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“Importance of the establishment of Management Systems on the Ecuadorian Industry  
to improve its competitiveness by identifying a potential sector”

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## **ABSTRACT**

This research, based on an Ecuadorian and international bibliographic and normative analysis, aims to demonstrate the importance of Management Systems and quality processes in industries, since they have become key in trade and to gain competitiveness, specifically in the food sector, upon which this research will focus. Ecuador still manages a primary export model with little added value and its practices have mostly remained static, simply in theory and not in actual execution, leading to the underdevelopment of certain industrial sectors. Therefore, it is important to note that the implementation of an effective administration of the Management Systems within the food sector will be beneficial to the National Industry and consumer satisfaction, making it more competitive and prepared to face external situations that may affect it.

## **INTRODUCTION**

This research aims to determine the importance that the establishment of Management Systems can have on the Ecuadorian industry to improve its competitiveness. To do so, methodologies such as the analysis of real cases, interviews and visits to different companies were used to have a clear idea of how the implementation of Management Systems in industries provide countless benefits and opportunities.

Through the years, it has been possible to appreciate the importance and necessity that companies have of establishing Management Systems, to standardize their processes and optimize their results. This thesis aims to demonstrate that thanks to these systems, a company can achieve greater competitiveness and continuous improvement. With compliance with standards, a substantial improvement can be easily identified in different areas of the organization.

Management Systems are a set of rules and regulations that have been developed in recent years and can be applied in all areas of an organization whether social, environmental, quality, labor, etc. Countries with strong economies have implemented these systems in their industries, which is why these activities should be used as a model. As a result, this research seeks to inform business people and future entrepreneurs of the country the possible tools that can be implemented to become equal or more competitive than other countries.

One of the main motivations to carry out this research was to identify a sector of potential improvement in Ecuador and how this sector, with the application of international models, can become very significant for the country. It seeks to take advantage of the potential that Ecuador has to become an influential figure with quality products.

## **CHAPTER 1**

### **ANALYSIS OF THE ECUADORIAN MODEL**

- 1.1 Analysis of Ecuadorian History
- 1.2 Ecuador today
- 1.3 Ecuador's main trade partners
- 1.4 Identification of potential markets for improvement.
- 1.5 Weaknesses within the identified sector

## **Analysis of the Ecuadorian Model**

It is important to take a brief look at Ecuador's commercial history to understand that it is not possible to find solutions without understanding the historical past, where the roots of the problems that are still present today are found. The analysis of past behaviors shows that a true development is not only achieved by exporting primary products.

Ecuador's economic development has been limited by several factors, which have existed since colonial times and are still going on today. The economy has been characterized by a series of conflicts, which apparently were never well studied, and therefore this economic underdevelopment continues, impeding growth. It may be noted that both from the time of conquering Spain and the independence of the Republic, Ecuador grew up based on a patriarchal model, believing that the economy was better managed in few hands and needed protection for all activity. At that time Ecuador was a resource-rich country that traded only internally, so it did not see the need to open its trade frontiers since everything that was needed could be found internally. Years later, Ecuador saw the great benefits of international relations, and was therefore motivated to take its products to the international market.

## **ANALYSIS OF THE ECUADORIAN MODEL**

### **1.1 Brief historical overview of Ecuador's economy**

A single commercial model has characterized the history of Ecuador's economy. Ecuador, being a country rich in natural resources according to economic scholars, is said to suffer from the evil of abundance. This evil is due to the fact that from the beginning of its history the economy was characterized by being an extraction-based, agro-primary economy. That is to say, it was dedicated to exploiting the natural resources and then exporting them without any added value. On the contrary, countries that do not have this natural wealth have sought forms of development and thanks to technology and innovative ideas, they have been able to develop and strengthen their economies. Although this condition has allowed us to survive, this has not allowed Ecuador to exploit its potential. Although different governments have tried to establish

various methods to boost the Ecuadorian economy, there are still many obstacles that the country has to overcome. It is for this reason that it is worth emphasizing the events that have marked our economy, to fully understand Ecuador's initial practices and why they are still being implemented nowadays. During certain stages of its history, the country enjoyed economic booms, and although these were extraordinary for the economy, at the same time they brought great problems.

Thirty years after Ecuador's independence, the country simply focused on supplying the domestic market. After, this model changed since Ecuador had the so-called cocoa boom, which occurred from 1860 to 1920, where the share of this product became very significant in the total export production of the country (Uquillas, 2008). However, around 1916 plagues hit cocoa production, adding to this the fall in European demand, which was a great blow to the country. In addition, new countries began exporting this product, making Ecuador no longer an exclusive exporter of it, and initiating an international cocoa competition. All this caused the price to fall and when prices finally increased again in 1920, another plague struck production and a yellow fever epidemic reduced labor, leaving the country with little production capacity. "Cocoa exports were the basis of the economy and growth, especially in the Ecuadorian Coast, so the commercial, agro-exporting, industrial and banking sectors came into crisis" (History of Ecuador, 2006).

In the late 1940s, banana production began as a way of escaping the economic crisis of the 1930s, and another era of growth based on primary exports began. Thanks to the banana boom, spending and investment were notably increased, especially in the construction of roads and means of national integration such as railroads. Once again, these banana profits were not managed responsibly, since the country did not direct the resources properly. For example, the consumption of the national production was left aside and imports of unnecessary products from abroad increased, including those that could even be found in the same country, and, thus affecting the peasant class and especially the food sector. This gave way to the banana crisis, which in 1964 reached its most critical point, since the Ecuadorian product was displaced by the Central American one and the trade balance became deficit until 1971 (Acosta, 2012).

Oil production began in the country at the beginning of the 1970s, bringing with it great expectations of industrialization, capital generation, savings and investment, for an

economy that depended throughout its history on agricultural raw materials. A steady and superior income was promised thanks to the considerable flow of dollars coming from abroad. However, during the first boom in oil revenues, these were not adequately managed, as they resulted in military governments spending excessively, causing severe fiscal imbalances, high public spending, and increased public and private external debt. It is important to mention that the benefits of the oil boom were concentrated in the hands of a few people, leaving the rest of the country in a difficult social and economic situation.

In January 2000, Ecuador surprised the world with the dollarization of its official coin, sacrificing its national currency "el sucre" and introducing a foreign currency. By 1980, Ecuador had entered into an economic crisis to which no one was able to find a way out. During the last few years before it was decided to implement the dollar in the country, there were a series of events, such as the fall in the price of oil, the impact of the Phenomenon of "El Niño", and the international financial crisis, which made the already deteriorating Ecuadorian economy, fall even more. All of these factors made the financial system even weaker, turning the Ecuadorian economy into a system that could no longer stand alone. As a consequence, Ecuador had to find a strategy that would help to regain confidence in the country's economy, so the government authorities decided to opt for dollarization. It was then, with President Jamil Mahuad, that Ecuador decided to go into dollarization to see if it was able to overcome the crisis in which the country had been submerged. Even though at first the dollarization created chaos, it brought long-term stability in the Ecuadorian economy since it regularized the national financial system (Acosta, 2012).

Parallel to the process of strengthening dollarization, at the beginning of the new millennium there was a second oil boom that took place during a more dynamic economy, with similar problems to those of past times. Although Ecuador was able to benefit from large revenues from the sale of oil that at that time was highly valued, it was not able to take advantage of them in the long term. This was due to the growth of the State, the increase of the external debt, the little diversification of the productive structure and the volatility of the oil price that did not allow the initial boom to continue. However, the economy was sustained by a series of exogenous factors such as remittances from migrants, national exports and, above all, the recovery of the United

States economy, the recipient of almost half of Ecuadorian exports. These circumstances allowed the country to resist the decline of this boom and the radical change of dollarization (Acosta, 2012).

In January 2007, Rafael Correa began his presidency, who has ruled for almost 10 years. It should be mentioned that during his presidency there have been several changes in the country, both economic and social, changes that have been positive, others negative, and others that are in process. His party's ideology has been completely different from previous governments, which is very much a socialist and left-wing policy. Among his most notable projects are: the development of a good road system, the reorganization of education, the improvement of citizen security services, the creation of a new constitution, a new tax culture, and the change of the productive matrix, which aims to "change the model of economic accumulation, or in other words, transforming a primary economic-exporting structure to an added value generating and exporting economy. Above all the document leaves a list of pending tasks for the next governments to continue in the transition to a new pattern of development" (Villavicencio, 2016). This project promises a profound transformation for the benefit of the country, however its objectives have not been fulfilled in its entirety.

It should be noted that thanks to the support given to the export sector, Ecuador's oil was not seriously affected by the drop in oil prices. However, the global crisis of 2008 led to reduced consumption of luxury products (shrimp, flowers, wood, etc.) (El Mercurio, 2010), which had a negative impact on all economies, including Ecuador's. As a result of the 2009 crisis, a decline in Ecuador's total exports was detected.

On the other hand, we must mention the negative aspects of Rafael Correa's presidency, such as: ideological confrontations between economic classes, the creation of a number of laws at the convenience of the current government, a mismanagement of oil revenue that was never seen before in the history of the country, increased public spending through excessive bureaucracy, import and trade restrictions, especially with capitalist countries that have traditionally been important trade partners for Ecuador, giving priority to international relations with countries related to its ideology that do not represent a significant economic benefit in commercial transactions. Finally, the decrease of oil prices and the need to maintain the bureaucracy created debt mainly with China, in conditions not in tune to the country just for keeping its left-wing ideology.

After a brief analysis of Ecuador's economic history, it can be stated that since the country's initial commercial activities, these have not been properly operated. This is because the country relied on a small number of products, which represents a great danger for the Ecuadorian economy, since it is subject to natural, economic or market conditions, which makes the economy vulnerable and prone to being unstable. In other words, these primary products have cyclical movements, with the boom and recession being common stages.

In addition to the external conditions already mentioned, there have been internal factors that have had an impact on the development of the Ecuadorian economy. For example, the State has taken protectionist measures, which in the long run has had negative effects on different industry sectors. Ecuador's economic culture as well as many Latin American countries has produced a conformist system that only takes advantage of natural resources and has not focused on innovating or developing new technologies. Since the mid-1800s, Ecuador has been dependent on a single sector, developing very few other economic areas that could be more productive, renewable, and more competitive.

The three booms in Ecuador's economic history were partly responsible for keeping the country in a comfortable and not visionary position. With sufficient external revenue, there was no need to resort to internal changes such as looking for other ways of generating capital through other sectors. The Ecuadorian of that time did not leave his zone of comfort thanks to the riches coming from the earth. For example, it was not necessary to revise domestic gasoline price structures to curb smuggling and energy waste, even reducing subsidies was not a primary action, nor diminishing the emergence of a growing fiscal gap.

Another reason why Ecuador did not feel the need to develop other sectors was because of the protectionist measures that began as a result of the oil boom. Likewise, most governments in different countries have implemented trade barriers as a protection mechanism in times of crisis. Another example of this was the global crisis of 2009, where several countries had to resort to protectionist actions to safeguard their industries (Vergara, 2010).

In short, Ecuador has been applying this protectionist and conformist model for many years by stopping imports, which has led the industry to a very uncompetitive model, leading to a lack of innovation, competitiveness and development. Most national products continue to be primary, with little added value. For this reason it is necessary to be prepared to compete with foreign products, with products that are of as good quality as those of its competitors. In this way, the opening of international markets and the elimination of restrictive measures will not seriously affect Ecuadorian industries. Although the new productive matrix, promoted since 2007, seeks to counter these conditions, it has not been able to fully meet its objectives due to different internal conflicts. This has caused there to be laws that have been written without being actually executed, or others that have been suspended because of different political ideologies. It has been confirmed that depending on only one category of products with little added value has not had optimal results, and that protectionist measures have not solved the shortcomings in Ecuador's economy.

Therefore, this research seeks to demonstrate that one of the solutions to the problems of the current model would be the implementation of systems and measures that allow optimizing the proper management of resources and aim towards competitiveness. The Management Systems are one of the best ways to promote the National Industry and Trade for the benefit of the country's development and of its citizens as well.

Today, Management Systems at a global level are of great importance in different fields of business. Management covers branches as diverse as: quality of products and services, environment, occupational safety and health, corporate social responsibility, finance, good manufacturing practices, ethical behavior, among others. Several authors have shown in their studies that an adequate use of the Management Systems helps to improve the efficiency and therefore the competitiveness of industries (Muñoz, 2016).

## **1.2 Ecuador Today**

In order to find solutions to the weaknesses of the Ecuadorian economy, it is essential to know the Ecuador's diverse realities:

- Much of the industry bases its productivity on energy and fuel subsidies.

- Exports are mostly primary products. Among them, the products considered as Premium are: roses, coffee, chocolate, snacks, sauces, confits, dehydrated fruits, liqueurs, and fruit jams, among others.
- Ecuadorian products are mostly medium and low technology, and few are highly technological, and are almost entirely exported to the CAN, MERCOSUR and the rest of ALADI.
- Private investment in recent years has declined, which was not taken advantage of the conditions generated in infrastructure.
- The Ecuadorian industry is constantly seeking normative stability.
- "In 2015 there were 1,037 regulations, representing an increase of 46% compared to 2014.
  - 86 rules per month, 22 weekly and 4 daily
  - 1 in 3 laws issued are reforms
  - 15% are officially written
  - 90% are specific laws
  - 31% of reform regulations are tax matters" (Ministry of Industry and Productivity, 2016).
- Ecuador is ranked 119 out of 141 countries according to the 2015 Global Innovation Index. This means that it lags behind other countries in production, creativity, innovation, knowledge and development. At the regional level, Chile and Costa Rica reached 44 and 45 respectively, as the most innovative economies (Ministry of Industry and Productivity, 2016).
- The Ecuadorian industry lacks quality infrastructure to support the industry. Only a third of the products have quality infrastructure to obtain certifications (Ministry of Industry and Productivity, 2016).
- In 2015, according to data from the Central Bank of Ecuador, exports of the products mentioned above reached the following amounts: roses (USD 605 million), extracts, essences and concentrates of coffee (USD 127 million), chocolate (USD 20 million), snacks (USD 57 million), sauces (USD 2 million), confectionery (USD 44 million), liqueurs (USD 434 thousand), jams and jellies (USD 51 million) and dehydrated fruits USD 14 million) (PROECUADOR, 2016).

