# CHALLENGES AND OPPORTUNITIES OF INTERNATIONAL TRADE ON THE COLOMBIAN ATLANTIC COAST GENERATED BY THE EXPANSION OF THE PANAMA CANAL

# LUIS FELIPE ESCOBAR ECHEVERRY URIEL FERNANDO BENÍTEZ BARROSO

ESUMER UNIVERSITY

FACULTY OF INTERNATIONAL STUDIES

INTERNATIONAL BUSINESS PROGRAM

MEDELLIN

2016

# CHALLENGES AND OPPORTUNITIES OF INTERNATIONAL TRADE ON THE COLOMBIAN ATLANTIC COAST GENERATED BY THE EXPANSION OF THE PANAMA CANAL

Presented by:

LUIS FELIPE ESCOBAR ECHEVERRY
URIEL FERNANDO BENÍTEZ BARROSO

Thesis presented for the degree:

International Business Professional

Advisor:

MARCO RUIZ CORREA

ESUMER UNIVERSITY

FACULTY OF INTERNATIONAL STUDIES

INTERNATIONAL BUSINESS PROGRAM

MEDELLIN

2016

Acceptance sheet		
	Signature of examining board	

## **CONTENTS**

			Page
ΑÌ	BSTR	RACT	
1.	IN	NTRODUCTION	9
2.	AP	PPROACH TO THE PROBLEM	
	2.1.	SITUATION OR PROBLEM DIAGNOSIS	13
	2.2.	FORMULATION OF THE PROBLEM	15
	2.3.	CONSEQUENCES OF THE PROBLEM	15
3.	JU	USTIFICATION	
<i>4</i> .	ОВ	BJECTIVES	
	4.1.	GENERAL OBJECTIVE	20
	4.2.	SPECIFIC OBJECTIVES	20
<i>5</i> .	RE	EFERENCE FRAMEWORK	
	5.1.	BACKGROUND	21
	5.2.	THEORETICAL FRAMEWORK	24
	5.2	2.1. The challenges of international relations and business	ss24
	5.2	2.2. Competitiveness	27
	5.2	2.3. Logistics: a key factor of competitiveness of compar	nies and countries28

5.	.3. MI	ETHODOLOGICAL FRAMEWORK30
6.	DEVEI	LOPMENT OF GOALS
6.	.1. LE	CGAL REGULATION APPLICABLE TO OPERATIONS IN COLOMBIA
T	RADE.	
	6.1.1.	Legal background
	6.1.2.	Current regulations
6.	.2. CC	ONDITIONS OF COLOMBIAN INFRASTRUCTURE COMPETITIVENESS38
	6.2.1.	Competitiveness: a priority for Colombia
	6.2.2.	Logistics infrastructure necessary for the modernization of the Colombian ports . 42
6.	.3. CE	HARACTERISTICS OF THE PANAMA CANAL EXPANSION PROJECT
A	ND ITS	S POTENTIAL IMPACT ON THE REGION47
6.	.4. CE	HALLENGES AND OPPORTUNITIES THAT THE PANAMA CANAL
E	XPANS	SION GENERATES 51
	6.4.1.	Quality control procedures and safety of the main ports of the Colombian Atlantic
	coast	51
	6.4.2.	Challenges and opportunities for Colombia with Panama Canal expansion 53
	6.4.3.	Infrastructure needs arising from the challenges and opportunities that the Panama
	Canal e	expansion will generate
<i>7</i> .	CONCI	LUSIONS AND RECOMMENDATIONS 57
RFI	FFRFN	CFS 50

### LIST OF GRAPHS

	Page
Graph 1. Total cost of logistics per region/country	45

## LIST OF FIGURES

	Page
Figure 1. Panama Canal expansion project.	48
Figure 2. Tubs for water reutilization	49
Figure 3. Dimensions for the new floodgates	49
Figure 4. Location of the new gates	50

**ABSTRACT** 

This work is focused on identifying the challenges and opportunities that the Panama Canal

expansion will create for international trade in Colombia, specifically it effects on the Colombian

Atlantic Coast; to achieve this goal, first, we analyze the current legal regulations applicable to

international trade operations in Colombia; secondly, we determine the competitiveness of

Colombia in infrastructure to cope with the commercial demands of the Panama Canal; third, we

familiarize ourselves with the characteristics of the expansion project of the Panama Canal and

its possible impact on the region; and finally we describe management procedures of quality and

safety of the main ports of the Colombian Atlantic coast and infrastructure needs arising from the

challenges and opportunities that the Panama Canal expansion project will generate.

Keywords: Panama Canal, international trade, economic growth, economic impact, social

impact, political impact.

#### 1. INTRODUCTION

With its expansion, the Panama Canal will bring new opportunities and challenges, which is why it is necessary to be prepared, because it is there that we see growth in the Colombian economy through increased trade; not providing the infrastructure to support this growth could stall the commercial future of Colombia, for this reason, we chose the role of the extension of the channel in the Colombian economy as a central theme.

Undoubtedly, the benefits that one is able to receive are more if one is aware that they should require investments to offer logistics services internationally, achieving turning Colombia and its ports in distribution centers of international maritime cargo; Additional to that Colombia may offer more employment (skilled labor), especially for the growth in infrastructure and modernization. These factors act synergistically to an end and are making a positive impact on the Colombian economy.

Still, to the extent that these projects are implemented, the enlargement of the Panama Canal and modernization of ports in Colombia, Panama and Colombia must take action together to prevent the latter can not answer the demands generated by the megaproject or vice versa. Moreover, concern also revolves around the fact that Colombia lacks an ability to tackle the large increase in the receipt of new markets and that there isn't a timely response from Panama to address the lack of completion of the enlargement in the time expected.

It is for these reasons that this research focuses on positions that for the research group are correct, because according to Maersk Line Colombia, points at Portfolio (2015), the works to expand the Panama Canal will make transport more efficient and productivity of the installed capacity higher, contributing to the competitiveness of countries in the region.

It is well-known that the Panama Canal expansion project is making major changes at the structural level and therefore, Colombia is not slacking with respect to this project, as it is currently investing in port infrastructure to meet the needs of new generations of ships, especially in Cartagena, where they are receiving new machinery, including new cranes to meet the demands of post-panamax ships; and although all these newly acquired technologies are not increasing traffic loads, what will grow will be the way in which Colombia resolves the care and efficiency to give way to them.

Colombia enjoys a strategic location that provides advantages over other countries; it is an important transshipment center for the region and could become a distribution center for Latin America; Similarly, the proximity of the country with the Panama Canal, and major infrastructure projects designed for the region of Uraba and the department of Choco that will allow them to compete directly with the channel, make the country a strategic place with medium and long term benefits.

Currently, there is a reduction on a commercial level, according to Maersk Line (2015), yet investment is expected to improve processes in ports, especially that of Buenaventura, with an extension for attention in ports to optimize container reception; plus continued investments for

growth in the new Terminal Aguadulce in the Colombian Pacific port; in Barranquilla investments are being made at the same time as in Cartagena, modernizing and expanding the refrigerated warehouses to improve the preservation of products that require it; the Caribbean Coast also is expected to improve in terms of navigability of the Magdalena River to help trade move quickly by river transport.

An alternative analysis of the research topic proposed here is the study of the flow of goods at the port of Cartagena, examination is also being tackled by other researchers such as Perez (2015)\*, from which you can see the type of range that one can come to have on various aspects (economic profitability, tourism, technology, adaptation to changes to improve the entire logistics chain involved in the port, etc.).

Visualize the future how the transit of goods at the port of Cartagena will behave, and this is one of the most important at the regional level by historical data from previous years, it will be able to establish an average for standardizing processes that do not affect the new standards.

Similarly, taking into account the data obtained through experiences of previous years you can avoid falling into the same mistakes, preventing port congestion and poor attention, to project on customers the message of a growing economy and for mutual benefit.

