the country go hand in hand with technology. “The country has been growing in exports of services in an important and sustained way in the last ten years” (Rivera & Palau, 2018). However, the government and companies still have big challenges to enter different markets with services.

A clear example where Colombia could export its services is Panama, a country that clearly lives in this tertiary sector, since its focus is not on the production of tangible goods or raw material transformation. According to the professor of the Inter-American University of Panama, Jean Delcid (Delcid, 2019), nowadays the most requested services in the country are platforms that handle electronic commerce, which is why the government is structuring laws that support these activities. In addition, customer service centers (call centers) are also being requested by different companies in the country, looking for this service to be performed in different languages.

2.3 Analyze the advantages that the TISA agreement and the Fourth Industrial Revolution would bring in the development of services.

For the development of this chapter, the proposals established by the TiSA for the countries belonging to the agreement will be mentioned and analyzed, and specifying the advantages that Colombia would find as a member country, in turn, the use generated by the use and implementation of Industry 4.0 or also called the fourth industrial revolution in the development of service trade.

To begin, the provisions of the European Commission, which is the representative body of the European Union in the framework of international agreements and relations, will be cited.

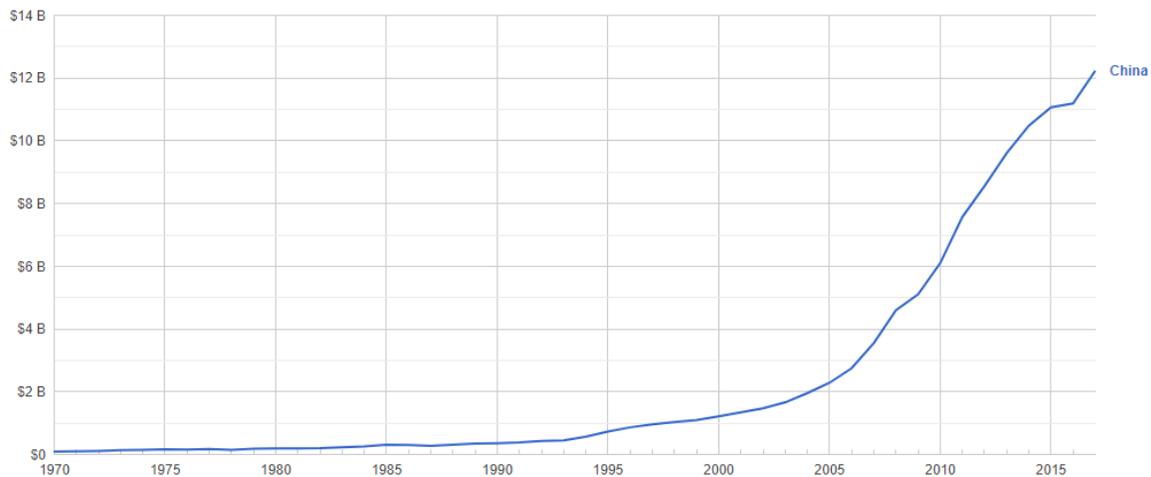
This commission establishes that TiSA intends to open international markets through compliance with the agreement and improve the rules that establish licensing, electronic commerce, telecommunications, financial services and all types of service provision by workers. (European Commission, 2019)

In this first analysis and consequently, as established by the European Commission, the agreement tries to liberalize the trade of services of the member countries, however, in this same publication it is established that as even the agreement is in negotiation, the conversations established by the representatives of the countries, the private sector (companies) and civil society, are not public and access to documents is restricted only to the management of the participants, all of the above representing a bias of the information available to your study.

However, in view of the current situation and to determine whether the proposal established by the TiSA agreement is considered advantage or disadvantage, it is necessary to consider several approaches to trade liberalization, this in order to conclude the advantages that Colombia could find within its trade with the launch of TiSA.

The first approach to trade liberalization is generated by the International Monetary Fund, through its publication “The liberalization of world trade and developing countries” in which it establishes the need for economic openness as a possibility of economic growth of the countries on track of development, and in turn, the commercial liberation for institutional reforms and structural norms of protectionism. (IMF, 2001). A clear example of what is established by the IMF is the case of China, which, after its opening and trade liberalization, its economy began to grow exponentially, even considered today, one of the commercial powers of the world.