- Ecuador has as its official currency the dollar, which has provided the stability of a strong currency, but at the same time it has not allowed economic autonomy since it is always subject to the monetary policies of the country issuing the currency.
- Adopting a foreign currency makes Ecuador less competitive because production costs are higher than those of countries that have their own currency (Ministry of Industry and Productivity, 2016).
- Ecuador has always had its economy supported by trade agreements.
- Ecuador is currently a member of the following trade blocs:
  - CAN: Andean Community
  - ALADI: Trade Agreement between the Member Countries of the Latin American Integration Association

Among the agreements that have had major importance in Ecuador's economy are:

- Partial Agreement No. 29 with Mexico: Tariff preferences with different levels of tariff reduction, to a specific product list.
- Economic Complementation Agreement No. 65 with Chile: Free Trade Area with Chile. .
- Economic Complementation Agreement No. 59 with Mercosur: Ecuador maintains a system of tariff preferences.
- Protocol to ACE No. 59 with which the Federative Republic of Brazil grants tariff preferences to the Republic of Ecuador.
- ATPDEA: (2001-2013) The Andean Tariff Preferences and Drug Eradication Act was a unilateral United States regulation that showed economic compensation for the fight against drug trafficking, and tariff-free access was granted to a wide variety of exports from Ecuador.
- SGP: Generalized System of Preferences: benefited Ecuador's exports among other 122 countries, establishing a zero tariff for around 400 subheadings of Ecuador's exportable supply (Ministry of Foreign Trade, 2016).
- On November 11, 2016 Ecuador signed Ecuador's Protocol of Accession to the Multi-Party Trade Agreement with the European Union, which will enter into force in January 2017 (Ministry of Foreign Trade, 2016).

- During the last years, more than half of the products in the basic goods basket are on the list of surplus goods. This raises the prices of basic goods consumed in the country and therefore increases the cost of living for the average Ecuadorian. The consumption of food and non-alcoholic beverages is the most important item for households, according to the National Institute of Statistics and Censuses (INEC), representing 22% of their expenditure.

"Since March 2015, safeguards have affected 517 food products, of which 191 are related to the CPI (Consumer Price Index) basket" (Quito City Institute, 2015). See table 1.

**Table 1 Overly Priced Basic Basket Products**

Products	% Safeguards
Oils and fats	39%
Mineral water, soft drinks, fruit and vegetable juices	45%
Sugar, jam, honey, chocolates and sweets	25%
Coffee, tea and cocoa	45%
Meat	45%
Fruits	45%
Milk, cheese and eggs	45%
Legumes and vegetables	42%
Bread and cereals	36%
Fish	45%
Food Products (mayonnaise, ketchup, mustard, dressings, condiments, baby food)	45%

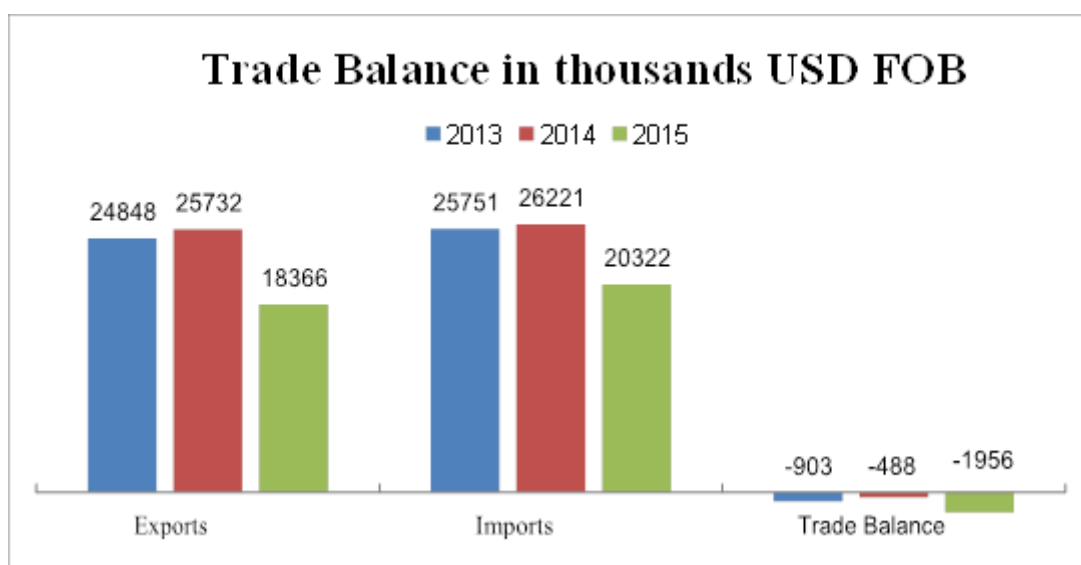
Source: Resolution No. 0112015 COMEX and Banco Central del Ecuador.

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### 1.3 Ecuador's main trade partners

It is essential to understand how Ecuador's economy is nowadays, its trade balance, its main exports and its most relevant commercial partners to have a better picture of how the trade is being handled and to identify areas where greater efforts can be made.

**Figure 1 Ecuador's Trade Balance**



Source: Banco Central del Ecuador

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During the year 2015 there is a deficit in the total trade balance of \$1,956 million in the figure above as it can be seen. Exports decreased by 28.6% and imports decreased by 22.5% when comparing the years 2015 and 2014 (Ministry of Foreign Trade, 2016).

Likewise, it is assumed that while imports have been reduced, which is what is sought, it is important that exports be increased or maintained. It is true that a positive trade balance is needed to reflect a good economy, but it must be known that this does not always represent a good management of international trade, since both the value of imports and exports do not always reflect the level of technology or the type of products

being traded. By reducing imports, efforts should focus on pushing the industry to become competitive against the international market.

Another point to be considered is that in the commercialization of Ecuadorian products have been characterized as traditional products: bananas and plantains, coffee, shrimp, cacao, tuna and fish, and oil.

The following table shows that the main destinations for Ecuador's non-oil exports from January to August 2016 were: the United States, with a share of 23.26% of total exports, Vietnam with 9.58%, Colombia with 6.97% And Russia with 6.73%. Of the twenty main destinations of our non-oil exports, eight correspond to countries in the Americas (Ministry of Foreign Trade, 2016).

**Table 2 Main Non-Petroleum Export Trade Partners**

<b>Main Destinations of Non- Oil Exports of Ecuador from Jan-Aug 2016</b>		
<b>Country</b>	<b>Thousands USD FOB</b>	<b>Percentage share</b>
United States	1717617	23,26%
Vietnam	707491	9,58%
Colombia	514784	6,97%
Rusia	496668	6,73%
Germany	370212	5,01%
Spain	366634	4,97%
China	294655	3,99%
Italy	290346	3,93%
The Netherlands	273426	3,70%
France	186307	2,52%
Peru	177369	2,40%
Chile	157569	2,13%
Japan	139170	1,88%
Argentina	130736	1,77%
Belgium	121058	1,64%
México	111517	1,51%
Venezuela	95911	1,30%
United Kingdom	94390	1,28%
Turkey	91457	1,24%
Brasil	83787	1,13%
Other Countries	962642	13,04%
<b>Total</b>	<b>7383746</b>	<b>100,00%</b>

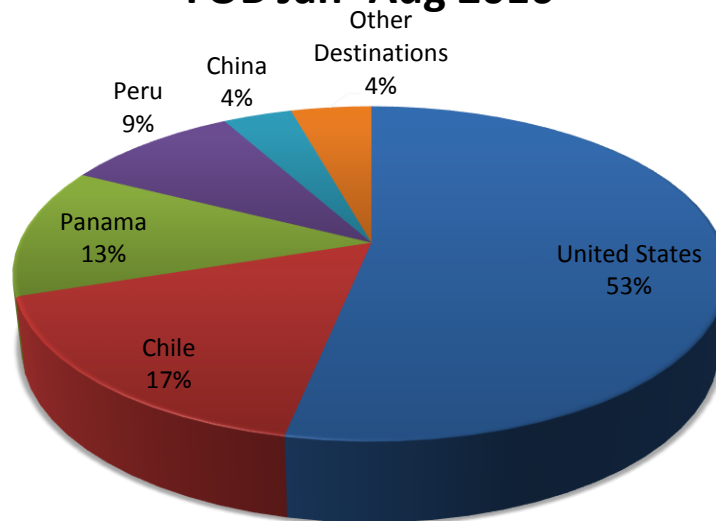
Source: Banco Central del Ecuador

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The following figure shows that in the main destination of Ecuador's oil exports corresponds to the United States with 53.24%, Chile with 16.69%, Panama with 12.57% and Peru with 9.43% of the total exported during the period from January to August 2016.

**Figure 2 Main Petroleum Export Trade Partners**

### **Main Petroleum Export Destinations FOB Jan- Aug 2016**



Source: Banco Central del Ecuador

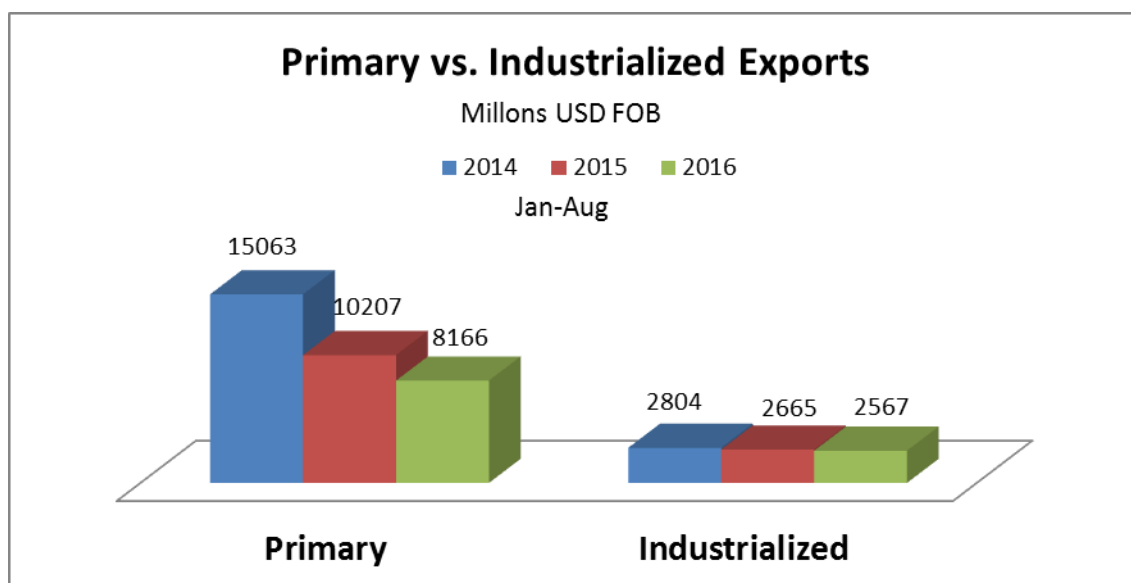
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The United States is Ecuador's main trading partner, which means that it is the country with which Ecuador trades the most, both in imports and exports. The European Union is the main destination for Ecuadorian products such as: fish and aquaculture, flowers, fruit juices, vegetables (palm hearts, broccoli) pineapples, papayas, vegetable oils, among others, which constitute the group of non-traditional products. Colombia and Peru are the largest buyers of Ecuadorian processed goods and Asia is the largest buyer of shrimp (CORPEI, 2010).

These graphs reflect the importance of maintaining relations with certain countries that are both significant in exports and imports for Ecuador's economy. A clearly important partner for Ecuador is the United States. According to statistics from the Central Bank of Ecuador, despite the fall of oil and oil exports, safeguards, and the appreciation of the dollar, the US is the country with the largest exchange of millions of dollars with Ecuador" (Expreso, 2016).

According to the following figure that shows primary and industrialized exports, both have been reduced and USD 8,186 million of primary products were exported versus USD 2,567 million of industrialized products during the period from January to August 2016 (Ministry of Foreign Trade, 2016).

**Figure 3 Primary vs. Industrialized Exports**



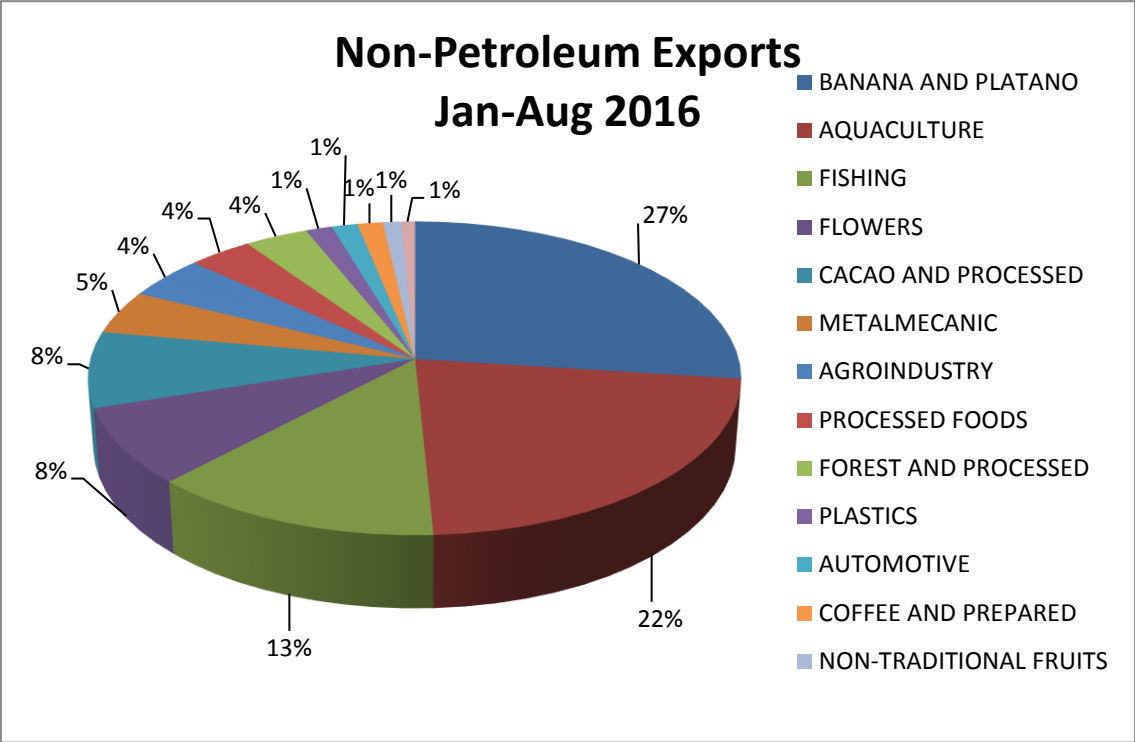
Source: Banco Central del Ecuador

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With this we can say that Ecuador keeps exporting products with little added value. Although the export volume of these products is high, the income is not representative, nor compared to the income of the industrialized products. Therefore, it is necessary to add value to the products to awaken the Ecuadorian industry.

From January to August 2016, the banana and plantain sector was constituted as the main export sector with a 24.07% share of the non-oil total, followed by aquaculture with 22.82%, fishing with 11.75% and flowers with 7.59%. All these 4 groups of products totals to 66.94% of non-oil exports (Ministry of Foreign Trade, 2016).