Following the purpose of this investigation, it is worth highlighting that Colombia has the means to grow, not only in the port logistics field, but also in the financial sector, to name one; the scope of these projects being neighboring countries, covers several sectors, according to

Malagon (2014). Colombia, beyond being a neighboring country of Panama is a strategic ally to meet the needs, not only on a commercial level, but also on a financial, real estate, food and energy level; all these canal expansion plans can turn Colombia into a major supplier, generating a society that benefits both parties.

To define some of the challenges that Colombia is faced with at its ports daily, and the challenges that hinder work there, it is important to note the study by Rivera (2015), who points out that it is necessary to achieve growth and convert Colombian ports into safer places and widely assign them to sectors such as tourism or specialized business centers, achieving better participation for further development and economic progress of the country. This topic provides an overview which invites us to reflect on how we find port security systems in Colombia showing the flaws that for many are obvious and affect the internal image of the country, creating an unfavorable environment for negotiation and distrust with foreign entities (including illegal) traffic.

Finally, it is important to note that currently Cartagena is aligned to the new requirements that the Panama Canal expansion demanded, acquiring and planning new alternative technologies that facilitate port operations; this city is a sign of forward thinking, it is investing in research to achieve technological growth and achieve the Panama Canal expansion and not absorbing the solution to achieve in order to supply this great megaproject.

#### 2. APPROACH TO THE PROBLEM

#### 2.1. SITUATION OR PROBLEM DIAGNOSIS

Currently, global maritime transport faces, like other major sectors of the economy, the challenge of being more productive, efficient and competitive each day, it is for this reason that maritime trade requires large and technological reception bays with important boats to energize and compete with larger markets. It is for the above reasons that it should be investigated in order to identify the areas which need improvement so we know if we can be a great maritime force, especially in the Colombian Atlantic coast.

With the expansion of the Panama Canal inter-oceanic trade in America will represent large and important benefits, especially for Colombia, as a globalized economy. However, in order to support the increased trade that is expected for the country, the various ports, including Cartagena, must make both significant structural and technological changes, in addition to investments in operations and logistics.

The Panama Canal expansion project, in its current state, is in the process of filling the new channel connecting the court commotion with the third part of the Game of Pacific Locks, this process complete filling will on average 20 days, the final delivery of the project is estimated to be in March 2016 and its inauguration is expected for the month of June of the same year.

On the other hand the Colombia port of Baru is becoming the most modern multimodal ports and was inaugurated on August 26, 2015. More than 550 million dollars were invested in its construction and the work lasted almost three years. This port has two docks, one for liquid cargo and one for dry or general cargo.

One of the structural changes, for example, will have to be increased water depth, especially those of Barranquilla and Cartagena, especially because thanks to the expansion of the Panama Canal and the opportunity to receive much larger ships, such as the post-Panamax, which can carry in one trip more than 12,000 containers, is 366 meters long, has a 49 meter-long beam and a maximum depth 15 meters, and which needs, according to El Tiempo (2015), between 390 and 450 meters of quay and will require the use of giant cranes to quickly move the high cargo container.

Undoubtedly, the Panama Canal expansion project is an opportunity that Colombia will have to take advantage of, as it means "enter the freeway of international maritime trade" (Arcieri, 2014), but for this country, especially the positions that will be impacted directly with the megaproject like Cartagena, one will need to identify changes that must be made to meet the new standards of shipping, because "the region will mobilize from 3 to 14 percent of the maritime trade in the world" (Montaño, 2013).

#### 2.2. FORMULATION OF THE PROBLEM

What opportunities and challenges will the expansion of the Panama Canal generate to international trade in Colombia, specifically on the Colombian Atlantic Coast?

#### 2.3. CONSEQUENCES OF THE PROBLEM

The risk of failing to adapt to the constant daily changes that international trade generates in Colombia involves significant losses of competitiveness for companies operating in the country, as it not only directly affects their ability to generate overall value against exports and imports with large production, but also affects the opportunity to turn the port of the Colombian Atlantic Coast in one of the major distribution and transshipment centers of Latin America.

According to Velandia, Segura and Fierro (2013), the ports of Colombia are an important factor for the country's competitiveness:

In addition to its enormous biodiversity, one of Colombia's greatest comparative advantages is its possession of water at both national borders, which indicates that there is a great opportunity for economic growth if this natural resource is exploited efficiently. Colombian seaports today are some of the ports with the greatest volume of cargo in South America, but they certainly have flaws both in terms of operations and infrastructure, preventing the competitive development of the country (Velandia, et al., 2013, p. 18).

Ports, therefore, are critical in establishing a degree of competitiveness for the country.

Today, Colombia ranks 61 in the global competitiveness ranking, according to the last measurement made by the World Economic Forum (2016). This indicates that the country has climbed five positions since 2015 when the same measurement was taken and the country ranked 66.

Moreover, it could be said that the non-implementation of infrastructure in different ports in the context of the large trade volume that will come through the Panama Canal expansion project could slow the logistics chains of production, transportation and Colombian distribution, generating lower levels of integration and moving the large portfolio that have export products to less competitive markets. This means that if Colombia does not invest or generate large port development projects, great opportunities to acquire private capital will undoubtedly be lost.

#### 3. JUSTIFICATION

This research project seeks to understand how the Panama Canal affects or benefits international trade in Colombia, especially on the Colombian Atlantic coast. Similarly, we explore how the project enables Colombia to be more competitive.

Colombia currently has some maritime ports close to the Panama Canal, such as the ports of Cartagena, Barranquilla and Santa Marta. This important location generates positive growth in trade, increasing levels of exports and imports and contributes to improved fares and rates, making the country an exclusive step for large economies of scale.

Currently, Colombia has nine port areas among which are: the Guajira, Santa Marta, Cienaga, Barranquilla, Cartagena, Gulf of Morrosquillo, Uraba and San Andrés, Buenaventura and Tumaco. Among the main Caribbean Coast are Barranquilla, Cartagena and Santa Marta, and the most important in the Pacific is Buenaventura (consolidated as the main multi-purpose port in the country) (Bejarano, 2014, p. 19).

Precisely, to improve the competitiveness of the country, a proposal of mechanisms that lead to the improvement of port services is essential. What we are trying to achieve through the project is, from the current limitations in Colombia's port areas, generate alternatives that allow the implementation of strategic plans that contribute to increasing the country's productivity, integrated with the Panama Canal. Through a comparison of the current situation and potential changes that can be generated, we will present process improvement opportunities that may be useful to improve the country's competitiveness and economic performance.

Given that international trade plays an indispensable role in each and every one of the world's economies, this project aims to investigate how the Colombian state will benefit if the country invests in the development of these ports, improving and modernizing all facilities and logistics services in support of requirements and admissions standards and in compliance with its business practices.

Currently this is already done Conpes 3744 of 2013, where they seek to follow the guidelines of the previous Conpes to achieve increased competitiveness of the ports of Colombia.

They outline the following five main objectives:

Present guidelines addressing the needs of the port capacity expansion, with the goal of advancing together with the private sector in an orderly and environmentally sustainable manner that responds efficiently to the demands of foreign trade and to the opportunities to provide port and logistics services.

- 2. Identify canal-related projects, access routes and coastal protection projects, which allow proper development of port activity, consistent with the policy guidelines established by the National Government in compliance with its international obligations.
- 3. Establish a new methodology for calculating the remuneration applicable to beneficiaries of port permits, seeking a balance between public and private in conditions appealing to capital.
- 4. Strengthen the policy, regulatory and institutional framework to encourage private investment and the sustainability of the sector (DNP, 2013, p. 24).

As a matter of fact, the Conpes document in question constitutes a reference point for the development, improvement and modernization of the Colombian port infrastructure. However, above all, it hopes to optimize the operations of Colombian ports to make them competitive and thus reduce logistics costs involved in all international marketing processes.