Charts 1 Chinese GDP Growth



Source: <https://www.bancomundial.org/>

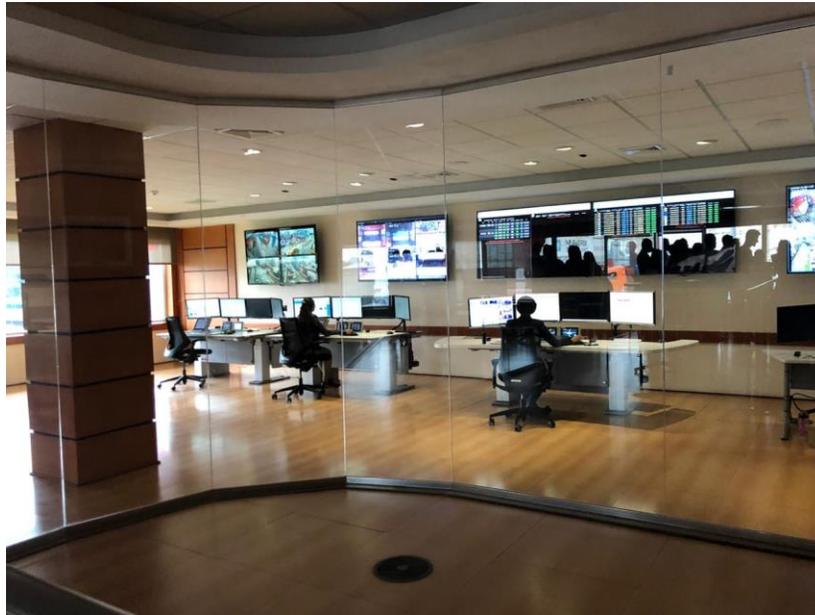
Another example of commercial liberalization sighted in South America is that of Panama in the financial sector, which, with the opening and liberalization of the sector, allowed the incorporation of commercial banks, establishing itself as the world center for financial services exports as indicated by the magazine. communication of the SEECI (CA Miró - Magazine of Communication of the SEECI, 2000). Understood as clear examples of favoritism in trade liberalization. However, there are also positions contrary to this position, based on trade protectionism.

On the other hand, the commitment to the use of the fourth revolution or industry 4.0 represents, to a large extent, an advantage for the services sector, but before that an introduction will be made to what was stated in this fourth industrial revolution.

Understood as the digital transformation of companies and / or manufacturers, the fourth revolution, includes the automation of processes and / or functions, through the use of robotics, the internet of things, big data and data exchange, this in order to develop more precise, fast processes, with less risk for human labor, besides being at low cost. (Mesurex, 2018).

A clear example, for its justification, was the one observed in the internship in Panama (2019 - II Semester) in the Manzanillo International Terminal, since they are currently operating remote controlled port cranes and also have fully automated cranes.

Illustration 3 Operations Center of the Manzanillo International Terminal



Source: Own capture.

Illustration 4 Remote Controlled Port Cranes



Source: Own capture.

This implementation of automation and characteristics of industry 4.0 within the Manzanillo Terminal allows a facilitation of the processes and / or activities carried out in port, generating a series of benefits such as: lower risk for the worker, efficiency and speed in loading and unloading of merchandise and greater productivity in the sector.

On the other hand, the current world is only beginning to perceive the advantages and / or benefits provided by the fourth revolution because, on occasion, it is only used to replace the operational activities that are already estimated within the supply chains of the products and / or services; However, the almost infinite possibilities offered by big data, information analysis and artificial intelligence generate many more fields of applicability. Companies such as Ruta N, considered as a development center for the fourth industrial revolution in Colombia are already considering models of applicability of today's businesses, which allows a possibility for the development of each type of business with the implementation of new technologies. (Route N, 2019).

To conclude this chapter about the advantages that TiSA would enter into force and the applicability of industry 4.0 in Colombia's services, some phases of incorporation into service trade that are difficult to predict would be estimated, beginning with clarity in conditions that TiSA would finally propose, once the agreement talks were closed and signed and finally the political and business acceleration used by Colombia for the implementation of industry 4.0, the latter being the one with the greatest contribution to economic, political and social development for The service sector..

3. Conclusions and Recommendations

3.1 Conclusions

According to the regulations that have been structured in recent years in Colombia, it can be concluded that these laws have allowed developing and service providers to access the national and international market more easily, promoting economic growth. of the country, since today the export of services has taken so much strength that it became the third sector that contributes more to the national economy.

On the other hand, the country is on the way to a transition in which it goes from the traditional (products that do not have added value), to the non-traditional (they require a high added value process), where technology is used as strong and base for operations.

The center for the Fourth Industrial Revolution is a great opportunity not only for Colombia, but for Latin America; since from this center technological projects will be carried out that help companies to be more efficient and competitive in the market, based on innovation, Artificial Intelligence, Internet of Things and data management. With all these tools and the incentives provided by the center, small, medium and large companies can improve their processes at the time of developing and marketing a service.

According to the negotiating approach of the TiSA Agreement regarding the liberalization of services, member countries and the conglomerate of companies could transfer services to each other without many restrictions from governments, thus creating new business models that contribute to the growth of the global economy; as trade in services grows rapidly compared to trade in tangible goods or products.

On the other hand, according to the study conducted in Panama, Colombia could have many opportunities to provide financial, tourism, logistics, and electronic commerce services, among others, because it is a country that has an economy that is supported by the provision of services.

3.2 Recommendations

For this section of recommendations, it will begin by recalling that the Agreement on Trade in Services (TiSA) is still in negotiations, so the first and necessary recommendation would be the proper analysis and evaluation of the applicability of the Agreement on the services sector in the country. All this, once all the points established by the Agreement and the acceptance by Colombia have been declared.

Since the use of the processes proposed by Industry 4.0, represent a great opportunity for the improvement of all sectors, and specifically, specified in this research, trade in services, it is recommended to point out and strengthen this type of tools that can favor and respond to the current demand of the markets, through the differentiating proposal where you get more productivity, less capital investment and agility in information for decision making.

Finally, it is recommended to carry out a market study to know which service has more demand and lack of supply in Panama, to enter this country being competitive, taking into account internal and external factors in Panama.

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