**Figure 4 Non-Petroleum Exports 2016**



Source: Banco Central del Ecuador

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Agriculture and fisheries play an important role in Ecuador's non-oil exports, including products such as fresh bananas, frozen shrimp and prawns, canned tuna, raw grain cacao and fresh roses, among others.

**Table 3 Main exportable products**

ECUADOR NON-PETROLEUM EXPORTS ( THOUSANDS USD FOB) 2016				
#	Tariff Subheading	Products	January	% Partic. 2016
1	0803.90.11.00	FRESH BANANAS	239,662	27,68%
2	0306.17.99.00	OTHER SHRIMPS, PRAWNS AND OTHER FROZEN DECIDUOUS VEGETABLES, NOT ELSEWHERE SPECIFIED OR INCLUDED.	83,988	9,70%
3	1801.00.19.00	COCOA IN RAW GRAIN, OTHERS EXCEPT FOR SOWING	68,481	7,91%
4	1604.14.10.00	CANNED TUNA	51,883	5,99%
5	0306.17.19.00	THE OTHER SEAFOODS	50,485	5,83%
6	0603.11.00.00	FRESH ROSES	47,99	5,54%
7	7108.12.00.00	OTHER GROSS FORMS OF GOLD FOR NON-MONETARY USE.	22,353	2,58%
8	0306.16.00.00	FROZEN SHRIMP, PRAWNS AND OTHER FROZEN FROZEN WATER DECAPODES.	19,303	2,23%
9	4407.22.00.00	SAWED OR CHOPPED WOODS.	12,207	1,41%
10	1604.13.10.00	SARDINES, SARDINES AND ESPADINES IN TOMATO SAUCE.	9,331	1,08%
11	8803.30.00.00	PARTS OF APPARATUS - OTHER PARTS OF AIRCRAFT OR HELICOPTERS.	8,407	0,97%
12	2009.89.20.00	OF MARACUYA.	7,348	0,85%
13	0710.80.90.00	OTHER VEGETABLES, WHETHER OR NOT COOKED IN WATER OR STEAM, FROZEN, EXCEPT ASPARAGUS.	7,309	0,0084
14	2101.11.00.00	EXTRACTS, ESSENCES AND COFFEE CONCENTRATES.	6,984	0,81%
15	1604.20.00.00	OTHER PREPARATIONS AND PRESERVATIONS OF FISH.	6,861	0,79%
16	0803.10.10.00	FRESH BANANAS (FOR COOKING).	6,841	0,79%
17	7112.99.00.00	OTHERS	6,235	0,72%
18	1701.14.00.00	OTHER SUGAR CANE	5,771	0,67%
19	0306.17.11.00	FROZEN WHOLE LANGOSTINES	5,723	0,66%
20	2008.91.00.00	CANNED PALMITOS	5,703	0,66%
Other products			192,981	22,29%
TOTAL			865,846	100%

Source: Banco Central del Ecuador

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## 1.4 Identification of potential markets for improvement

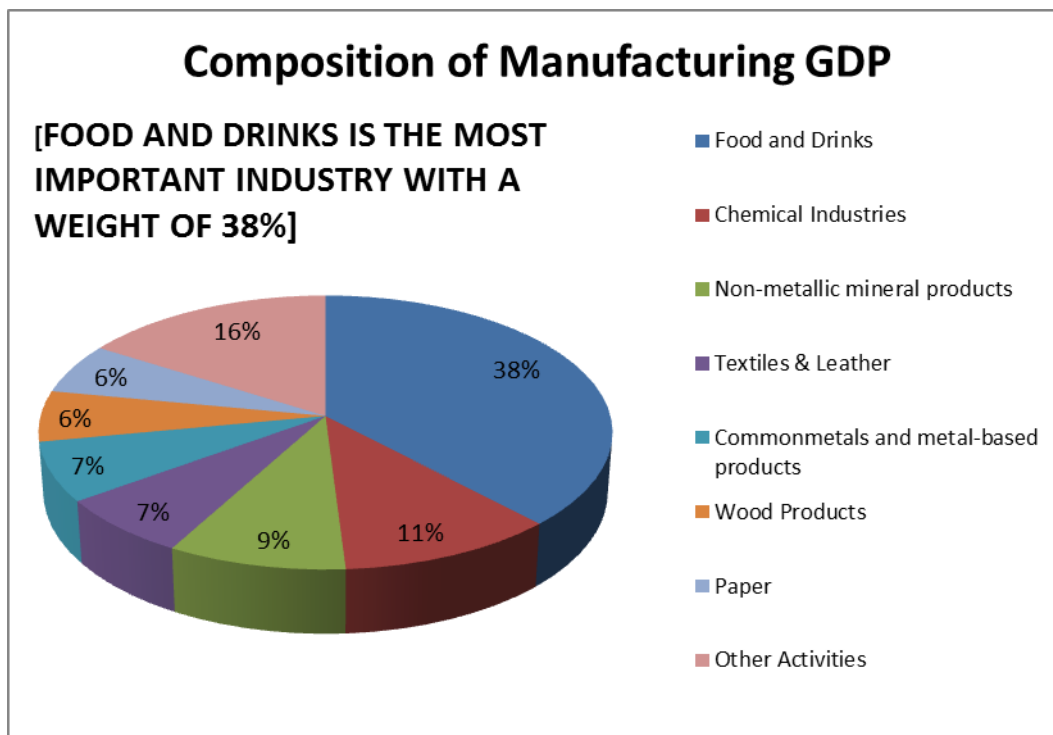
According to the statistics and the analysis of the tariff headings mentioned above, the importance of the food sector for Ecuador's economic activity can be noted, since it represents a high percentage of non-oil exports. The food and beverage industry is one of the most influential sectors to promote good business. The high demand for these goods in the market has made them the main axes around the world, which is why Ecuador should not be the exception. This is a great opportunity for the country to improve this sector, enhance it, add value, but always with high quality products that comply with regulations, exceed consumer expectations, and can compete with foreign products. It is time to strengthen this sector so that consumers internally prefer what is produced in their own country and that in turn the products are exquisite and of excellent quality to compete in the international market.

It is crucial to know that the food sector is related to whole food production chain including origin, production, storage, transportation, sale and consumption. As a benefit we can see that this sector generates a large number of jobs for Ecuadorians. Spending on food is essential since consumers cannot live without it.

The primary sector has played a decisive role in the country as exports focus on the traditional sector due to their geographical conditions. Among the main export products after oil, is the food sector (Zoom al sector alimenticio, 2014).

According to the following figure, we can appreciate the importance of the food manufacturing sector since food and beverages in Ecuador account for 38% of the composition of manufacturing GDP, which is the highest percentage among other manufacturing activities in 2015.

**Figure 5 Composition of Manufacturing GDP**

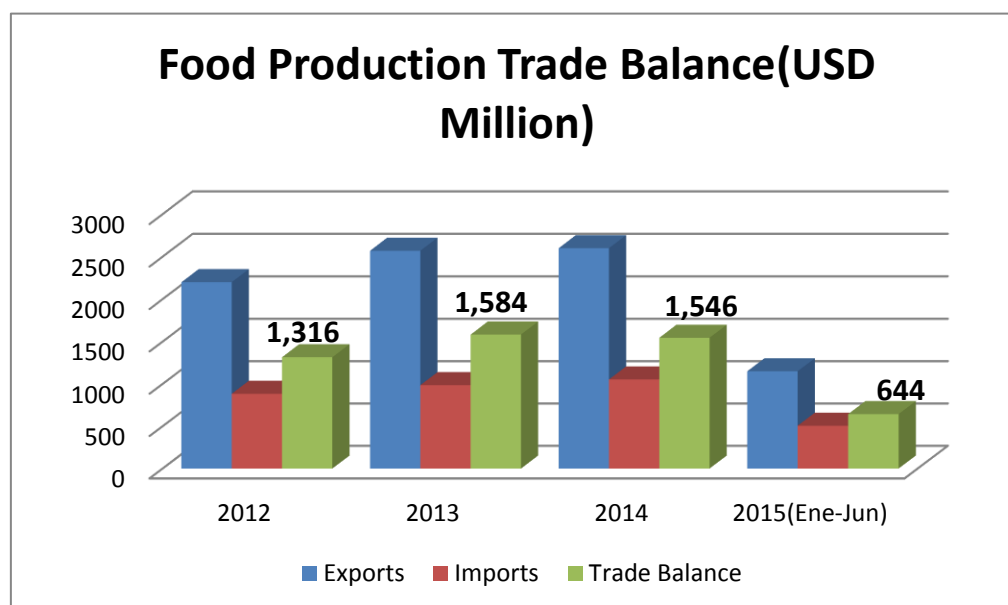


Source: Banco Central del Ecuador

Created by: Ana María Carrasco and Belén Muñoz

Figure 6 shows the importance of this sector, which is why this research focuses on enhancing the improvement of the food sector. As can be seen, the trade balance of food production indicates that exports are greater than imports, which is why there is an opportunity to implement improvements in different areas of this sector that has much to offer to foreign trade.

**Figure 6 Food Production Trade Balance**



Source: Banco Central del Ecuador

Created by: Ana María Carrasco and Belén Muñoz

### 1.5 Analysis of the food sector

Ecuador has maintained a weak productive structure that has not accelerated economic growth. More than half of the manufacturing exports focus on five products that are part of the primary goods category, of which oil exports are the most important, while only 3% represents the exports of medium and high technology exports. Ecuador has lost several diversification opportunities such as textiles, glassware, furniture, and food since its export base is very limited. In addition, a disadvantage for the country has been that Ecuador has signed a small number of trade agreements in comparison to most Latin American countries, and the process of export and import is quite complex, which makes it difficult to trade goods and services (Andrea Liz, 2015).

What has caused this lack of industrialization? There are several answers to this question, since Ecuadorians are afraid of growing, have a fear of investing, lack confidence, technology, cultural development, overprotection, depend on subsidies, among others. In addition to these situations, government instability of recent years can also be another factor that makes trade difficult due to high tax rates, among others. It is ironic to think that although the country has the best cocoa in the world, the population has to pay a high price to consume internationally renowned chocolate. That being an oil exporting nation, it has to import gasoline; that having many agricultural and livestock resources, Ecuador imports foreign food, among other examples.

Ecuador must foster a culture of continuous improvement that strives for quality, that when referring to Ecuadorian products, they are immediately related to quality, efficiency and responsible practices. Efforts must be transformed into actions to truly empower the industrial sectors.

As mentioned above, Ecuador, as a country rich in natural resources, has been seen as a great opportunity to improve the food industry, adding value and turning our products into excellent quality goods, so that they can enter foreign markets, and in turn compete against them without being seriously affected. However, as previously mentioned, the food sector has several elements that need to be improved and resolved and many challenges that must be faced to achieve the desired results.

That is why a SWOT analysis has been applied to this sector so that in the following chapters it is possible to develop strategies through the application of Management Systems in this area, which will provide long-term stability to the Ecuadorian industry.

### **Strengths:**

- High participation of this sector within the economic activity of Ecuador.
- The country has an excellent geographical location for quality production. With four regions, the Ecuadorian land offers a great diversity of products.
- Currently, Ecuadorian food production seeks an increase in the quality level of the products.
- High diversity of food production.

## **Opportunities**

- Every day consumers demand higher quality, and are interested in consuming these types of products.
- Food expenditure is a constant expense in the economy since it is necessary for everyone. It accounts for an estimated 22% of household expenses.
- People both nationally and abroad give preference to natural, nutritious goods, contributing to the development of responsible consumption.
- Promote an increased consumption of Ecuadorian products if they are of good quality.
- Signing commercial agreements that will require high quality standards and that Ecuador must comply with.

## **Weaknesses:**

- Low added value in products
- Low level of innovation
- Difficulty in incorporating new business models in the sector (Image, service, sales)
- Low levels of investment in the sector and fear of investing.
- Insufficient or poor technology for food production.
- Lack of training in the sector.
- Dependence on international prices.
- Difficulty in accessing new technology.
- Harming of native ecosystems.

## **Threats:**

- Lack of knowledge about the proper use of natural resources such as water and soil.
- An increase of urban population on agricultural land.
- A high international competitiveness with and increasing trend
- Signing of trade agreements that may affect the Ecuador's economy. (Revista Ekos, 2014)

The SWOT analysis of the food sector quickly and easily identified the strategic tools that must be used to deal with complex situations in the sector in which the country is going through. The following are solutions that should be implemented for the effective development of this project.

- Proactive measures to ensure sustained growth of the sector through companies.
- Awareness and optimization of resource management and a culture of recycling waste for possible future use.
- Promote quality enterprises within the food sector.
- Facilitate access to new markets and maintain good conditions with existing markets.
- Diversify the positioning throughout the national territory.
- Incorporate Research and Development within companies.
- Make way for innovation. (Revista Ekos, 2014)

After having managed an extraction-based agro-primary economy with little added value, Ecuador has gone through several economic cycles with booms and recessions, which unfortunately have not allowed it to remain in a stable economy. The problems have been endorsed from government to government characterized by not having studied or understood these conflicts well from the beginning, and for that reason, Ecuador has repeated these errors constantly without being able to find a solution.

Among the attempts that have been implemented to improve Ecuador's economy are the following: import substitution, trade barriers both tariff and non-tariff protectionist measures, among others. These have not been effective in achieving substantial changes that have a positive effect on the economy in the long term. However, with new proposals for quality improvement, diversification, change of the accumulation model, among others, it has been seen that Ecuador has the potential to improve industrial infrastructure if it focuses on correctly managing the country's industrialization processes and procedures.

Consequently, it has been seen that the food sector brings great proposals to change the way that Ecuador has led its economy. This is because it is a sector that has not been fully exploited to its entire capacity and it is a great alternative to support the different sectors that make up the Ecuadorian economy. By taking advantage of the country's

resources and adhering to international standards that promote quality, this sector has the potential to become competitive and the products will be more apt for international markets.

## **CHAPTER 2**

### **MANAGEMENT SYSTEMS**

2.1 Management Systems

2.2 Standardization Entities and Accreditation Bodies

2.2.1 Standardization Entities

2.2.2 Accreditation Bodies

2.3 Description of management systems

2.4 International Certifications

2.5 Certifications and Seals

## **Management Systems**

After analyzing in chapter one that the food sector is the one with the most relevance in the Ecuadorian economy, it has been possible to affirm that an adequate development of it can contribute much to the growth of the country, since it is a promising sector and that can take advantage of the national resources. However, the focus on this sector would have to be modernized in order to offer products with high added value and of excellent quality. As a result, this chapter aims at analyzing the different Management Systems within the food sector to demonstrate the substantial improvement that an entire sector can achieve by applying these systems.