On a more personal note, this research would provide us with important insights on the current economic problems of a country which are generated by international trade. What is necessary is to create trained and competitive human capital for the economic and social growth of a population, promoting efficient and effective solutions to improve the per capita GDP and the quality of life of each and every Colombian.

#### 4. OBJECTIVES

#### 4.1. GENERAL OBJECTIVE

Identify challenges and opportunities created by the expansion of the Panama Canal with respect to international trade in Colombia, specifically the effects on the Colombian Atlantic Coast.

#### 4.2. SPECIFIC OBJECTIVES

Analyze the current legal regulations applicable to international trade operations in Colombia.

Determine the competitiveness of Colombia when it comes to infrastructure to cope with the commercial demands of the Panama Canal.

Understand the characteristics of the Panama Canal expansion project and its possible impact on the region.

Describe the procedures for quality management and safety of the main ports of the Colombian Atlantic coast and the infrastructure needs arising from the challenges and opportunities that the Panama Canal expansion will generate.

#### 5. REFERENCE FRAMEWORK

#### 5.1. BACKGROUND

Relating to the research project developed here, various studies have been carried out, some dating back to the history of the Panama Canal, which was built in 1914 with help from North America, and its extension. Others, meanwhile, refer to the importance of port infrastructure of various countries, and Colombia in particular, to improve competitiveness. Studies are listed below. They are recent studies and are presented in chronological order.

The research of Corrales, Perez and Mosquera (2009) shows Colombia's difficulties with respect to ports, while manifesting some possible solutions such as the launch of a port system in the Gulf of Uraba. To that effect, they lay out the advantages and disadvantages of the sub-region of Urabá to carry out the construction of such a port system. Likewise, they give a small outline of which departments could be the biggest beneficiaries of an Uraba port, given its productive structure and export supply.

The work of Jimenez Osorio, Presiga, Restrepo and Salazar (2013) shows the difficulties Colombia faces with regards to port matters, while at the same time offering some possible solutions. This is why we established the advantages and disadvantages of the Colombian ports to carry out the construction and improvement of the port system; likewise it gives a small outline of what could be the biggest benefits of these ports, given the structure of production and

exports. Thus, this research project seeks to analyze the influence of structural and operational constraints on competitiveness and performance of the Colombian ports; for this, we carry out an approach to the structural and operational status of the ports of Santa Marta, Cartagena and Buenaventura. Likewise, the structural and operational lag of Colombian ports over other Latin American ports is determined. Finally, we identify the need for modernization of the Colombian ports logistics infrastructure.

Gonzalez, Country and Freire (2014), for their part, analyze the importance of Colombian ports, especially the port of Cartagena, which provides an important outlet for exports and imports, as well as the relationship it has with the Panamanian port. For these researchers, recent years have shown rapid and large growth in port operations and shipping industries and, of course, globalization, trade and economic relations have led to a major process of containerization. These changes represent a huge challenge to assess the constitution and establishment of commercial port systems in a global context. This work also highlights the great relevance of the Cartagena port in its maritime relations and assesses the strengths and categories of its connections worldwide in the context of the Panama Canal expansion project and future alternatives that will open towards maritime trade with European ports and the restructuring that is taking place in the transpacific traffic.

Investing in Colombian ports safely and based on research can help improve every aspect where we encounter weakness and opportunity for growth. In that regard, through their research Knight and Kosztura (2014) describe the situation of Colombian ports presenting the capacity, infrastructure and current status, and showing the systematic problems and deficiencies. Then,

they perform an analysis of some efficient, competitive, cutting-edge international ports such as those in Shanghai, Rotterdam, Hamburg and Singapore in order to have comparison, argument, and examples of successful models in order to propose possible solutions to the most critical areas of the Colombian ports.

Finally, Malagon (2014) argues that the port society of Cartagena, in their plans for improvement, plans to invest more than six hundred billion dollars in logistics technology and in this way will meet logistical expectations. On the other hand, he notes that Fedesarrollo, who funded this study, quantified by various methods, the impacts of the existence and possible expansion of the Cartagena port in its area of influence and the national economy.

From previous research and studies, one can establish that the thematic connection between the development of port infrastructure in Colombia and the Panama Canal expansion project is practically null, which brings about the need for this work and presents said topic from the perspective of international business and the improvement of the country's competitiveness. Even so, these studies serve as a reference point to understand how the expansion process has been developing, and to understand the economic, commercial and social impact of the project, both in Panama and the region.

#### 5.2. THEORETICAL FRAMEWORK

#### 5.2.1. The challenges of international relations and business

It is indisputable that the twenty-first century begins brings profound changes in the paradigms that constitute the idiosyncrasy of science and society. Precisely that these changes have not escaped the management of modern enterprises, which due to new technologies and different demands, from an administrative point of view, today's world, has established new ways of managing organizations in order to adapt expected aims and goals to a context belonging specifically to this new period.

In the work of Drucker (1999), for example, you can find highly relevant aspects that help one understand the different changes of the paradigm of business administration in this new period of history. The importance of these aspects is the fact that if managers in the world today do not accommodate the new needs that management companies demand, both organizations and their directors and who are targeted can simply stop being at the forefront of this globalized world.

We say, therefore, that management is considering a new paradigm in which assumptions are important. For example, those hypothetical approaches that characterize the social sciences (and not exact sciences) and allow in turn experimentation, risk, operational, performance and optimal results of an organization.

Previously, companies were managed with the sole purpose of increasing profits: without thinking of efficiency, productivity, or operability, in performance, much less in organization, as revealed by Drucker (1999). At present, all these concepts that were previously discarded, constitute the backbone of the new management board of our day. It is no longer expected therefore to obtain optimum results only for the company, but those results are reflected externally in relation to the organization.

As an example, we can say that today's businesses are not so much interested in selling large quantities of products and increasing their internal capital. Instead, what really matters is that those who buy the products are satisfied with their quality and that they, in turn, will not generate additional costs.

But as the century changes its management paradigms and requires new strategies, it also demands new leaders. Business administration of tomorrow (or rather today), requires leaders who will not forget past processes, but at the same time who will tend towards organized improvement and achievement of success; leaders committed to change through innovation, willing to experiment, to risk, and to build a future without neglecting the continuity of efficient processes.

But for a leader to manage a company in the manner described above, the new tools that the modern world offers are also required, and they are information technology that to some extent constitute the very basis on which we have produced the paradigm shift in the administration of the XXI century.

So, adds Drucker (1999), the information that executives now need to do their work is obtained through data processing, organization of information and data acquisition through external sources.

Today, the work of those working with knowledge is increasingly valuable. Although initially craftwork was designed only to manufacture products (those who executed the task watched a job and then repeated it countless times), today this kind of work has been redesigned and has focused on values such as autonomy, innovation, continuous learning, quality over quantity and a desire to work. Thus one can see, those working with knowledge work as operators of a system that goes beyond the simple repetitive execution of a task.

Similarly, those working with knowledge must be very aware of their skills, so they must know what they do best through feedback analysis; likewise, they must know that their activity is not limited to teaching and to carrying out orders, but also to maintaining a constant flow and fluid information between the parties that make up an organization.

All this leads to self-management, which involves much more effort than managing a company, it is easier to study the strengths and weaknesses of an organization than to identify these same aspects in oneself.

This indicates that one of the great lessons that allows for the understanding of the management environment as a whole is the fact that companies do not last forever, and therefore,

these should be seen as finite organizations. For their ability to stay in the field of business, they would do everything possible, the fact is that one day they will finish their cycle.

#### 5.2.2. Competitiveness

For Porter (1994) competitiveness is determined, especially for productivity, which can be defined as:

Product value generated by a unit of labor or capital. Productivity is based on the quality of products (which in turn depends on the price) and productive efficiency. On the other hand, competitiveness is presented in specific industries and not in all sectors of a country (p. 43).

Porter (1994) notes that the competitiveness of a country depends on the ability of its industry to innovate and upgrade; therefore, a country achieves success in a particular industry because their home environment is more directed towards the future, which is dynamic and challenging.

Porter (1994) also notes that a nation can respond to the innovativeness of their organizations and these, in turn, could improve if they overcome barriers to threats of change, but one must take into account the four attributes that this author states in his diamond of competitive advantages: 1) the context of the strategy and rivalry of companies; 2) demand conditions; 3) the conditions of factors (inputs); and 4) the related and supporting industries.

#### 5.2.3. Logistics: a key factor of competitiveness of companies and countries

According to Alvarez, Pabon and Ortiz (2010), logistics is an excellent tool that can provide competitive advantages: optimization in the manufacture of a product and ability to obtain good quality products, lowering costs in the process, which brings as a result the ability to offer them at competitive prices.

Currently, for companies and countries in general, logistics has become a key factor of business competitiveness in order to provide the tightest response to current challenges: to provide customers the best quality service with the lowest possible system cost.

Competitive logistics enables high levels of service at low costs, but to achieve this it is necessary to develop a reference model to provide a specific idea of how we should act and what factors should be considered to obtain the best results in a country like Colombia.

International logistics is one of the main sectors in the global economic environment today and for this reason the importance of this activity in foreign trade, new technologies, plus it has become a major link in the industrial activity, It is indicating that appropriate international logistics infrastructure is indispensable to position oneself in the international economic outlook.

To Cure, Meza and Amaya (2011):

The development of the logistics function in the company during the last decades has been significant due mainly to the possibility of achieving sustainable competitive advantages through it. Many definitions have been developed on the concept of logistics, and all of them establish a

unique sense for the flow of materials and products that circulates through the logistics system from the producer to the consumer (p. 185).

One finds the logistics sector within tertiary activities, where it acts as the industrial sector support; this means that the success of an internationally competitive industrial sector also demands the indispensable support of a logistics sector that should ensure the needs of the national industrial system; all this for the importance industrial activities related to just-in-time and integrated logistics have achieved in recent years.

The logistics sector hints to marketing systems today, which, through the economy that innovates products offered through the internet makes necessary an effective, fast and secure logistical infrastructure so that it can achieve a true international economic structure.

To apply logistics is a tool of great proportions that can cause great competitive advantages such as optimization in the development of a product or obtaining quality products, reducing costs in the process, which would mean that they can be offered at competitive prices.

According to Guasch (2011):

Logistics is becoming a crucial element of competitiveness and economic performance, both in itself and in the context of increasing globalization. Most countries in Latin America and the Caribbean (LAC) are focusing on strategies to increase exports. For these strategies to succeed, a key component is an effective and efficient logistics framework that addresses the entire spectrum (upstream, middle and posterior) of the value chain and production. A logistical framework includes hardware, ie the need to transport products effectively physical infrastructure, and software, ie, associated services and processes necessary for the transport and marketing of the products effectively. The impact of logistics costs on competitiveness and productivity, marketing and integration in food prices, inequality and poverty is substantial (p. 2).

Ultimately, in all companies, or any economic or service unit, one seeks to feel the least impact of competition, and respond effectively to technological challenges; therefore, the rest is to manage integrated supply chain, from the supplier to the final customer.

#### 5.3. METHODOLOGICAL FRAMEWORK

Maritime transport is influenced by two operating parts, which play an indispensable role in Colombia's international trade: the ports and free zones; these important nodes, connecting objectively manage to streamline foreign trade operations generating added value and fostering an economy of scale. That is why this thesis was directed toward this line of research, since logistics is most important to achieving high levels of competitiveness and increasing dynamism of the economic sector of the country.

Several years ago, the ports of Panama occupied the top places in the list of the main ports, according to the Economic Commission of the Caribbean and Latin America. The Panama Canal expansion will bring major challenges for the Colombian logistical and financial sector, thanks to its location it will be one of the ports benefited most from this important infrastructure project. This is why the challenge for Colombia will be the technological resources with the largest and most complex logistical facilities in order to efficiently increase the volume of the goods themselves, generate value to the products, and consequently improve the quality of life of citizens.

This important engineering project on the Panama Canal will bring the triple container to Colombia and drive forward international trade. It is for this reason that Colombian ports must be prepared efficiently with quality infrastructure to improve the installed capacity and generate more and better products to customers.

Addressing a little more the solution to the problem that arose from the outset, the research group examined a selection of a significant number of sources, which should have much relevance in updating their content, thus you can easily identify what works and what does not; we also sought support in statistical and bibliographic data, which helped direct the line of work so they can complement validity, accuracy and credibility to the future solution of the problem raised here.

The method used was, mostly, the deductive method, since this work started from general frameworks, generating particular and specific assumptions along the way, transforming global ideas into solutions to this important research topic.

The working group, through this project, tried to find a feasible solution to the research problem mentioned and the main way to improve competitiveness in the Colombian ports, especially with the expansion of the Panama Canal, will be through excellent adaptation of logistics infrastructure, which generates the Colombian international trade growth and increased productivity, deepening and broadening the sea lanes, encouraging foreign investment, boosting port traffic in order to increase the volume of our goods and become an important economy scale.

All solutions, which generated this research project, were simplified in economic growth and excellent quality of life.

#### 6. DEVELOPMENT OF GOALS

# 6.1. LEGAL REGULATION APPLICABLE TO OPERATIONS IN COLOMBIA TRADE

### 6.1.1. Legal background

In search of strengthened foreign trade, especially exports, the Government established the Export Promotion Fund (PROEXPO) in 1967; with this initiative, technical support was given to exporters, plus a financial incentive. At the same time, traders were interested in the different sectors of the economy, seeing in them a good opportunity to export their products, but this interest did not prosper much. They worried about trading in the seventies, some traders and union producers appeared in the metalworking and apparel sectors to sell their products abroad, however, the difficulties of financial strength, the absence of regulations for the treatment of producers, the failure to have strategies that would implement trading as a channel and not to solve circumstantial difficulties, the imbalance in competition and immediacy by partners, which do not permit a real investment, because they wanted to have a quick profit, they did not allow these decisions to last.

In 1978 the proposal is rescued by the Board of Proexport, who conducted some research and as a result welcomed Resolution 41 to assist small and medium traders and/or producers who

were exporting, both of supply abroad for their products, as the needs of financial leverage and investment in fixed assets.

In 1979 the National Government, based on the regulations of Proexport, today ProColombia, sought tools to strengthen this sector, and on the expectations of the traders and their dynamic impact through the Ministry of Economic Development presented to the Congress of the Republic the draft Framework Law International Distributors, which was then approved with Law 67 in December 28, 1979.

The National Government led the Special Regime of C.I., which formally established the international marketing companies; there they established general guidelines for the formation and operation, set special incentives to national companies which marketed Colombian products abroad, and noted at the same time general guidelines to meet specific conditions regarding their establishment and operation, subject to inspection and monitoring regime to establish the national government. Basically, it refers to an incentive aimed at all those companies that buy goods from the domestic market configured as movable goods and/or intermediate services production destined for export under conditions that improve their productivity and competitiveness, staking effectively the industry and indicating its corporate purpose, type of company, and other conditions.

It then became an incentive mechanism and support for those companies that meet all the requirements of the law, they could access it and promote exports as it provided an opportunity

to bring together several suppliers in the same sector driving the share domestic production, with the advantage of considered tax and customs benefits.

The realization of exports would be the sole responsibility of the International Marketing Society and therefore, if not carried out within the opportunity and conditions prescribed by law, these companies should pay the national treasury a sum equal to the cost of incentives and exemptions that both it and the producer they had favored tax plus penalty interest, regardless of the sanctions the ordinary rules forsaw (Article 5 of Law 67 of December 28, 1979).