One factor that should be taken into consideration is that the adoption of these systems within the industries does not generate immediate changes, but rather it is a long process that includes several steps that must be implemented in the companies in order to achieve the desired results in the future. Competitiveness, adaptation to change, globalization, technology, political, social and economic factors are many of the challenges that companies must face today. Trying to solve these challenges without prior planning, have led companies to be inefficient and unable to meet their objectives. For this reason, there are procedures that allow balancing all these business requirements in a systematic way. It is believed that Management Systems are one of the best methods to solve these obstacles, since they play a very important role in the industries. This is because they take advantage of the existing potential of the companies that allows them to work in an orderly way so that they can reach their objectives and goals and fulfill organization policies through a series of strategies that optimize both production costs and the use of resources.

### **2.1 Management Systems:**

Management Systems internally unify the company so that it functions as a complete unit, as they focus on management and disciplined thinking. These systems also include diverse topics such as: improving operational effectiveness, social and health responsibility of workers, managing environmental, social and financial risks, achieving continuous improvements, reducing costs and time, increasing customer satisfaction, innovation, eliminating trade barriers, protecting the brand and image, greater competitiveness, among others (Cedaro, 2009).

For a better understanding of the definition of Management System, it must be analyzed word for word:

**System:** "Set of elements that relate to each other and in an orderly manner contribute to certain objects" (Real Academia Española, 2001).

**Management:** "It is the action or effect of doing activities for the achievement of a business or any other reason" (Real Academia Española, 2001).

Therefore, it can be said that a Management System is a set of rules, principles and related elements that interact with each other to contribute to the management of general or specific processes of an organization. They allow the implementation and achievement of the policy and the objectives of an institution in different aspects. A Management System has standardized parameters of sectoral, national, or international character and can be implemented by all types of organizations.

It is important to know that in order to introduce Ecuadorian products in different countries it is necessary to adhere to regulations and requirements of the desired destination. This research will indicate the requirements that Ecuador's main trade partners demand in relation to the food sector. Most norms, certificates and stamps that will be analyzed are not mandatory in the national territory. However, in international trade, certain requirements are required that are indispensable. It is essential to have knowledge that Management Systems are the guide to the achievement of these requirements.

Therefore, it is strongly believed that Ecuadorian companies should improve their systems. This is especially due to the Multi-Party Trade Agreement with the European Union, which was enforced at the beginning of 2017, since many products from these countries will enter the Ecuadorian market with higher levels of quality, greater innovation, attractive prices and even responsible with the environment and consumer health, characteristics that are currently receiving a lot of acceptance among consumers. If Ecuadorian companies want to compete with these foreign products, it is necessary to develop a strategic competitiveness, where the objective is not only to equalize their quality or to generate income, but also to exceed pre-established standards and to enter international markets.

## **2.2 Standardization Entities and Accreditation Bodies**

Today Management Systems have a broad function of covering various business areas that help to manage a good operating structure, capturing various sectors and concentrating on customer satisfaction. The management systems most used at the global level and those that have been shown to have positive effects will be described below. Among them, the vast majority follows a series of standards issued by the International Organization for Standardization (ISO).

### **2.2.1 Standardization Entities**

**Standardization Body:** These are the bodies responsible for creating, implementing and improving standards that apply to activities in different fields, to be used at international and national levels, covering the needs of society and the market. Globalization has forced the standardization and harmonization of the rules between countries so that the commercial exchange does stagger under any circumstance. It has been made evident that standardizing bodies have developed the best practices and have reduced trade barriers (ISO Central Secretariat, 2010).

The following are the most globally known Standardization Entities:

#### **- The International Organization for Standardization (ISO):**

The International Organization for Standardization, or ISO, is an independent, non-governmental international organization with 161 members worldwide. This organization, with the help of experts, develops knowledge, promotes international standardization, facilitates the exchange of goods and services, and encourages scientific, technological, and economic innovation (International Organization for Standardization, 2017).

The ISO has different families that regulate several business areas to facilitate its management. For instance, ISO has developed a common basis to dictate its norms. This allows for companies that have previously certified one of their ISO standards to achieve compatibility with other certifiable standards, making the company a more integrated system. For example, all standards refer to staff commitment,

management agreement, leadership, documentation of processes and indicators, generation of work teams, among others.

ISO is a very important organization, dealing with such diverse topics as quality standards, maintenance, social security, environmental management, risk management, and addresses issues such as monetary codes, languages, among others. ISO standards are the most widely used worldwide, as several countries take them as a basis for creating their own standards (International Organization for Standardization, 2017).

The Spanish Association of Normalization (UNE):

The UNE is the agency responsible for the development and publication of technical standards in Spain. The rules indicate how a product should be and how it works, so that it is safe and pleasing to the consumer, exceeding its expectations. This model has been applied worldwide because the UNE has a great experience and knowledge in its field, developing a great activity of international cooperation (AENOR, 2016).

British Standard Institution (BSI):

"It is a British non-profit distribution organization, offering global services in the fields of standardization, creation, evaluation, product and process certification, training and advisory services" (International Organization for Standardization, 2017). These standards have been implemented in the creation of norms of other countries for their great effectiveness and show a continuous improvement, standing out in occupational safety and health in companies.

Finally, there is also the normalizing entity of Ecuador, responsible for the elaboration and issuance of standards is the Ecuadorian Standardization Service (INEN):

INEN: "Ecuadorian technical agency, its functions are: Standardization, Technical Regulation and Metrology, it endorses citizen rights related to security, the protection of human, animal and plant life and health, conservation of the environment, protection of the consumer and the promotion of a culture of quality

and the improvement of productivity and competitiveness in Ecuadorian society" (Ecuadorian Institute for Standardization, 2017).

### **2.2.2 Accreditation Bodies**

"They are voluntary control systems that allow the consumer to ensure that food products contain differentiating value attributes. These systems, called certifying bodies, consist in the establishment of an entity independent of the company responsible for verifying and controlling that the product corresponds to the attributes of value that it presents. These agencies are controlled at the state level or by private certification systems" (Rodríguez, 2016).

The Accreditation Body in Ecuador is the Ecuadorian Accreditation Service (SAE).

"The SAE is the official accreditation body, which provides credentialing services to three different sectors: laboratories, inspection entities and certification bodies, all of which are called Conformity Assessment Bodies (OEC). These conformity assessments ensure that a product, procedure, system, person or agency meets all requirements that ensure quality and reliability, based on international standards" (Ecuadorian Accreditation Service, 2017).

**Image 1 SAE**



Source: Servicio de Acreditación Ecuatoriano

Created by: Servicio de Acreditación Ecuatoriano

## 2.3 Description of Management Systems

After learning about the most important Normalization Entities and Accreditation Bodies, it is extremely important to determine which is the most widely used International Management Systems.

### **Quality Management System (QMS):**

The QMS is a set of synchronized business actions with the objective of achieving the highest quality of products or services offered to the client. QMS's plan, control, and improve an organization's activities that are instrumental in achieving goals and customer satisfaction (Mateo, 2010).

#### **Its main elements are:**

- **Organizational Structure:** It is the way in which the company organizes its personnel, according to the hierarchy, its functions and tasks.
- **Planning (Strategy):** Directs the organization towards the achievement of its objectives.
- **Resources:** People, equipment, infrastructure, money, among other elements that are needed to reach the objectives of the organization.
- **Processes:** Sequence of steps in order to reach the desired product or service.
- **Procedures:** They are the way in which a process is handled, and are made up of detailed steps to successfully achieve a product or service.

The 5 elements mentioned above must have a systematic operation so that the Quality Management System is effective, since if only one of them fails, there will be deterioration in the Quality of the products or services offered by the organization (Mateo, 2014).

#### **The QMS is based on the ISO 9000 group:**

ISO 9000 addresses various aspects of quality management and provides guidance and tools to companies that want to ensure that both their products and services meet customer expectations and have continuous improvement.

**Table 4 ISO 9000 group standards**

<b>ISO 9000 group standards include:</b>	
<b>ISO 9001</b>	Sets the requirements of a Quality Management System
<b>ISO 9002</b>	Covers basic concepts and language
<b>ISO 9004</b>	It focuses on how to make a more efficient and effective Quality Management System
<b>ISO 19011</b>	It presents a guide on the internal and external audits of the Quality Management Systems.

Source: ISO

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The QMS focuses mainly on ISO 9001, which is an international standard that manages all the quality elements that a company must have in order for its system to be effective to direct and improve the quality of its products or services. This standard provides infrastructure, procedures and resources for proper customer service and product excellence.

**Among the benefits of the ISO 9001 standard are:**

- It makes the company a more stable competitor in the market
- It improves the Quality Management System of the company
- It implements more effective work methods which saves time, money and resources
- It improves operational performance
- It minimizes errors and increases profits
- It increases the level of commitment of staff through efficient processes
- It improves customer service
- It improves and highlights the image of the company (British Standard Institution, 2017).

## **Structure of ISO 9001**

- Scope
- Normative references
- Terms and definitions
- System Requirements
- Management Responsibilities
- Resource management
- Production
- Measurement, analysis and improvement

## **Environmental Management Systems (EMS)**

An EMS provides the basis for directing, measuring and evaluating the operation of the company with the objective of ensuring that activities are carried out in a responsible manner with environmental regulations and in accordance with corporate policy (Martinez, 2006).

Environmental Management Systems are a great opportunity for organizations to be more efficient with the use of their resources and at the same time to reduce the negative impact on the environment.

An EMS is not going to solve immediate environmental effects, but this system works as a tool to improve the parameters of the environment in the long term (Martinez, 2006). "The Environmental Management System is: the mean and the environmental improvement: the end" (García & Casanueva, 1999).

### **The objectives of an EMS are as follows:**

- Identify the environmental effects of current and future activities of the organization's products and services.
- Analyze and evaluate the environmental effects caused by accidents and other situations.
- Apply the most appropriate regulations and ensure that the policy is

implemented.

- Define which environmental objectives and targets are best suited for the organization (García & Casanueva, 1999).

An EMS facilitates the establishment of a set of environmental performance requirements and enables the company to measure performance against internationally endorsed criteria. Today, companies, public institutions and consumers have acquired a growing trend with respect to environmental certifications (Martinez, 2006).

**This system is mainly based on ISO 14000 group standards:**

ISO 14000 is a series of internationally accepted environmental management standards and has become one of the world's most widely recognized reference models. It is important to know that the ISO 14000 certification does not certify the environmental action, but rather certifies the Management System. This standard does not specifically indicate the requirements that must be met to achieve a Management System, but rather establishes certain criteria that guide the achievement of an EMS. For example, it does not determine the amount of emissions or a maximum of waste, but instead determines if the system requirements are met (Martinez, 2006).

**Table 5 ISO 14000 group standards**

<b>ISO 14000 group standards include:</b>	
<b>14001</b>	Environmental Management System: Specifications and guidelines
<b>14004</b>	Environmental Management System: General guidelines on supporting principles, systems and techniques
<b>14006</b>	Environmental Management System: guidelines for the incorporation of ecological design
<b>14064</b>	Greenhouse gases: Reports and quantification of gases

Source: ISO

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An Environmental Management System can be applied in any type of organization regardless of its activity or sector. It should be stressed that it is essential that the management of an organization consider that the care of the environment makes the difference with respect to its competitiveness and it also positively effects the community.

**Benefits of using ISO 14001 may include:**

- Reducing the cost of waste management
- Saving energy and material consumption
- Low distribution costs
- Improvement of the corporate image
- Increased participation of leadership and commitments of workers
- Provides competitive and financial advantages by improving efficiency and reducing costs.

**Structure of ISO 14001**

- Environmental management
- Scope of the Environmental Management System
- Environmental policy
- Environmental aspects and legal requirements
- Environmental objectives, targets and programs
- Resources, functions and environmental responsibility
- Competitiveness, training and awareness
- Communication
- Documentation
- Production control
- Emergency preparedness and response
- Internal audit and verification
- Management review and continuous improvement
- Compliance
- Integration with other Management Systems (International Organization for Standardization)

### **Occupational Health and Safety Management System:**

Occupational safety is currently one of the most important management tools to improve the work life quality in companies and at the same time their competitiveness. This system refers to the set of norms and methods aimed at preventing the incidence of accidents, risks and occupational diseases of the worker, inside and outside their work environment. This system helps to reduce employees missing work and avoids a decrease in productivity that could cause considerable personal injuries as well as equipment or materials losses (International Labor Organization, 2011).

It is necessary for the company to encourage and stimulate the creation of a safety and occupational health culture that is aligned with quality standards, process improvement, productivity, personnel development and training, and reduction of operating costs.

It aims to improve conditions and the working environment through 5 necessary steps:

1. Identify hazards

2. Determine who and how a person could be harmed during a job
3. Assess risks and establishes appropriate precautions
4. Compiles conclusions and puts them into practice
5. Reviews the evaluation and keeps it updated (International Labor Organization, 2011).

**The Occupational Health and Safety Management System is based on the OHSAS standards:**

The OHSAS 18000 standard was created in the United Kingdom by a group of organizations along with the British Standard Institution (BSI). It is the most widely used standard in Occupational Health and Safety at work recognized worldwide (International Organization for Standardization).

The OHSAS 18001 standard is a series of voluntary international standards that indicates the minimum requirements of best practices in Occupational Health and Safety management, with the aim of helping an organization to control its risks and improve its performance.

This standard has been created to be compatible with the standards of quality management (ISO 9001), Environmental Management Systems (ISO 14001), with the aim of facilitating the integration of several Management Systems. In addition, OHSAS standards are flexible to necessary changes when deemed appropriate, in other words amendments will be made when new editions of ISO 9001, 14001 are published to remain compatible. This OHSAS standard has been made according to the norms dictated in the ISO directives.

**Structure of OHSAS 18000:**

1. Scope
2. Reference publications
3. Terms and definitions
  - 3.1 Acceptable risk
  - 3.2 Audit
  - 3.3 Continuous improvement
  - 3.4 Corrective Action

- 3.5 Document
- 3.6 Danger
- 3.7 Hazard identification
- 3.8 Disease
- 3.9 Accident
- 3.10 Stakeholders
- 3.11 Nonconformity
- 3.12 Occupational Health and Safety (OH & S)
- 3.13 S & SO Management Systems
- 3.14 S & SO Objectives
- 3.15 S & SO Performance
- 3.16 SO & SO Policy
- 3.17 Organization
- 3.18 Preventive action
- 3.19 Procedure
- 3.20 Registration
- 3.21 Risk
- 3.22 Risk evaluation
- 4. Work place
  - 4.1 Requirements of the S&SO Management System
  - 4.2 General requirements
  - 4.3 S & SO Policy
  - 4.4 Planning
  - 4.5 Implementation and operation
  - 4.6 Verification (OHSAS 18001: 2007, 2007)

**Benefits of the OHSAS 18001 standard:**

- Creates better working conditions in the organization
- Identifies risks and establishes controls
- Reduces the number of work accidents and illnesses, reducing staff costs and absenteeism
- Engages and motivates staff through better and safer working conditions
- Improves the company's operations and makes it more profitable.