Later, in the year 1980, to enable that the law apply, they issued the Regulation Decree 2874, which is where the regulation of Marketing International companies was established and, likewise, incentives and benefits attached of which such companies were entitled.

#### 6.1.2. Current regulations

The current regulations applicable to international trade operations in Colombia are varied and long-standing; therefore, here we will mention the most important issue concerning the topic.

First, there is the Law 6 of 1971, through which standards should be taken into account by the national government to make changes to tariffs and tariff, as well as establish other provisions relating to the customs regime.

Also the Law 67 of 1979, through which norms were created, must equally be taken into account by the President of the Republic to boost exports through the international marketing companies, in addition to enact other aptitudes to promote foreign trade.

Similarly, we come across Law 48 of 1983, through which rules should likewise be considered by the Government to regulate Colombian foreign trade issues.

In turn, we can mention Law 7 of 1991, through which standards to be considered by the government to regulate foreign trade in Colombia are enacted; Also, through this legislation, the Ministry of Foreign Trade is created, the structure of the Higher Council for Foreign Trade is set, the Foreign Trade Bank as the Fund for Economic Modernization is created; and finally, some authorizations are granted and other provisions are set.

Through Law 9 of 1991, for its part, it longed for rules that must be taken into account by the national government to regulate international changes, plus additional measures are welcome.

With Decree 2685 of 1999, the Colombian customs legislation is amended.

Law 1242 of 2008 established the National Code of Navigation and Fluvial Port Activities and also enacted other provisions.

Decree 474 of 2015 regulated the procedure for applying for grants for the development of port activities covered by laws 1 of 1991 and 1242 of 2008.

Finally, we should mention here the Decree 390 of 2016, through which the customs issue is regulated in Colombia.

As can be seen, the regulations governing foreign trade in Colombia are diverse; this means that the country, like the rest of the world, demands rules for international trade governing the movement of goods transnationally, because the universe of international trade is quite complex and without these rules it would not be possible to complete international transactions. What stands out from the previous regulation is the effort of the Colombian state to unify legislation that seeks to strengthen logistics competitiveness which can be achieved through a more modern port infrastructure. This will allow Colombia to take advantage of its geographical location and the possibility of communicating with the sea through two oceans.

What the previous regulatory provisions show is that the issue of international trade in Colombia is properly regulated; however, it suffers from the problem that such regulation is highly dispersed, making it difficult to identify the tacit benefits offered by Colombia to traders, investors and carriers for international trade. Even so, it is necessary that Colombian law adopt a new course, which seek greater benefits, especially for ports, so that these, especially the Atlantic, become a benchmark for international trade, not only on the regional level, but also worldwide.

Local trade, for example, establishes a number of rules with which any person or company must comply, but already at the international level these rules change, so they must be defined, in particular, to define the duties and responsibilities that affect the various operations carried out

internationally.

The fact is that without rules governing the entry and exit of goods in one country we could

not establish obligations and responsibilities between buyers and sellers; therefore, the goal is to

establish a set of terms and rules that enable both rights and obligations between the parties to a

international commercial transaction; the idea is that it facilitates the exchange of goods and

simplifies terms of delivery terms, making clear the terms under which the various negotiations

are conducted.

Now, after identifying the current regulations applicable to international trade operations in

Colombia, this next chapter developed from this point forward will revolve around getting to

know the Panama Canal expansion project, the expected impact on the region, and growth

projections through 2020; the importance of this chapter is to enable you to understand, besides

the canal enlargement process, the positive effects it will bring to Colombia, particularly in terms

of competitiveness and productivity.

6.2. CONDITIONS OF COLOMBIAN INFRASTRUCTURE COMPETITIVENESS

6.2.1. Competitiveness: a priority for Colombia

During the last decade in Colombia, most of entrepreneurs and government agencies have

made competitiveness a priority and believe firmly that free trade and international business

38

without borders generates development and quality jobs; also they state that these policies would be impossible without progress in poor countries and emerging economies.

According to Herrera (2011), we have reached a point in which we confuse competitiveness with productivity; but what we intend is to increase productivity, because if this happens, success in international competition will be secured.

And the current Colombian economic outlook is not very encouraging if you consider that despite having a good position in the international ranks in the field of information technology and communications, it possesses low performance in other indicators in the productive field so that the country remains behind in world rankings in terms of competitiveness.

On the other hand, we must remember that free trade agreements that are strengthened by infrastructure projects (especially road and port) are governed by principles such as full liberalization of trade and investment through tariff reduction, elimination of subsidies, tax exemptions to foreign investors in export processing zones, elimination of requirements to foreign investment and protection of intellectual property rights, among other principles. However, we hear very little about the manner in which developed countries achieved their level of development. To Chang (2002), for example, cited by Herrera (2011) it is clear that protectionist states which intervened in the market and pursued policies of import substitution to become powerful now claim that developing countries are opening their markets without restriction.

It is important to recognize that "a bilateral or multilateral treaty is preferable to having unilateral preferences (such as the GSP Plus awarded by Europe or ATPDEA granted by the United States to countries fighting the production/export of illicit drugs)" (Herrera, 2011, p. 5) more if you have the support of a group of countries receiving 15%, approximately, of Colombian exports. While unilateral preferences are uncertain, the benefits agreed in these treaties have greater permanence; even the removal of these means their prior denouncement and the effects of treaties remain in force for the period established.

It should be kept in mind that if a country like Colombia conducts a unilateral opening of markets, without consideration of its partners, it loses a margin of negotiation that could be better utilized if in exchange for their concession of demands and reaches its counterparts in the negotiation, reducing distorting factors such as subsidies, quotas and arbitrary use of sanitary and environmental measures. It is recalled that this kind of openness processes began in Colombia in the nineties.

Experts on the subject such as Payares (2003) argue that Colombia, for example, is a closed country and is one of the most closed economies in Latin America, and even the world; so much so that the share of exports and imports in the GDP is very low compared to similar economies.

United States, making a comparison, "is the first economic power in the world and exports have been in recent years about 11% of Gross Domestic Product" (Herrera, 2011, p. 5); China, meanwhile, is seeking to strengthen its domestic market, with the goal of reducing dependence on the international market and minimizing vulnerability to events of recession in the

international economy, as this could harm its production strategy, as happened to several countries with the recent international financial crisis.

This confirms, therefore, that many developed countries have used policies that do not allow the employment of other countries, arguing precisely the opposite of what they enacted when they required development. In the same way, they present various contradictions: first, is the difference between integration understood as a monetary economic, political, and migratory process and, unlike membership in free trade zones or customs unions limited to the economic sphere; and, secondly, is the insertion (encouraging the export of competitive goods with import of those products that the country cannot produce) and the purely economic opening to the entry of goods, services and capital, but with conditions of the free movement of people.

It is worth remembering that Colombia enacted a unilateral opening in 1990 (with lower tariffs from 42% to about 12%, elimination of prior licenses, fees and pre-imports deposits, all in just one year), with the faithful conviction that it would thereby automatically reallocate factors to more competitive sectors. However, at present the main items of exports from Colombia remain hydrocarbons, mining, flowers, coffee, textiles, clothing and footwear, which were already dynamic before the opening.

Moreover, according to Herrera (2011), the country is one of the nations that presents the greatest migration in South America, with approximately 10% of its population living abroad, according to the International Organization for Migration -IOM- Colombia. In the nineties, for example, it showed one of the highest peaks in emigration, one of the possible reasons for job

losses is the reduction of agricultural acreage and the massive bankruptcy of companies that followed the economic opening initiated in the government of Virgilio Barco Vargas between 1986 and 1990 and exacerbated by the government of Cesar Gaviria Trujillo between 1990 and 1994.

The fact is that in all these areas, Colombia has huge backlogs, which are not offset by tariff reductions. "Simply review Colombian exports according to the technological intensity used to observe that the country remains a primary exporter" (Herrera, 2011, p. 7).

As has been seen so far, what determines the success of a country in the international economic arena is its good performance in the issue of productivity, which is determined by both technical, business and marketing factors. Meanwhile, the political context of international relations and the decisions made in foreign trade must be coordinated with the export strategy of the nation.

### 6.2.2. Logistics infrastructure necessary for the modernization of the Colombian ports

According to World Bank data (2016), Colombia is ranked 64 in the Logistics Performance Index which measures the development of infrastructure and logistics processes among 155 countries in the world; in the last three years, the country has successfully climbed 8 positions, and in 2010 it was ranked 72, while in 2007 it occupied the 82nd position.

However, despite this climb in terms of logistics, the work and the challenges that remain for Colombia are many. According to Alvarez et al. (2010), the economy of the nation demands new logistics systems in terms of cargo in order to improve the competitiveness issue, so it is important to understand that the planned and projected road infrastructure projects are not enough, but that it is necessary for logistics to evolve, especially in terms of reducing costs related to the flow of goods and services, as in the articulation of the various actors involved in exchange processes, in increasing the supply of services logistics and, above all, in providing specialized logistics infrastructure.

According to these authors, in the last decade:

(...) The country registered positive growth rates in 2007 reaching a record 7.5%. Also, the share of foreign trade in GDP, according to the National Planning Department (DNP), increased from 26.3% in 1996 to 31.4% in 2008; and between 2003 and 2008, Colombian exports have grown at an annual average of 21.2% (Alvarez et. al, 2010).

In addition to the above, it must be recognized that the National Government, through the Ministry of Commerce, Industry and Tourism has been developing a broad agenda of trade negotiations with countries such as Canada, China, Spain, Chile, Mexico, South Korea and several countries in Central America, as well as international organizations such as the Andean Community of Nations (CAN). Under this scenario, Colombia must face enormous challenges in terms of productivity and competitiveness, which will require policy measures that allow the proper introduction of the country into the global environment, taking advantage of the benefits that come from foreign trade through logistics efficiency, reducing costs and streamlining operations.

Thus, investment and infrastructure development are essential to the national transportation system load, which must be associated with additional measures aimed at growth in competitiveness of the system and the economy. So, "the consolidation of the National Logistics System (SLN) becomes a matter of great importance within the set of public policies to be implemented with the aim of raising productivity and competitiveness of the Colombian economy" (Alvarez et al, 2010).

Indeed, Colombia has a huge backlog in the National Logistics System and this delay is undoubtedly causing extra charges in freight for companies in the country.

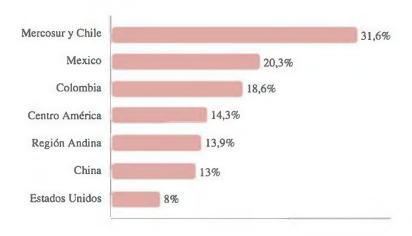
According to the National Association of Foreign Trade (Analdex), supported by World Bank reports, while in Colombia the cost of transporting a container of an industrial plant to a port costs about \$2,255, with processing times of 14 days (document preparation, authorization Customs management in ports and transport) and \$2,830 to import (with a time of 13 days), Chile, for example, can reach those markets with a cost of \$980 per container and in 15 days (...) (Arias, 2013).

What is problematic about this is that there is not a particular case, but, on the contrary, it shows the enormous backlog of the entire operating system of transportation in the country, as prices of logistics in transportation are above average from the rest of Latin America.

Peru, who also signed FTA with the bloc (with the EU) from 28 countries, can be reached in 12 days, with a cost of \$1,450 per container. And Mexico can send a container to the European Union in 12 days with a unit cost of \$1,450, while Latin America and the Caribbean do it in 17 days, but with a lower cost of \$1,268 for export and \$1,612 to import (...) (Arias, 2013).

The following graph shows the total cost of logistics by region/country and reflects how Colombia is one of the countries that pays most for the transport and logistics of their products.

Graph 1. Total cost of logistics per region/country



Source: World Bank

What this above graph shows is that the better the logistics infrastructure in a country, the higher the revenues and lower the expenses of its enterprises. As can be seen, logistical expenses incurred by a Colombian businessman are 18.6%, it is therefore necessary that the country will position the development of infrastructure projects that reduce these costs and thus make the country an attractive market for foreign investors.

Meanwhile, with the purpose of defining the policy guidelines to guide the country's productive activity and exchange of goods and services under the principles of efficiency, in June 2008 Document CONPES 3527 was endorsed in which policy directions for productivity and competitiveness were designed. To achieve that objective, strategies were drawn up, above all, to correct deficiencies in financing infrastructure projects and regulation and standards related to freight and logistics.

Similarly, it is worth noting that the measures implemented are designed taking into account the myriad components that make up the dynamics of logistics.

Knowing the narrow maneuverability of the national budget, the World Bank considers it essential to improve the quality of public expenditure; through an efficient reassignment focused on projects that encourage innovation and development; placing the role of the public sector focused on improving infrastructure and prudential regulation of freight activity. Thus, regulation of road transport, which predominates as the primary means of cargo transport within the country, also demands a business model facilitation of logistics, understood as the formalization of the sector and growth in the creation of logistics operators. Within this regulatory framework we should promote a gradual release to achieve prudential regulation, where it facilitates the entry to companies; improve information systems with reliable statistics to guide the sector and take appropriate corrective action; promote policies to control anti-competitive practices, strengthen businesses and promote the development of logistics operators and focus on the formalization of the sector (Alvarez et al., 2010).

Faced with the above, it is necessary to establish that Colombia has major challenges to take on with respect to infrastructure to counter logistical constraints and address the requirements and demands of the Panama Canal. The country seeks to address these challenges through various infrastructure projects, highlighting the expansion and modernization of clients and the implementation of so-called 4G highways, initiatives that have been implemented and generate a number of opportunities such as acceleration of regional economies, increased local revenues, job creation, reduced journey times, improved quality of life of the regions and the opportunity to access new markets.

These infrastructure projects are set up as a major development focus for departments, and therefore for all of Colombia; despite the criticisms that such initiatives have received and the possible negative impacts that could be generated on the environmental level, the fact is that such projects are necessary and will aim at improving the quality of life of the entire population.

Still, it is important to note that this is not a risk-free project, whether social, economic, legal, political or geographical; issues such as high cost, corruption, breaches of contractors, delays in implementation of the different sections, are situations that should be monitored constantly and in a timely manner by government agencies and the citizens themselves.

In conclusion, the logistics of the country presents a huge backlog that restricts the competitiveness of the productive and export sector. In response, the government has sought to design policies to overcome the difficulties identified, although, without a doubt, the biggest challenge, especially in the short and medium term is to advance the development of an agenda that enables the implementation of these policies and involves the various stakeholders. For this it is necessary to analyze the political economy factors and economic conditions that have hindered the development of major issue areas identified in the National Logistics Policy.

## 6.3. CHARACTERISTICS OF THE PANAMA CANAL EXPANSION PROJECT AND ITS POTENTIAL IMPACT ON THE REGION

After conducting various studies and analyses, Panama decided to expand its canal; the idea was to add a third lane of traffic to increase its capacity. Basically, the Panama Canal expansion project is based on building two sets of locks, each with three levels and three tubs (which reuse 60% of water in each transit), one on the Pacific side and two on the Atlantic side, which allow reuse of water by level. Likewise, it seeks to broaden and deepen the existing navigational channels in Gatun Lake and the entrances to the Pacific and the Atlantic and deepen, in turn,

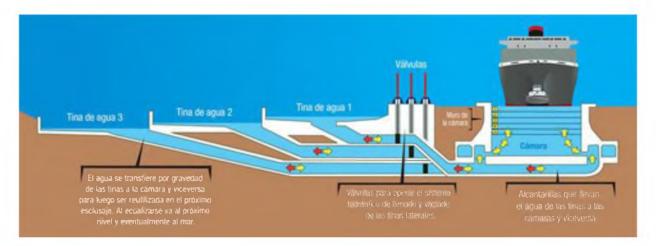
Culebra Cut, which is also part of the Canal. With the new locks for the Panama Canal, between 10 and 12 seek Neopanamax, named for its large dimensions (ships with a length up to 366 m. and/or sleeve up to 49 m. And/or set to 15.24 m.) may pass, ie about 40 transits daily, following a mix of vessels.