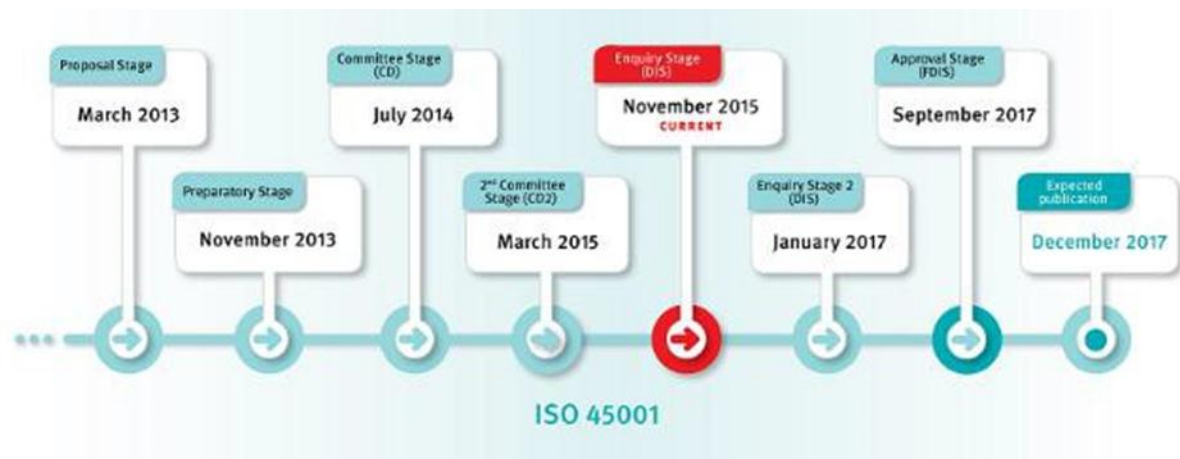
- It facilitates integration with ISO 14001 and ISO 9001 standards, providing maximum quality and safety for customers, workers and the community (International Labor Organization, 2011).

Currently, the OHSAS standards have proven their relevance in the business field, because their evolution is planned to adapt them to ISO 45000 standards to have a greater reach.

The future ISO 45001 has the same objective as OHSAS 18001: the prevention of occupational and health risks in organizations, seeking continuous improvement. However, ISO 45001 will strengthen the role of senior management in the leadership of the Occupational Safety and Health Management System. The standard can be applied to any organization in the world, regardless of size, activity or nature (New ISO 45001, 2016).

The publication of ISO 45001 does not entail the automatic cancellation of OHSAS 18001 and will be published in December 2017. (Spanish Association for Standardization, 2016).

**Figure 7 ISO 45001 Publishing Process**



Source: ISO

Created by: ISO

## **Social Responsibility Management Systems**

Social Responsibility Management Systems are a guarantee for competitiveness and better management in organizations. These systems integrate economic, environmental, social, sustainability and good governance aspects. Social responsibility is a perfect tool to demonstrate that the efforts are made in a transparent and committed way with society (International Organization for Standardization, 2017).

"Businesses and organizations do not operate alone since their relationship with society and the environment in which they operate is a critical factor in their ability to continue to function effectively" (International Organization for Standardization, 2017). Therefore, certain organizations seek to manage activities with good practices and transparency that benefits society.

### **The advantages of having a system that integrates social responsibility are:**

- Increased trust and credibility
- Public commitment with society and improvement of it
- Environmental awareness
- Improvement of the work environment
- Improvement of the image of the company

It is important to know that the Management Systems previously mentioned have a basis of norms that must be fulfilled if they want to be certified. However, Social Responsibility Management Systems are based on different guidelines, not on standards since there is great cultural diversity at the global level and it is not possible to create a general rule that is applicable in all countries. Therefore, there are a series of standards that can be accessed to implement a Social Responsibility Management System.

The following are the most common standards:

**ISO 26000:** This system is based mainly on a guide that provides guidance instead of requirements. Therefore, ISO 26000 cannot be certified unlike other ISO standards. Such systems help to understand what social responsibility is, translate principles into actions, and train

organizations on how to best practice social responsibility at the international level. ISO 26000 became an international consensus in 2010, since organizations of all kinds participated in its development.

- **SA 8000 Standard:** The SA 8000 standard was created in the United States with the aim of improving working conditions worldwide. This certifiable standard is also based on international human rights standards such as the Universal Declaration of Human Rights of the United Nations, the International Convention on the Rights of Children and the International Labor Organization conventions (Spanish Association for Quality, 2015).

If an organization wishes to comply with SA 8000, it must implement policies and processes that protect the essential human rights of workers. This includes compliance with responsible principles on child labor, forced labor, health and safety, discrimination, disciplinary practices, hours of work, compensation and Management Systems (Spanish Association for Quality, 2015).

- **Ethical and Socially Responsible Management (SGE 21):** The SGE 21 standard was created by the Association of Companies and Professionals of Corporate Social Responsibility in Spain. It provides tools that ensure an alignment between the management and the values of each organization. The SGE 21 standard is easily integrated with other Management Systems and everything related to corporate interest groups such as customers and consumers, suppliers, employees, administration and the environment.

## **Food Safety Management System**

The Food Safety Management System is a unique model that covers food safety requirements, monopolizing all activities in the food chain (Qualigestiona, 2014).

The consequences of harmful foods can be very damaging to human health, which is why this system was created to identify, analyze and control food safety risks, as international trade now opens its doors to foreign products. It is the duty of food producers to ensure that products crossing national borders guarantee complete safety.

**This system is based on ISO 22000 standards:**

This standard is based on food safety; its scope covers the entire supply chain, "From farm to table".

**Structure of ISO 22000:**

- Requirements of Good Manufacturing Practices or Prerequisite Programs
- Requirements to Develop a HACCP System
- Requirements for a Management System (Intedya, 2017)

**Benefits of ISO 22000:**

- Provides greater confidence in food products by complying with legal and international requirements.
- Minimizes health risks of populations
- Improves the image of the company.
- Reduces auditing costs by having an international acceptance standard.
- Improves the management of the supply chain.
- Allows integration with other Management Systems (Intedya, 2017).

**Good Manufacturing Practices Management System (GMP)**

Good Manufacturing Practices, better known as GMP (BPM in Spanish, Buenas Prácticas de Manufactura), are fundamental principles in hygiene that guide how to handle, process, package and store food so that it can be consumed. Today, these standards regulate food processing plants, manufacturing processes, cleaning and disinfection, personal hygiene, controls, records, and storage, in order to ensure that food is manufactured under adequate sanitary conditions and to reduce risks in the production process (Ministry of Industries and Productivity, 2014).

Currently, consumers are increasingly demanding in the quality of products available on the market, which is why good manufacturing practices were created, which are required by both national and international standards to ensure that products comply with parameters suitable for human and animal consumption (Ministry of Agriculture, Fisheries and Farming, Argentina, 2015).

In order for GMP to have a positive effect on a company, it is important to know that before producing a product, a company must ensure that the materials, equipment and tools have the perfect conditions for a good operation and that the personnel and everything related to the production meet the essential hygiene requirements.

**The Good Manufacturing Practices Management System is mainly based on the Codex Alimentarius:**

The Codex Alimentarius was created in 1963 by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) as a solution to serious problems arising from the lack of sanitation, safety and efficiency of food and medicines. Faced with this need, the Codex Alimentarius created general principles of hygiene, where it established the bases to guarantee food sanitation, from the start of production to the final consumer. The control of the food chain is achieved through GMP and HACCP (Inter-American Institute for Cooperation on Agriculture, 2009).

This code defines BPM as: "A set of principles and technical recommendations that are applied in food processing to ensure its safety and suitability and to prevent tampering" (Inter-American Institute for Cooperation on Agriculture, 2009).

It is important to know that each country establishes its own standards, norms, and systems that guarantee the supply of food safe and suitable for consumption, many countries have established guidelines, standards and systems that ensure the provision of food suitable for consumption. The World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) empowers countries to apply the necessary safety measures, provided that they are justified and in conformity with the provisions of the SPS Agreement if they are aligned in the Codex Alimentarius Standards (Inter-American Institute for Cooperation on Agriculture, 2009).

For example in Ecuador among the rules governing GMP we can find the INEN standards:

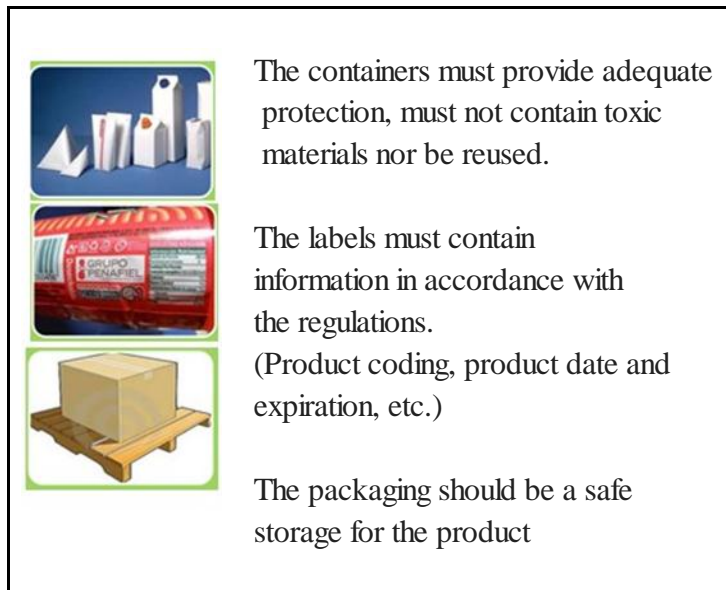
- **NTE INEN 3039:** This standard establishes GMP requirements for food for human consumption, which will be prepared by restaurant services in an innocuous way. The scope of this standard includes school and industrial dining rooms, hospitals, prisons, hotels, restaurants, catering services, among others (INEN, 2015).
- **NTE INEN 3010:** This standard aims to establish general requirements for quality management and environmental management in restaurants (INEN, 2015).
- **NTE INEN 2442:** This rule establishes requirements that must be met by chefs who work in food and beverage companies, catering, hospitality, among others (INEN, 2015).

#### **GMP Structure:**

- Facilities: location, maintenance and sanitation
- Equipment, utensils and services
- Personnel: hygiene, control and training of personnel
- Good handling of materials and supplies
- Production and control operations
- Packaging and labeling
- Management and supervision: Documentation and records
- Storage, distribution, transport and marketing
- Prevention of polluting hazards
- Assurance and Quality Control (Inter-American Institute for Cooperation on Agriculture, 2009)

It is important to take into account that all food products carry labels with clear instructions that allow the person to continue with the food chain. They should also have packaging that allows manipulation, display, storage or use of the product without affecting its quality.

**Figure 8 Labels and Packaging**



Source: MIPRO

Created by: Ana Maria Carrasco and Belen Muñoz

## **2.4 International Certifications**

As can be seen, Management Systems are standards that guide companies to achieve the homologation of standards with the other countries. They minimize the obstacles for international trade. This is why the implementation of these systems through international certifications will be explained below.

Certifications are the system established to identify a product with certain specific characteristics. There are a large number of agencies dedicated to certify that the production practices and processes are adapted to the specific standards of quality, origin, fair trade, sustainability, among others.

Mandatory certifications are those that verify that a product complies with the standards so that they can be exported or imported into new markets with their own regulations.

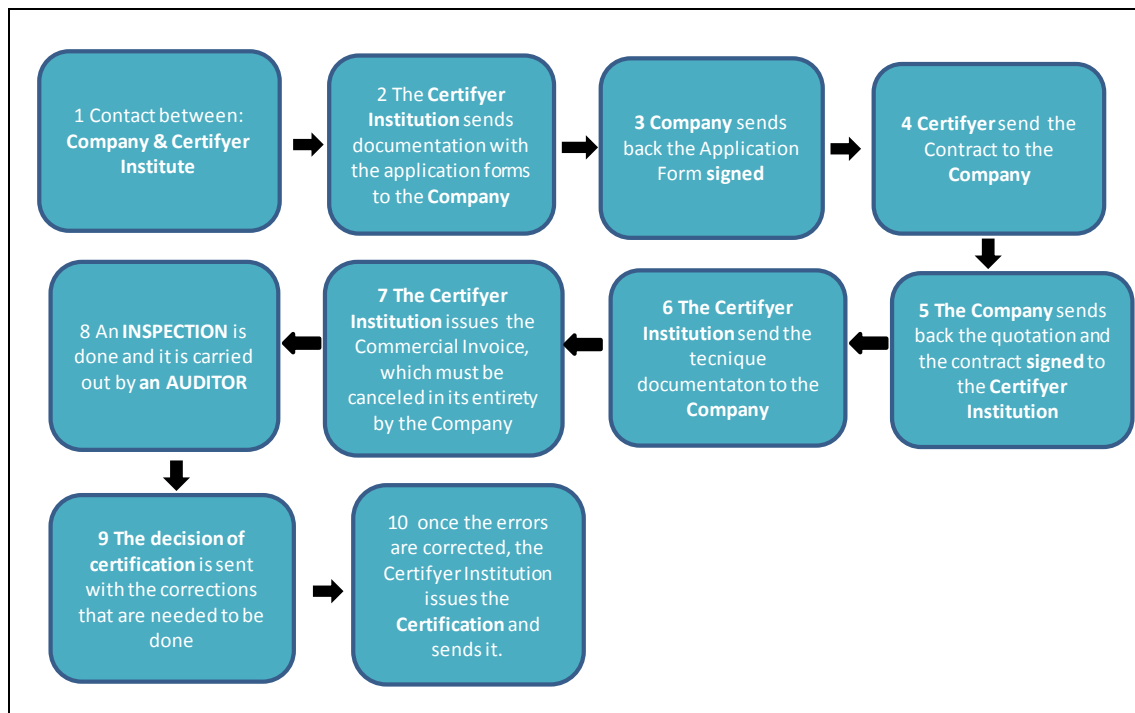
Voluntary certifications are those standards that are requested by the buyers. They grant a written guarantee on a product or service, stating that it is in conformity with the requirements set by a certifiable body. These certifications demonstrate that the products are socially, environmentally and economically responsible (PROECUADOR, 2013).

International certifications are a tool increasingly used by companies, with the aim of improving productivity, market entry, creating trust among customers, improving competitiveness and production. Although compliance with international standards is not mandatory, it has become indispensable for entering certain markets. Generating confidence in the value chain allows international standards or seals to become a priority for companies (PROECUADOR, 2013).

**Steps to obtain a certification:**

- Implementation:** Dictates and applies the technical standards of the certification within the processes of the company.
- **Inspection:** A certifying company sends a specialized technician that ensures that all certification norms are being carried out.
- **Certification:** After the final report has been issued, the certificate request is sent to the matrix so that the required certificate is awarded to the company (PRO-ECUADOR, 2013).