Figure 1. Panama Canal expansion project

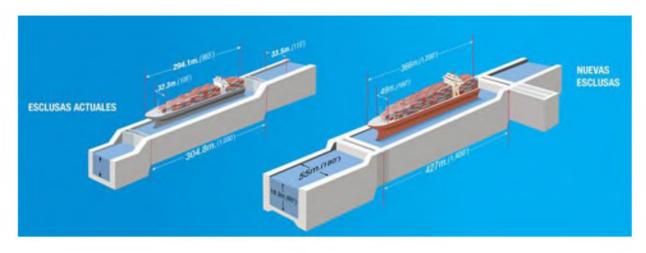
Source: Micanaldepanama.com (2015).

Figure 2. Tubs for water reutilization



Source: Micanaldepanama.com (2015).

Figure 3. Dimensions for the new floodgates



Source: Micanaldepanama.com (2015).

The illustrations above show the new conditions the Panama Canal will have; for Colombia it is very important to consider the characteristics of the canal expansion, insofar as it will lead to the movement of larger boats and open work, which in turn requires an overhaul and modernization of the Colombian ports to receive, load, unload and dispatch such craft. In total there will be 16 rolling gates, all of different dimensions for the new locks (8 in each game).

Figure 4. Location of the new gates



Source: Micanaldepanama.com (2015).

The entire project costs US \$5.250 million, but to finance this amount, with help from the United States, the government of Panama has signed several contracts with bilateral entities and multilateral credit (with the Japan Bank for International Cooperation (JBIC), with the European Investment Bank (EIB), the Inter-American Development Bank (IDB), the International Finance Corporation (IFC) and the Andean Development Corporation (CAF)).

According to the Panama Canal Authority (2006), the canal expansion is financially profitable to the extent that it can yield an internal rate of return of 12%. Surely such expansion will yield increased operational efficiency, which is required, above all, to meet the growing demand of

trade passing through the Panama route, and there will be economic benefits, especially for Panama, which will allow for quality of life improvements for the inhabitants of the country.

The impact for the region, meanwhile, will be direct, especially in economic matters. And for logistics processes and stakeholders (customers and users, importers and exporters, control agencies, government authorities, etc.) there will also be a significant impact even though they required port expansion plans that ensure that investments in this system will contribute to the vision of growth of international trade and a reduction of costs, plus it will increase competitiveness.

# 6.4. CHALLENGES AND OPPORTUNITIES THAT THE PANAMA CANAL EXPANSION GENERATES

### 6.4.1. Quality control procedures and safety of the main ports of the Colombian Atlantic coast

The seaports in Colombia are indispensable for business operations, which is why we have sought to improve the quality of services provided in these with the intention to be more competitive globally; however, this sector still requires a number of improvements to enhance port performance. Basically, we have to give priority to improving safety, enhancing the capacity of the facilities, giving reliable service and rotating the load.

Improving port infrastructure in the country is a matter of great importance, especially for the enforcement of the various free trade agreements between Colombia and other countries. The seaports in Colombia are critical not only for foreign trade, but also to attract foreign and domestic investors.

The purpose of promoting the generation of higher levels of competitiveness in Colombia is to have effective logistical action and with excellent levels of communication, and allow the promotion of foreign trade and encourage the provision of quality service in logistics and transportation, but for one to accomplish this task it is necessary to strengthen the foundation for the entire port system of the country, especially those of the Atlantic Coast.

Everyone involved in port activities should be clear that the management of a port terminal should be focused on moving as much cargo as possible in the shortest time and safely, but incurring the lowest possible expenditure and this requires use of technological processes for optimizing loading processes and means of transport.

Similarly, and in order to improve the reliability and efficiency of service and rotation of the load, it requires the creation of strategies aimed at reducing waiting times and service in port terminals, in addition to efficiently using all of the installations.

One of the difficulties that most affects seaports in Colombia is undoubtedly the topic of operations, because this is a fundamental aspect for both the maintenance and survival of these.

With the passage of time the issue has become very important, because ships have increased their depth in order to increase transport capacity, this is why one of the priorities of the ports in the country, in this case those of Atlantic Coast, is to increase the level of depth and efficient technology to handle the load. Currently in Colombia interoceanic container flow is catered for Sub-Panamax vessels and Panamax, so we should consider the new ships that will pass through the Panama Canal with its enlargement, the Neopanamax.

#### 6.4.2. Challenges and opportunities for Colombia with Panama Canal expansion

The benefits of the Panama Canal expansion are different for Colombia, because indisputably, the cargo volume will increase trade. The passing of larger vessels means there will be a reduction in costs and transit times, because they require fewer stops, so the main challenge for the country's ports, especially for Cartagena, Barranquilla and Buenaventura, is modernization.

For Concha (2015), for example, ports on the Atlantic coast should grow much larger, especially for the new ships that pass through the expanded Panama Canal; also they should acquire larger refrigerated warehouses to handle loads of perishable foods that require cold storage.

In addition to dredging, it is also necessary to install security cameras and new scanners for the inspection of cargo. Similarly, it is necessary to construct new warehouses, especially since the ability to move containers will double. The Panama Canal expansion project will undoubtedly make shipping in the region more efficient and the increase in productivity of installed capacity will contribute to the competitiveness of countries in the region, especially for Colombia, especially for its geographical location, it is a very important transshipment hub for the region. That is why we have to be first in line, according Portfolio (2015) to take advantage of upcoming opportunities.

Similarly, it is necessary to encourage investment in installed capacity in the port terminals and restructure the indicators measuring efficiency in order to integrate the processes that have to do with the quality of service in ports.

### 6.4.3. Infrastructure needs arising from the challenges and opportunities that the Panama Canal expansion will generate

As has already been said, Porter (1994) refers to competitiveness as a factor determined by productivity, but this depends on the product that generates a unit of work or capital and on production efficiency. Although there is efficiency, it is necessary that each country has a national advantage. This advantage is provided by the infrastructure that each nation has. Thus, the ability of Colombia to address the challenges and opportunities that the Panama Canal expansion project will generate depends largely on the infrastructure of the country.

Currently, Colombia's infrastructure is in a stage of development, which seeks to respond in general to the conditions of domestic demand. It is not just ports and roads, it is infrastructure projects that serve the interests of the entire national territory, because there can exist much

faster transit regions, loading and unloading of products, enabling interconnections between different regions and allowing access to different destinations.

In terms of logistics, it is indisputable that the expansion of the Panama Canal will provide businesses and transport, higher and better conditions for their business sector. In this regard, Gomez (2000) notes that logistics determines and adequately systematized the right product, the right customer, the right place and the right time; however, such coordination is not possible if you do not have adequate infrastructure.

It is important to note that the supply chain is therefore:

Planning, organization and control of the activities of the supply chain. In these activities, the management of cash flows, product and service information is involved, throughout the supply chain, in order to maximize the value of the product/service delivered to the end consumer while decreasing costs of the organization (Grisales, 2005, p. 26).

With the expansion of the Panama Canal the priority for Colombia must be to break down organizational barriers that form the root of the logistical problems caused by restrictions on production lines, one of those barriers being poor road infrastructure. To this we must add that the Panama Canal expansion project will be complemented by other important infrastructure improvements in the country, especially highlighting the port in the Gulf of Uraba, which will be located in the municipality of Turbo, whose works have already started. It is a work with "great potential for business" (Florez, 2014, p. 1), which is coordinated with the 4G highways, improving ostensibly competitive conditions and trade logistics, and helping to turn the trade with other countries, taking advantage of the proximity of Colombia with the channel.

In summary, it can be said that with both competitiveness and logistics management, the Panama Canal expansion project will allow Colombia to venture into a "win-win" through infrastructure projects of great magnitude, these being a major development focus for the nation in general.

#### 7. CONCLUSIONS AND RECOMMENDATIONS

By identifying the challenges and opportunities created by the expansion of the Panama Canal to international trade in Colombia, we are able to observe that ports deployed in the Colombian Atlantic Coast have a special competitive and comparative advantage over other ports in the Caribbean Sea in other countries, not only on the issue of the distance to the Atlantic entrance of the Panama Canal, but also because the country has and exercises sovereignty over much of the maritime territory that serves as a transit point for ships heading to and from the Panamanian isthmus.

This creates a number of challenges that Colombia must address vehemently with the implementation of major infrastructure projects, not only port projects, but also logistical, as much with roads and rivers as with airports. Just as modernization and upgrading of ports on the Atlantic is necessary, it is also necessary for the ports of Cartagena, Barranquilla and the port of Puerto de Santa Marta; likewise, it should be given more quickly to the construction of the port of Uraba, which would reduce logistics costs of Colombian entrepreneurs tangentially, to the extent that the number of hours of domestic freight transport to the nearest port would reduce.

To this we must add a greater use of inland waterways in the country, particularly the Magdalena River, which is navigable from the departments of Caldas and Cundinamarca to its mouth. This requires the development of inland port projects along the river. Similarly, to

retrieve and promote the navigability through the Canal del Dique, which leads to Cartagena, we would generate greater development for this port.

In road matters, Autopistas 4G or Highway Prosperity should be implemented with great transparency and special monitoring by control bodies, so that the country can have this type of infrastructure promptly without any procrastination.

And in airport matters, modernization of the major airports of the Atlantic Coast is necessary, so that they can accommodate tourists and investors who see in these ports an important reference point for their interests.

#### REFERENCES

- Álvarez, C., Pabón, C. y Ortiz, J. F. (2010). *Logística en Colombia: camino hacia la competitividad*. Recuperado de http://revistasupuestos.uniandes.edu.co/?p=64
- Arcieri, V. (2014). *Nuevo Canal de Panamá, un reto para la Costa Caribe*. Recuperado de http://www.elheraldo.co/economia/nuevo-canal-de-panama-un-reto-para-la-costa-caribe-139653
- Arias R., F. (2013). Los costos logísticos frenan el TLC con Europa. Recuperado de http://www.elcolombiano.com/BancoConocimiento/L/los\_costos\_logisticos\_frenan\_el\_tlc\_con\_europa/los\_costos\_logisticos\_frenan\_el\_tlc\_con\_europa.asp
- Autoridad del Canal de Panamá. (2006). Propuesta de ampliación del Canal de Panamá. Proyecto del tercer juego de esclusas. Recuperado de https://micanaldepanama.com/wp-content/uploads/2012/10/acp-propuesta-de-ampliacion.pdf
- Banco Mundial. (2016). *Índice de Desempeño Logístico*. Recuperado de http://datos.bancomundial.org/indicador/LP.LPI.OVRL.XQ

- Bejarano M., F. (2014). Sector portuario colombiano e incidencia de las políticas públicas en la Sociedad Portuaria Regional de Buenaventura (SPRBUN). Bogotá: Superintendencia de Industria y Comercio.
- Caballero G., M. y Kosztura, C. (2014). *Una infraestructura portuaria éficiente y competitiva en Colombia. Diagnóstico y perspectivas*. Bogotá: Universidad Militar Nueva Granada.
- Concha, J. (2015). Colombia se prepara para la ampliación del Canal de Panamá. Recuperado de http://www.americaeconomia.com/analisis-opinion/colombia-se-prepara-para-la-ampliacion-del-canal-de-panama
- Corrales Á., A., Pérez L., M., & Mosquera P., R. (2009). Sistema portuario de Urabá: potencialidades y ventajas en el desarrollo económico de Antioquia. Medellín: Universidad de Antioquia.
- Cure V., L., Meza G., J. C., & Amaya M., R. (2011). Logística Inversa: una herramienta de apoyo a la competitividad de las organizaciones. *Revista Científica Ingeniería y Desarrollo*, 20(20), 184-202.
- Departamento Nacional de Planeación. (2013). Conpes 3744, política portuaria para un país más moderno. Bogotá: Consejo Nacional de Política Económica y Social, República de Colombia, Departamento Nacional de Planeación.

Drucker, P. (1999). Los desafíos de la gerencia para el siglo XXI. Bogotá: Nueva Línea.

El Tiempo. (2015). Puertos de Cartagena, listos para recibir los megabuques de Panamá.

Recuperado de http://www.central.com.co/es/noticias/puertos-de-cartagena-listos-para-recibir-los-megabuques-de-panam%C3%A1

Flórez F., N. (2014). *Urabá: potencial para los negocios*. Medellín: Universidad de Medellín.

Foro Económico Mundial. (2016). *The Global Competitiveness Report 2015–2016*. Recuperado de http://www3.weforum.org/docs/gcr/2015-2016/Global\_Competitiveness\_Report\_2015-2016.pdf

Gómez G., G. (2000). Logística industrial. Pereira: Universidad Tecnológica de Pereira.

González L., F., Pais M., C. y Freire S., M. (2014). Análisis del foreland y de la conectividad portuaria de Cartagena de Indias. Bases para los desarrollos derivados de la ampliación del Canal de Panamá. *Revista de Economía Mundial*, 38, 49-76.

Grisales D., S. M. (2005). Estructuración del manual de procedimientos de la cadena logística.

Medellín: Universidad de Antioquia.

Guasch, J. L. (2011). La logística como motor de la competitividad en América Latina y el Caribe. Santo Domingo (República Dominicana): Inter-American Development Bank.

Herrera V., B. (2011). TLC Colombia: retos y desafíos. *Policy Paper*, (5), 1-22.

Jiménez Z., M., Osorio U., S., Présiga C., M., Restrepo G., M., & Salazar C., I. (2013).

\*Competitividad y desempeño de los puertos colombianos. Medellín: Universidad de Medellín.

Maersk Line. (2015). *Informe de Comercio Primer Trimestre de 2015*. Recuperado de http://www.maersk.com/~/media/publications/trade-reports/latin-america/colombia-new/2015-q1-maersk-line-trade-report colombia-spanish-version.pdf?la=en

Malagón, J. (2014). Impacto económico y social del puerto de Cartagena. Bogotá: Fedesarrollo.

Micanaldepanama.com. (2015). ¿Qué es el Programa de Ampliación del Canal de Panamá?

Recuperado de http://micanaldepanama.com/ampliacion/preguntas-frecuentes/#prettyPhoto

Montaño, J. (2013). Retos del Caribe con la ampliación del Canal de Panamá. Recuperado de http://www.eltiempo.com/archivo/documento/CMS-13289059

Payares V., Z. (2003). Asociatividad empresarial. Estrategias para la competitividad. Bogotá: Fondo Editorial Nueva Empresa.

- Portafolio. (2015). *Colombia estará en primera fila en el Canal de Panamá*. Recuperado de http://www.portafolio.co/internacional/colombia-estara-primera-fila-canal-panama-27334
- Porter, M. (1994). Estrategia competitiva: técnicas para el análisis de los sectores industriales y de la competencia. México: Continental.
- Rivera M., G. (2015). Modelo de gestión de talento humano como herramienta para el mejoramiento de la seguridad portuaria en Colombia. Bogotá: Universidad Militar Nueva Granada.
- Velandia, C., Segura, C., & Fierro, M. (2013). *Infraestructura de puertos marítimos como determinante para el incremento de la competitividad en Colombia*. Bogotá: Universidad del Rosario.