**Figure 9 Process for Obtaining a Certification**



Source: PROECUADOR

Created by: Ana María Carrasco y Belén Muñoz

## 2.5 Seals and Certifications

The way to ensure that a product has been verified in terms of materials, environmental care, safety, etc., is through a seal or in other words, a symbol or logo of quality stamped on its packaging. When a brand is placed in the market, these stamps are recognized immediately and show that the product complies with the regulations and quality controls.

A seal is the official recognition of a product that is produced through a quality system approved by an Institution and that complies with all requirements established in the normative document of reference (INEN, 2017).

In Ecuador, one of the most recognized labels in relation to quality is the INEN Quality Seal.

### **The benefits of obtaining seals are:**

According to INEN, some of the benefits of obtaining seals from the following different perspectives are:

#### **Industry:**

- Continuous improvement of the product's manufacturing processes with the implementation of a system of quality and the technical competence of its personnel.
- It allows an easier introduction of products into national and foreign markets.
- Strengthens the relations between the buyer and the supplier in the different industrial sectors.
- Increases the prestige of products and services.

#### **Consumer:**

- Guides a buyer to acquire a quality product.
- Guarantees continuous quality of the products.
- Certifies products that are reliable to the consumer.

#### **Government:**

- Ensures that goods comply with quality requirements.
- Products and services gain a good reputation and they ensure that they are safe to consume.
- It contributes to industrial development, based on competitiveness and productivity.
- Strengthens exports of domestic products.
- It acts as a tool for the evaluation of suppliers in the processes to verify that the delivered good complies with the established requirements.

### **2.5.1 Most Recognized Certifications and Seals**

Currently, having stamps and certifications are not always mandatory requirements, but they are not only suggestions either, since the consumer sees these stamps when buying

a product and assumes that they are trustworthy and safe to consume. That is, the customer has become so demanding today that when the products do not have these seals, they usually lose against their competition that do have ecological, social, and health responsibility seals, among others. In the next section the most recognized seals and certifications applied mainly in the United States and the European Union are presented, these being commercial partners of interest to Ecuador.

### **United States Certifications:**

#### **- Hazard Analysis Critical Control Points (HACCP)**

The HACCP system translated into Spanish as a Risk Analysis and Critical Control Points system is an internationally accepted method that helps organizations to systematically identify, evaluate and control all hazards that may affect the safety and health of food products. This method establishes control mechanisms that protect the critical limits associated with each of the control points established throughout the whole process of food production (PROECUADOR, 2013).

**Image 2 HACCP**



Source: PROECUADOR

URL: <http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

#### **- Sustainable Agriculture Network (RAS)**

The Sustainable Agriculture Network is an environmental conservation network dedicated to researching and proposing initiatives in accordance with the communities that are in the area. The SAN develops and

implements social and environmental standards applicable to products of forestry and tropical agriculture. The Rainforest Alliance organization is in charge of the SAN certification program in the Latin American territory (PROECUADOR, 2013).

**Image 3 RAS**



Source: PROECUADOR

URL:<http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

**- United States Department of Agriculture Organic Certification (USDA)**

In order to be able to sell organic products in the US market, a National Organic Program (NOP) certificate is required which certifies that it complies with the international standards for organic products, issued by the USDA (PROECUADOR, 2013).

**Image 4 USDA Organic Certification**



Source: PROECUADOR

URL: <http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

**- Forest Stewardship Council (FSC):**

FSC (Forest Stewardship Council) is an independent, international and non-profit Spanish organization that seeks to promote environmentally responsible forest management, raise awareness of the rational use of products and promotes economically viable actions in forests around the world (Department of Sustainability IED Madrid, 2015).

**Image 5 FSC**



Source: PROECUADOR

URL: <http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

**- Not tested on animals:**

This seal is awarded by CCF (Choose Cruelty Free), an American non-profit association, to those companies that have not tested any of their products or ingredients on animals.

### **Image 6 Not tested on animals**



Source: Instituto Español

URL: <http://institutoespanol.com.au/environment-friendly-policy/>

### **- Cruelty free & and vegan:**

It is a seal awarded by the famous PETA (People for the Ethical Treatment of Animals) association to companies whose products and ingredients are not tested on animals. They also offer the Cruelty Free and Vegan seal for companies that do not include any ingredient of animal origin or any of its derivatives in their products.

### **Image 7 Cruelty Free**



Source: New Earth Botanicals

URL: <http://www.newearthbotanicals.ca/>

### **- Environmental Protection Agency (EPA)**

The US Environmental Protection Agency (EPA) is working to develop and enforce rules and regulations through environmental laws established by the US Congress. It is responsible for researching and setting standards for environmental programs and for delegating responsibilities to grant permits, and to monitor and enforce compliance.

**Image 8 EPA**



Source: Environmental Protection Agency

URL: Environmental Protection Agency

### **European Certifications:**

#### **- Naturland**

This certification promotes organic agriculture throughout the world, being one of the largest associations of organic agriculture, as there are more than 53,000 associated producers. This certification is valid worldwide; regardless of its location since these standards are applicable to crop requirements and local soil or climate conditions (PROECUADOR, 2013).

**Image 9 Naturland**



Source: PROECUADOR

URL: <http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

#### **- Ecolabel**

This label helps identify products and services that seek to reduce environmental impacts during all of their activities, from extraction to production. It is well known throughout Europe despite being a voluntary label to promote environmental excellence.

**Image 10 Ecolabel**



Source: PROECUADOR

URL: <http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

#### **- EEC Certificate European Regulations**

It is a certificate that is granted to the practice of organic farming, which is an agricultural production system that provides the consumer with fresh food, respecting the vital cycles of natural systems (PROECUADOR, 2013).

#### **Ecological farming practices usually include:**

- Crop rotation

- Strict limits on the use of pesticides and fertilizers
- Prohibition of the use of genetically modified organisms.
- Use of on-site resources such as manure for fertilization or feed for livestock
- Livestock breeding in outdoor areas, through the use of organic food and appropriate practices.

### **Supply Chain**

- In organic farming the supply chain is very important, since each link of this chain must provide benefits to different areas and with total certainty that the products have been elaborated with respect to strict rules based on:
  - Environmental Protection
  - Animal welfare
  - Consumer Confidence
  - Society and economy

### **Image 11 EEC Certificate European Regulations**



Source: PROECUADOR

URL: <http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

### **- Spanish Association for Standardization and Certification (AENOR)**

AENOR grants conformity to standards, allowing the company to demonstrate an effective system of environmental management and conservation of the environment. When a company obtains this certification it means that it has been evaluated and controlled by the control systems of AENOR and that they are in conformity with the Norms UNE-EN ISO 14001 (Department of Sustainability IED Madrid, 2015).

### Image 12 AENOR



Source: IED Sostenibilidad

URL: <http://iwt2.org/certificados-por-aenor/>

### - Cradle to Cradle (C2C):

The C2C is awarded to sustainable products that use environmentally safe materials, reuse materials to minimize waste, use renewable energy and use water consciously in a way that its activities are based on social responsibility strategies (Department of Sustainability IED Madrid, 2015).

### Image 13 C2C



Source: IED Sostenibilidad

URL: <http://sostenibilidad.iedmadrid.com/bibliografia-y-documentacion/certificaciones-y-normativas/etiquetas-y-sellos-certificados/>

### - ECO Control:

The Eco Control Certification is one of many certifications that recognize Earth Friendly Products, which is awarded to companies that carry out environmentally friendly practices in the work place and that produce sustainable products (Department of Sustainability IED Madrid, 2015).

**Image 14 ECO Control**



Source: IED Sostenibilidad

URL: <http://sostenibilidad.iedmadrid.com/bibliografia-y-documentacion/certificaciones-y-normativas/etiquetas-y-sellos-certificados/>

**- The Blue Angel:**

The Blue Angel is the oldest label for products and services in the world, created in Germany. Its purpose is to standardize ecological characteristics and quality of products and services (Department of Sustainability IED Madrid, 2015).

**Image 15 The Blue Angel**



Source: The Blue Angel

URL: <https://www.blauer-engel.de/en>

**Global Certifications:**

## - Fairtrade

Fairtrade is based on the cooperation between producers and consumers, offering producers fairer treatment, improving their living conditions and at the same time making the business environment more profitable. Fair trade is an alternative to conventional trade that gives consumers the option to reduce poverty through their daily purchases.

The entities that make up Fair Trade are: Fairtrade International (FLO) and FLO-CERT, the first is a non-profit body dedicated to the strategic direction of fair trade, to delimit standards and support producers. The second is a company that is owned by FLO independent certification, in charge of verifying that both producers and traders comply with fair trade standards.

To have a Fair Trade Certification Seal means that producers and traders have met its criteria, reducing the imbalance of power in trade relations, the instability of markets and the injustices of conventional trade (PROECUADOR, 2013).

**Image 16 Fairtrade**



Source: PROECUADOR

URL:<http://www.proecuador.gob.ec/wpcontent/uploads/2013/04/GuiaCertificaciones.pdf>

### **Issues addressed by Fair Trade are:**

- **Standards:** There are two different types of Fairtrade standards, which recognize different groups of disadvantaged producers. One set of standards applies to small producers working in small structure

organizations. The other set applies to workers whose wages guarantee basic living conditions, allowing the right to join trade unions and ensuring safety and health standards, among others (PROECUADOR, 2013).

- **Price:** Most products have a Fairtrade price determined by Fairtrade standards, which is the minimum that must be paid to producers to cover their costs and ensure an adequate profit margin, plus receive an additional amount, called The Fair Trade Premium, for investment in their communities. This enables farmers to be assured that, at a time when world markets are falling below a sustainable level, they do not fully depend on it to be profitable (PROECUADOR, 2013).
- **Fairtrade Products:** Fairtrade Standards apply to food products ranging from tea and coffee, to fresh fruit and nuts, as well as non-food products. Today there are several products bearing the "FAIRTRADE" seal worldwide (PROECUADOR, 2013).

After highlighting the importance of Management Systems, it can be noted that quality is not the only element necessary to generate a good and competitive product. As a result, Management Systems have a much greater amplitude that comprises different fields.

Many companies decide to make changes in their structures and manage good practices such as: safe activities that ensure the health of workers, are environmentally friendly, responsible to society, comply with standards in accordance with international regulations, etc. Consequently, Management Systems have become integrated systems that have brought great results. However, since achieving these certifications is a quite difficult and complex process, several companies have preferred to leave them aside. Yet, once the company has completed these requirements and implemented them, its services and products are preferred by consumers, since products with seals and certifications are considered fully reliable, serving as an exemplary model for other organizations seeking continuous improvement and progress towards competitiveness.

## **CHAPTER 3**

### **BENEFITS OF IMPLEMENTING MANAGEMENT SYSTEMS**

3.1 Compliance with international market requirements

3.2 Real application of Management Systems cases

3.3 Field research

3.4 Opportunities and considerations to contribute to the Ecuadorian model

## **Benefits of Implementing Management Systems**

This last chapter is intended to reflect the importance of the implementation of Management Systems in the food sector, not only in words but also through the documentation of positive results that both national and international companies have had. For this reason, through the analysis of real cases, the effectiveness of implementing Management Systems in their organizational structures will be demonstrated, and how they have contributed to make companies more competitive, through the standardization of their processes, which facilitates the management of the production and gives way to significant effects for the society and surroundings. Having the United States and the European Union as the main trade partners, it is of the utmost importance to have an in depth understanding of the requirements that these countries demand for products from abroad. These countries should be taken as models for Ecuador for the implementation of MS, since through their economies it has been demonstrated that they are correctly carrying out the management of good practices, covering all areas of manufacturing, whether it's food, industrial, technological, textile, etc.

Compliance with international standards in Ecuador allows for the development of companies that manufacture products with similar characteristics to those of demanding markets. As well as being an essential element for future entry into international markets, MS's lead companies to achieve their goals such as growth and improvement of their activities. To achieve market positioning and to receive greater consumer interest, companies must highlight their achievements through advertising and marketing, with the aim of increasing consumer confidence and preference.

The moment customers are provided with information on origin, processing, product ingredients, and seals and certificates, it is reaffirmed that these goods were carefully produced and demonstrates the company's interest in meeting their expectations.

Businessmen and future entrepreneurs must understand the importance of meeting these standards, which not only have the mission to increase profits or give a better image to the company, but also seek to generate a substantial improvement in the community. Awareness should be spread on the importance of choosing industries that provide fair conditions to their workers, use their resources responsibly, and

manufacture products that meet quality standards that do not harm health. Companies that work to reduce environmental damages, with vision of economic growth of the Ecuadorian food sector should be chosen over others.

### **3.1 Compliance with international market requirements**

#### **3.1.1 Guide to Sanitary and Phytosanitary Requirements for Exporting Food Products to the European Union**

Guidelines of the requirements for exporting food products to the European Union will be presented below. Thanks to these requirements, it is easier to manage the companies that wish to export products, and above all make these industries more competitive through Management Systems. The new Multiparty Trade Agreement between Ecuador and the European Union provides opportunities for Ecuador, since it opens doors to production and trade with Europe, especially in the growing food sector (MINCETUR, 2010).

The export requirements of foods products to the European Union must comply with the general principles and requirements of Food Law Regulation (CE) N°178/2002 of the European Parliament and of the Council. In 2001, the European Food Safety Authority was established that refers to all processes related to food law (EUR-LEX, 2017).

The EU sets strict food safety standards that protect and promote the health and well-being of consumers by ensuring the hygiene of food products and preventing the risk of contamination by external substances.

EU Imports as well as food produced in the EU are subject to strict revisions (EUR-Lex, 2016).

The European Union's food policy is based on strict food safety standards that protect the health of consumers since the production and consumption of food are essential in every society. These standards have broad economic, social and environmental implications (COMMISSION OF THE EUROPEAN COMMUNITIES, 2000).

### **Competent food safety bodies in the European Union:**

- **Directorate-General for Health and Consumer Protection - SANCO:**  
Its role is to improve the health, safety and trust of the European community. It is responsible for keeping food safety legislation and consumer rights up to date and ensuring compliance (MINCETUR, 2010).
- **The European Food Safety Authority (EFSA):** Provides scientific specifications, provides both technical and scientific support to the Commission in circumstances related to food safety issues. It also identifies emerging risks in the food chain and informs the population (MINCETUR, 2010).
- **Standing Committee on the Food Chain and Animal Health:** It focuses on the entire food production chain, from issues such as animal health on the farm to the product that is placed on the consumer's table. It clearly identifies health risks (MINCETUR, 2010).
- **The Food and Veterinary Office (FVO):** It monitors compliance with veterinary and phytosanitary legislation and hygiene standards for food products. It conducts inspections on the use of chemical substances (veterinary drugs, growth promoters, pesticides), residues pesticides in fruits and vegetables, epidemics, among others (MINCETUR, 2010).

### **Export Requirements for the European Union:**

In order to export food to the European Union, countries must comply with standards that seek to protect human, animal and plant health. These standards also seek to guarantee the quality and safety of imported food (Inter-American Institute for Cooperation on Agriculture, 2010). The most relevant parts of the Regulation of the European Parliament and of the Council will be detailed below:

- **Additive controls:** Regulation (CE) N° 1333/2008 regulates all food additives including colorings and sweeteners (MIN-CETUR, 2010).

- **Food hygiene:** Companies in the food sector must comply with food hygiene standards, based on Regulation (CE) N° 852/2004 which establishes the following principles and obligations:
  - The owner of a food business is primarily responsible for food safety in all the stages from the production until the sale to the final consumer.
  - Applying correct hygiene practices.
  - The need to ensure that imported food has the same hygienic level as food produced in the EU.
  - The food business operator must monitor the safety of products and processes.
  - The operator must comply with hygiene standards in the post-primary stages.
  - It must comply with temperature, cold chain and microbiological requirements for all type of products (MINCETUR, 2010).
- **Food packaging:** Regulation (CE) N°1935/2004 refers to the requirements for materials and articles that will be in contact with food products. The following are considered containers: plastic and glass bottles, lids, glue and printing inks of labels. In addition, this regulation indicates which are the so-called active and intelligent containers, which prolong the shelf life of the food or inform consumers a products state.

The conditions for the preparation of materials in contact with food are governed by Regulation (CE) N° 2023/2006 on good practices for the preparation of materials predestined to come into contact with food.

Materials and articles which are not expressly designed to handle food must present the words "for food contact" or a glass and a fork symbol described in Regulation (CE) N°1935/2004 (MINCETUR, 2010).

### Image 17 Food Packaging



Source: MINCETUR

Created by: MINCETUR

- **Labeling:** The labeling of food is important since it provides complete information on the content, composition and data of interest to consumers to protect their health. The labels present information such as the origin of the product, the form of production, if they are genetically modified products, if they are allergenic foods, among others (Inter-American Institute for Cooperation on Agriculture, 2010).

The requirements on labeling, presentation and advertising of food products can be seen in Directive 2000/13/CE and its updated version, Directive 2008/5/CE.

The parts of a label include:

- “Product Name
- List of ingredients
- Net Amount
- Date of minimum duration
- Special conditions of storage and use
- Name and address of manufacturer or packer"

Packaging of food products is subject to compliance with a number of manufacturing criteria in order not to contaminate the products (Inter-American Institute for Cooperation on Agriculture, 2010).

- **Language requirements:** Labeling must be printed in a language that is understandable to consumers, such as the official languages of the EU Member States (MINCETUR, 2010).
- **Nutrition, health and medicinal claims:** Regulation (CE) N° 1924/2006 establishes the conditions in the EU for nutrition claims. For example: "high vitamin C content"; "low in fat"; "Rich in fiber"; etc. It is important that these declarations be in line with harmonized concepts having the same meaning in all EU member countries (MINCETUR, 2010).
- **Genetically Modified food:** Regulation (CE) N° 1829/2003 on genetically modified food is intended to regulate trade in genetically modified organisms (GMOs). Genetically modified foods should be labeled with the acronym "GMO" so that the consumer is informed and makes a good decision regarding the consumption of these products (MINCETUR, 2010).
- **Food security:** The basic principles of EU food law include:
  - The selling of unsafe food products that are possibly harmful or unfit for human consumption is prohibited.
  - The product should be able to be traced through its entire food chain "from field to table."
  - Hazard analysis and Critical Control Points (HACCP) is central to EU food legislation. The risks of physical, chemical and biological contamination of products are identified and prevented, establishing preventive and corrective measures for their control (Inter-American Institute for Cooperation on Agriculture, 2010).
- **The maximum limit of chemical residues present in food (MRLs):** The maximum level of pesticide residues legally tolerated in food and its general framework is established by Regulation (CE) N° 396/2005, which sets the maximum authorized quantities of pesticide residues which may be found in products of animal or vegetable origin that is for the consumption of humans or animals.

The maximum level of pesticide residues in food is 0.01 mg / kg. This general limit applies in all cases where a specific MRL for a product has not been fixed (MINCETUR, 2010).

- **Marketing standards:** Marketing standards are legal instruments that allow the classification of fruits and vegetables into different commercial categories. These standards indicate aspects related to the quality, maturity, tolerances and market of origin of the product.

The products should be:

- whole,
- healthy
- clean, practically free of visible foreign matter,
- free from pests,
- practically free of damage caused by pests,
- exempt from an abnormal degree of external humidity
- free from odors and strange flavors.

The products must be in a state that allows them to:

- stored well during transportation and handling
- arrive in satisfactory conditions to their destination.

(Inter-American Institute for Cooperation on Agriculture, 2010)

### **3.1.2 Guide to Sanitary and Phytosanitary Requirements for exporting food to United States:**

Regulations for exporting food to the United States are governed by different agencies such as federal agencies in charge of regulating and controlling food imports. (MINCETUR, 2010)

The following are the main regulatory agencies:

- **Environmental Protection Agency (EPA):** It is in charge of normalizing environmental laws established by the US Congress. It sets maximum pesticide residues limits and other contaminants in food (MINCETUR, 2010).
- **Food and Drugs Administration (FDA):** It belongs to the Department of Health and Human Services (HHS). This agency's objective is the

protection of public health, guaranteeing the safety and security of food, medicine, medical equipment, among others, both for humans and animals. It is also responsible for monitoring compliance with the tolerance of pollutants established by the EPA (MINCETUR, 2010).

- **Animal and Plant Health Inspection Service (APHIS):** It belongs to the United States Department of Agriculture (USDA), is an agency responsible for protecting agricultural health by examining plant and animal products exported to the United States to prevent the spread of Pests. It is also responsible for reviewing the eligibility of products and to verify the correct documentation of products entering the US (MINCETUR, 2010).
- **Food Safety and Inspection Service (FSIS):** It belongs to the United States Department of Agriculture (USDA). Is a public health agency responsible for ensuring that all products containing meat, eggs and derived products are safe for human consumption and that their labels and packaging are adequate (MINCETUR, 2010).
- **Alcohol and Tobacco Trade and Tax Bureau (TTB):** It belongs to the United States Department of the Treasury, which collects taxes on the consumption of alcoholic beverages, and ensures that these products are appropriately labeled (MINCETUR, 2010).

### **Requirements for exporting food products:**

The US market is interesting for the Ecuadorian Industry because it is its number one commercial partner and that is why it is essential to maintain relations with this country since a large percentage of the country's production is destined for the United States.

The following are legal requirements that Ecuadorian companies must meet to export food products to the American market.

- **Food labeling:** The US government requires labels to be placed on packaged foods in order to provide complete, useful, accurate, readable and understandable information to the consumer. All food that is sold in the US must present a label that shows compliance with the rules,

otherwise the US authorities will deny its entry.

US legislation requires the product to have double labeling: general labeling and nutritional labeling and a bar code with product data. There are also special provisions regarding the declaration of allergens and trans-fat on the label (MINCETUR, 2010).

The agency responsible for regulating the labeling of packaged foods is the Food and Drugs Administration (FDA), including the nutritional table, ingredients and nutrient content.

- **General Labeling:** The information must be in English with American units of measurement (pounds, ounces). The following information should also be mentioned:
  - "Nature of the product;
  - Brand or logo of the product;
  - Exact net content (weight, volume);
  - Name and place of establishment of manufacturer, packer or distributor, exporter;
  - Country of origin;

The complete list of ingredients must be detailed in descending order based on the amount of each component found in the product" (MINCETUR, 2010).

- **Nutrition Label:** The components listed in the following order should be provided:
  - Total calories
  - Calories from fat
  - Calories from saturated fat
  - total fat
  - Saturated fat
  - Polysaturated fat
  - Monosaturated fat
  - Cholesterol

- Sodium
  - Potassium
  - Total carbohydrate
  - Dietary fiber
  - Soluble fiber
  - Insoluble fiber
  - Sugars
  - Sugar alcohol
  - Other carbohydrate
  - Protein
  - Vitamin A
  - Percent of vitamin A present as betacarotene
  - Vitamin C
  - Calcium
  - Iron
  - Other essential vitamins and minerals (MINCETUR, 2010)
- **Nutrition facts table:** The nutrition facts table is a mandatory requirement for all foods. The amounts of the basic nutrients of the product should be placed in the nutritional table. It should be located on top of the ingredient list (MINCETUR, 2010).

### Image 18 Nutrition Facts

Nutrition Facts		
Serving Size 1 cup (228g)		
Serving Per Container 2		
Amount Per Serving		
Calories 280	Calories from Fat 120	
	%Daily Value	
<b>Total Fat</b> 13g		<b>20%</b>
Saturated Fat 5g		<b>25%</b>
<b>Cholesterol</b> 30 mg		<b>10%</b>
<b>Sodium</b> 660mg		<b>28%</b>
<b>Total Carbohydrate</b> 31g		<b>10%</b>
Dietary Fiber 0g		<b>0%</b>
Sugars 5g		
<b>Protein</b> 5g		
Vitamin A 4%	•	Vitamin C 2%
Calcium 15%	•	Iron 4%
Percent Daily Values are based on a diet of other people's secrets.		
Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:		
	Calories	2,000 2,500
Total Fat:	Less than	85g 89g
Sat Fat:	Less than	20g 26g
Cholesterol:	Less than	300mg 300mg
Sodium:	Less than	2,400mg 2,400mg
Total Carbohydrate:		300g 375g
Fiber:		25g 30g

Source: MINCETUR

URL: [http://www.siicex.gob.pe/siicex/resources/calidad/req\\_usa.pdf](http://www.siicex.gob.pe/siicex/resources/calidad/req_usa.pdf)

- **List of ingredients:** The list of ingredients is placed under the nutrition facts table. The existence of chemicals, dyes, artificial flavors, etc. in food products must be detailed. The list of ingredients must include water when it is used, and the description of the ingredients should begin with the most used ingredient (based on the weight of the products used) (MINCETUR, 2010).
- **Nutrient Content Statement:** It is optional for product developers to determine nutritional content, using phrases only permitted by the FDA in English.
- **Maximum Pesticides Residue Limits (MRL):** It is a mandatory requirement that all batches of agricultural products exported to the US do not have pesticide residues, or for these pesticides to be below the MRL limits established by law. Failure to comply may lead to the holding of products or these products may be banned from being sold.

The Federal Insecticide, Fungicide, and Rodenticide Act, approved by the US Congress establishes that EPA has the responsibility to record and establish limits on the entry of pesticides in national and imported food (MINCETUR, 2010).

- **Other pollutants:** The EPA is responsible for establishing the tolerance for other pollutants in food and the environment, such as heavy metals, dioxins, nitrofurans, among others (MINCETUR, 2010).

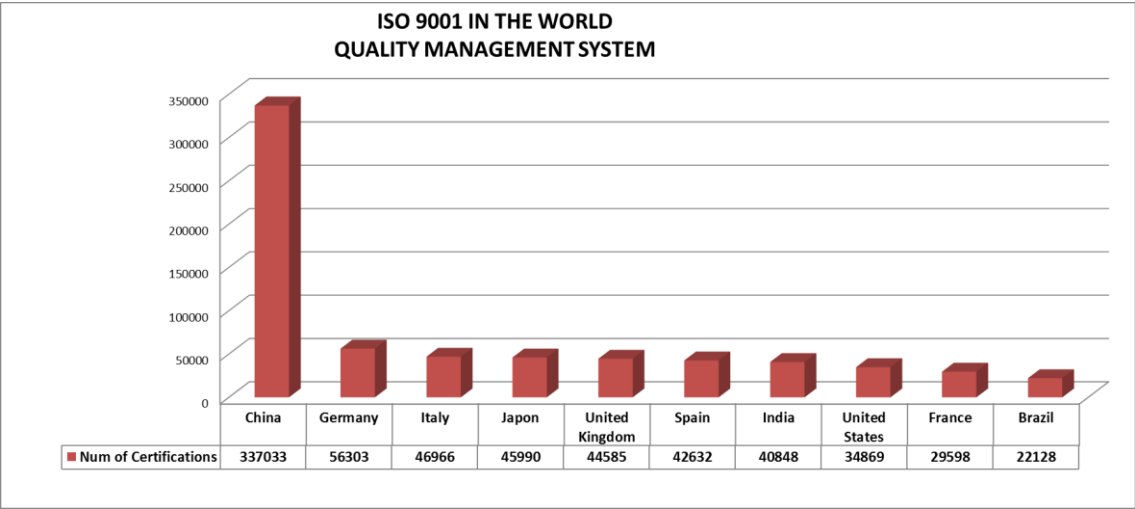
### 3.2 Application of Management Systems in Real Cases

This section of the chapter will present real statistics on the benefits of Management Systems (MS) around the world. This reaffirms the theory on the importance of MS in any industrial sector renders a substantial improvement in all the areas of a company. It is important to mention that in order to apply an MS, an initial commitment is needed that is born from the management, who is in charge of informing all subordinates from the beginning that the changes and positive effects will not be short term, since

implementing Management Systems is a long term action that will have its rewards. The thought that the adoption of a MS is an expense should be changed since it should be considered an investment.

In order to have a global and clearer vision of what it means to have Management Systems, a report by ISO Survey in 2014 will be presented, where the numerical data of the ten countries with the highest number of certifications worldwide will be demonstrated (Rojo, 2014).

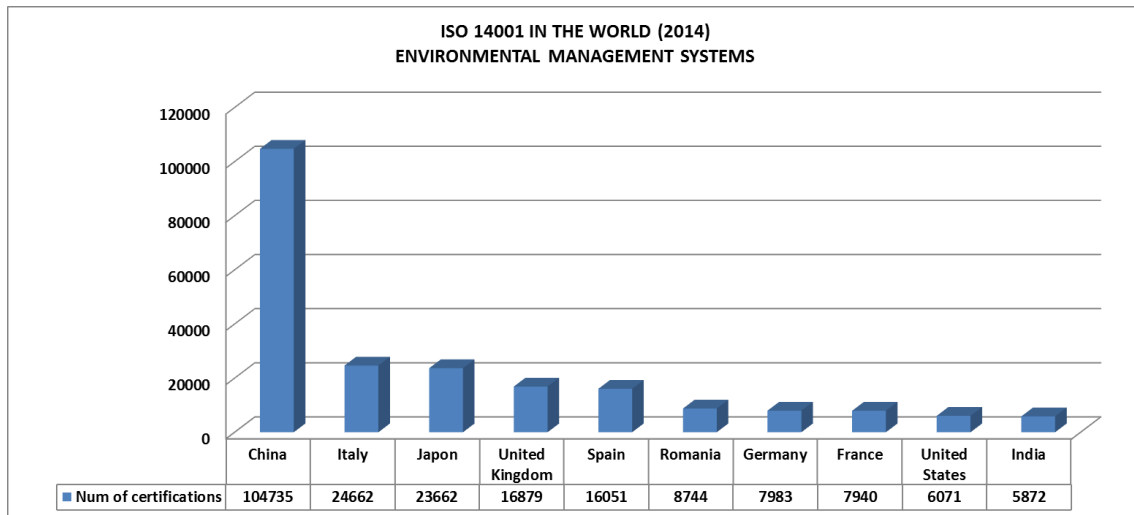
**Figure 10 ISO 9001 in the World**



Source: Solutions For Your Business Quality

Created by: Ana María Carrasco and Belén Muñoz

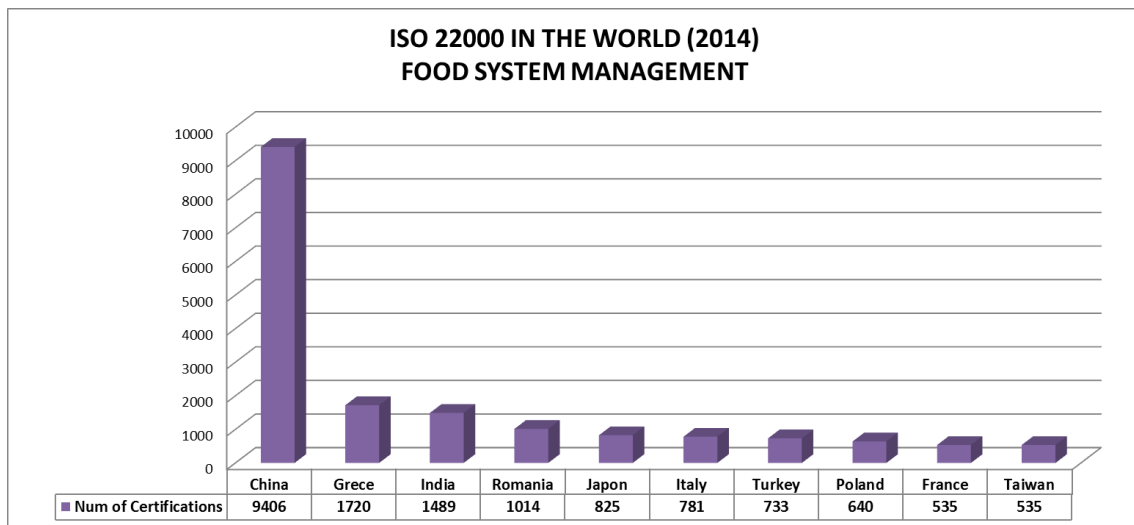
**Figure 11 ISO 14001 in the World**



Source: Solutions For Your Business Quality

Created by: Ana María Carrasco and Belén Muñoz

**Figure 12 ISO 22000 in the World**



Source: Solutions For Your Business Quality

Created by: Ana María Carrasco and Belén Muñoz

Although this data was compiled in 2014, they serve as a guide to understand which countries are leaders in the application of certain Management Systems. It should be taken into account that this data is closely related to the production volumes of each country, but it still serves as a model for Ecuador, since if more advanced countries have developed these systems, it is because this mechanism has truly improved the competitiveness of industries in different countries.

In order to demonstrate the importance of complying with the norms of the different Management Systems, we will consider the recent case in Brazil for the export of rotten meat that was disguised to enter international markets.

In March 20, 2017, the results of an investigation that lasted almost 2 years were revealed. They indicated that the main meat producers of Brazil had adulterated meats that were rotten or in unsuitable conditions for human consumption with acids and chemical products to disguise the physical characteristics of the rotten product and its odor, which were then exported.

The meat industry in Brazil reaches 150 countries, mostly from the European Union and Asia. This sector accounts for 7.2% of its exports, with annual sales around US \$12 billion.

"Import restrictions of Brazilian meat, in addition to a long-standing backlash, will have an impact on the economy and will result in the loss of jobs and income. The protein sector employs more than 7 million people and represents 15% of Brazilian exports" (BBC World, 2017).

It is clear that it is essential to comply with all the necessary requirements to export a product, since not doing so can completely affect a country's economy and especially the health of all consumers, causing irreparable losses.

Brazil suffered from commercial bans imposed by importing countries. For example, China, their second-best beef and poultry client, prohibited the entry of Brazilian meats into the country. Additionally, the European Union, its top importer, announced that it suspends purchases of meat and poultry and other products from the companies involved. On the other hand, Chile, the sixth importer of Brazilian red meat, also decreed a temporary blockade. All of these restrictions affected the industry, not to

mention the scandal and loss of confidence of the Brazilian consumer in these products (The Universe, 2017).

### **3.3 Field Research**

Another way of providing more detailed information on the importance of Management Systems is through technical visits and surveys applied to different companies that belong to the National Association of Food and Beverage Manufacturers. These industries provided the information to truly understand the importance of Management Systems in the Ecuadorian food sector.

#### **Lácteos San Antonio C.A- Nutri Leche**

We visited the distinguished Nutri Leche Company, which is dedicated to the elaboration and distribution of dairy products and natural juices at a national level. Biochemistry Engineer Jandry Neira, who is the coordinator of the quality team, guided a technical visit to the factory and knew how to answer important questions about Management Systems, which the company has been applying for many years. Nutri was one of the first companies to obtain Food Safety Certification 22000 (FSC) and BPM certification. In addition, the company manages its processes under the guidelines of ISO 9001, ISO 14000, ISO 26000, OHSAS 18000, and despite the fact that they are not certified under these guidelines, they are aware of the importance of Management Systems and carry out their processes based on these standards, thus forming an Integrated System within the company.

Management has developed models of sustainability in different practices because they think it is important to consider the environment and their consumers. These practices include: recycling, good livestock and fishery practices, etc. They carry all of these mechanisms out with the objective of fulfilling its goals and challenges, both internal and of the consumer. One important fact that the Coordinator emphasized is that Nutri takes its own indicators as a challenge to keep improving.

Nutri assures us that by setting parameters for many years, they have been able to guarantee quality, reduce product losses and ensure continuous improvement. It has also become key to increasing the level of trust with its national and international customers. Customers in the international arena include Unilever and KFC. Increasing

the level of trust with consumers, large distributors, suppliers and multinationals, has a positive impact on the level of sales since they have full confidence and knowledge that Nutri has these certifications.

According to Nutri's Quality Coordinator, the Management Systems improve competitiveness against similar companies, since the compliance of these requirements guarantee that the products always retain the same quality, and that the whole chain has the same amount of nutrients and benefits of a product.

"We are a company committed to satisfying nutrition needs by delivering safe products to consumers, prepared with the highest quality, and developed by highly qualified personnel, strengthening the growth and development of our community" (Nutri, 2016).

**Table 6 Summary Table**

Management Systems in Food Companies		
Companies	Management Systems	What effects have the MS caused?
	<ul style="list-style-type: none"> <li>• FSSC/ISO 22000</li> <li>• BMP</li> <li>• Kosher</li> </ul>	<ul style="list-style-type: none"> <li>• Quality products that comply with standards and requirements.</li> <li>• Standardization of processes</li> <li>• Reduced costs through reprocessing</li> <li>• Access to demanding markets</li> <li>• Customer loyalty</li> <li>• Increased productivity and sales</li> </ul>
	<ul style="list-style-type: none"> <li>• ISO 22000</li> <li>• BMP</li> </ul>	<ul style="list-style-type: none"> <li>• The opportunity to offer to our customers safe and hygienic products</li> <li>• Greater confidence towards our brand and products</li> <li>• Reduce reprocessing.</li> <li>• Decrease returns.</li> <li>• Fewer claims.</li> <li>• Better image, quality and conservation of products.</li> </ul>
	<ul style="list-style-type: none"> <li>• ISO 22000</li> <li>• BMP</li> </ul>	<ul style="list-style-type: none"> <li>• Offer quality products</li> <li>• Process improvement</li> <li>• Greater control and prevention of possible production errors</li> <li>• Continuous improvement</li> <li>• Reduced reprocessing</li> <li>• Improve and sustain quality</li> </ul>
	<ul style="list-style-type: none"> <li>• ISO 9000</li> <li>• ISO 22000</li> <li>• OHSAS 18000</li> <li>• ISO 14000</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous improvement</li> <li>• Standardization of processes</li> <li>• Customer loyalty and trust</li> <li>• Entry into the international market</li> <li>• Improvement of productive capacity</li> <li>• Improvement of the work environment</li> <li>• More competitive, quality products</li> </ul>
	<ul style="list-style-type: none"> <li>• ISO 2200</li> <li>• BPM</li> </ul> <p>In accordance to the following standards:</p> <ul style="list-style-type: none"> <li>• OHSAS 18000</li> <li>• ISO 14000</li> <li>• ISO 9000</li> <li>• ISO 26000</li> </ul>	<ul style="list-style-type: none"> <li>• Greater process control</li> <li>• Confidence of customers, distributors and multinationals</li> <li>• Standardization of processes</li> <li>• Sustaining quality</li> <li>• Improve productive capacity</li> <li>• Improvement of the work environment</li> <li>• Resource Optimization</li> </ul>
	<ul style="list-style-type: none"> <li>• ISO 2200</li> <li>• ISO 14000</li> <li>• ISO 9000</li> <li>• BPM</li> <li>• BASC</li> <li>• HACCP</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain product quality and safety</li> <li>• Avoid reprocessing, rejection and waste</li> <li>• Customer loyalty</li> <li>• Improve competitiveness</li> <li>• Good practices are transformed into efficiency, effectiveness, generating productivity.</li> </ul>

This research, which focuses on the food sector, has studied the fulfillment of sanitary and phytosanitary regulations, food regulations, etc. to achieve quality, safety and consumer welfare. However, it is extremely important to emphasize that all companies, regardless of their activity, must comply with good practices, principles of labor ethics, environmental care, social responsibility and also give back to the community in some way.

All rules are created to complement each other and form integrated systems. Management Systems can operate in any type of company, since its objective is to carry out a positive reform of a company's old practices and innovate them, to avoid failures and to obtain continuous improvement, which helps to achieve significant economic growth.

An interview was held with Indurama, a prestigious company dedicated to the production and sale of electrical appliances, to demonstrate the importance of Management Systems in all types of companies.

### **Visit to Indurama**

Felipe Carrasco, Quality Manager of Indurama, explained during the visit the importance of implementing Management Systems in the company.

Indurama believes that the evolution of quality opens the way to the need for certain tools for the development of its products. In the beginning controls were only carried out on the finished product, however problems were encountered during production, so a quality control was implemented during the processes, in order to minimize errors. Both materials and suppliers began to be controlled and in this way, a quality control system was implemented.

Subsequently, the company determined the need to work with more rigorous processes, thus implementing the ISO 9001, a Quality System used worldwide, which Indurama was confident that would have positive results. This was an excellent strategy as the products were standardized and quality cycles were developed. After a few years, it was

decided to focus on acting responsibly with the environment, for which the ISO 14001 was implemented, obtaining integrated systems. After the company saw that in order to export to more than 20 countries and to meet the requirements necessary, they had to accredit their laboratories, and thanks to ISO 17025, its accreditation has been used for exports and to detect that the imported products comply with the specifications. They also apply the BASC standard, which is a process of ensuring that your products or people do not carry arms, drugs or money. In addition, Indurama has the General Work Risk Insurance (SART) system, which is based on the good treatment of personnel through social and labor responsibility within the company providing them with security, proper food and other activities.

The implementation of Management Systems has generated standardized, controlled, competitive, long-lasting products. Thanks to MS, the company's sales have increased, since it enabled its entry to international markets, exporting to almost all Latin America and the Caribbean. Productivity has significantly improved since there is no need to reprocess the products and the level of competitiveness has increased enormously since it is extremely difficult to enter demanding markets without complying with high quality standards. This has forced Indurama to become increasingly strict with their products.

It can be concluded that a Management System can be applied to any area, regardless of its activities and although many companies do not have the physical certification, they have seen a need to align themselves with these processes, since they serve as guidelines for the achievement of their goals and improvement of their activities.

### **3.4 Opportunities and considerations for the Ecuadorian model**

After studying the reality of Ecuador and understanding how significant the food sector is for the Ecuadorian GDP, it can be clearly seen that this sector is a potential source of obtaining economic resources. Although this sector's growth is the most representative, there is still a lot that Ecuador has to learn in order to take advantage of its entire capacity.

Throughout the investigation, it has been proven that the most advanced countries are those that have developed compliance with standards and certificates. This is why Ecuador must also comply with international standards.

The main objective of this research is to contribute considerably to the Ecuadorian model, as it is not necessary to invent or discover new processes when models can be taken as systems that have been completely viable in different industries in developed countries. By having the guidance of these systems available, the initiatives to implement Management Systems in the Ecuadorian industries must come from both the public and private sectors. The government must support these needs and not hinder their processes for the achievement of improvements.

We must applaud the effort shown in surveys and interviews of companies to become increasingly competitive and seek the satisfaction of consumers, however, there are still many efforts to be made to be able to internationalize Ecuadorian products.

## CONCLUSION

To conclude with this research, it can be stated that the Ecuadorian economy has had repetitive failures throughout its history. It has been seen that an economy should not depend on primary products because at the expense of natural conditions or the market, the economy becomes very unstable, as has been the case with oil, since because of its price variation the country has been seriously affected. Alternatives such as following a protectionist model, tariff barriers, import substitution, etc. have not met expectations for progress.

This paper aims to demonstrate that Ecuador has the potential to develop economic growth with other products, demonstrating that one of the most promising sectors is the food sector through an intelligent use of the country's resources. The food and beverage industry is very influential in Ecuador, since it comprises the entire food chain, which involves work from the elaboration of a product to its distribution. It is time for the country to produce high quality, value-added products that comply with national and international standards, and at the same time exceed consumer expectations and that are competitive in other markets.

Investing in Management Systems has brought great opportunities for those who have implemented them, since it represents a great advance for Ecuador's industry, as it demonstrates the efforts of companies to improve and produce quality products that do not harm the environment. It also encourages industries to make their employees feel safe and secure and to implement fair trade standards. By producing quality products, consumers are encouraged to support domestic production, leaving aside the conception that everything that is foreign is better.

As has already been demonstrated, Management Systems also bring many benefits to the industry, such as process standardization, cost reduction, error prevention and reprocessing. Through these systems, it is possible to maintain quality in all products, increase the customer fidelity, have a better company image, enter into more demanding markets, among other advantages that Management Systems provide.

It is undeniable that internal and external factors have weakened the Ecuadorian economy in recent years, yet ingenuity and opportunity are the engine for the recovery of an economy. As Albert Einstein said, "The crisis is the best blessing that can happen to people and countries because it brings progress." The food sector represents a great opportunity to develop and expand markets and to add value to Ecuadorian products.

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