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"FEASIBILITY ANALYSIS OF THE IMPORTATION AND COMMERCIALIZATION OF TECHNIFIED INFRASTRUCTURE, EQUIPMENT AND ACCESSORIES FOR SWINE FARMS IN THE PROVINCE OF AZUAY".

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To God, for giving me the necessary capacity to fulfill this goal so long awaited. For his blessings and obstacles that were served to develop me as a person and professional.

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ABSTRACT

The analysis will reveal the needs for infrastructure, equipment and technical accessories in the swine farms of the province of Azuay. For this a market study was necessary with primary research methods, such as interviews and field visits, and secondary research methods were employed, through official pages and specialized authors in the subject. The information from the market analysis, will indicate whether an unsatished market exists, the required products and the suppliers that provide the most benefits. It will also indicate the different procedures and documentation for imports of swine equipment, their nationalization, methods of payment, containerization, and logistics. A marketing plan will be established through sales strategies with a good inventory management. Finally, using financial evaluation criteria, the feasibility of the project will be determined.

INTRODUCTION

International trade activities have been developing since the Middle Ages, beginning with the trade of surplus agricultural products of the villages, which specialized in the production of certain goods such as cereals, dyes, silk, etc (EL Mundo, 2015).

International trade allows countries to specialize in what they produce best and benefit from the products and services offered by other countries. Adam Smith on Absolute Advantage says, "When a foreign country can offer us a cheaper commodity than it costs us, it will be better to buy it than produce it, giving part of the product of our own economic activity, applied in those sectors where we take advantage abroad" (Smith, 1976, p.354).

Ecuador's foreign trade is based on the export of commodities such as oil, bananas and cacao, which is why a negative trade balance has been maintained (US \$ 287 million in 2015); this is due to greater imports of finished products with added value than those that are exported.

In recent years there has been a reduction in imports due to government protection policies, such as safeguards and various import documents (INEN, MIPRO), etc. This has allowed the development of some sectors based on the policy of changing the productive matrix (Central Bank of Ecuador, 2015).

Although there are products of very good quality in Ecuador, these do not exceed the expectations of the consumer and there is more acceptance of imported products. Depending on the type of imported product, these may be more expensive than the Ecuadorian product, since there are tariffs and protection for the national product.

In the case of products such as infrastructure and equipment for swine production, consumers prefer to import products from Europe as they have developed improved intensive production systems and are at the vanguard of technology, innovation and animal welfare.

When we talk about the world swine industry, it has ceased to be an activity without care and hygiene, thus obtaining a great technological and innovative development to reach to fully technified farms that contribute a large percentage to the economies of the regions and the society.

Swine production activity in Ecuador has developed in a good way, but not under technified production standards. There are few intensive production farms (3%) and a large group of small and medium farms (not technified 97%), that need technification and automation of the processes for a greater production (Porcine Census, 2010).

In the swine industry, they talk about disciplines such as genetics, nutrition, equipment and facilities, health and food safety, all of them directed to a single objective - efficient production with excellent meat quality. In Ecuador, despite having good tools for a good management of the industry, failures have been observed through dissatisfied meat markets, mainly due to, the lack of technology. Many swine producers conduct their activities in an empirical way, through backyard production systems or family businesses.

The application of machinery and technological tools in the swine industry offers many benefits, since these help to make the production processes shorter to obtain greater economic returns for the company. Since pre-state societies, man has been developing techniques of survival and production, bringing as a consequence the creation of industrialized machines.

Rostow, in his book "The Stages of Economic Growth" talks about the characteristics of a modern company and places particular emphasis on the infrastructure and machinery it must have to be competitive. When there are companies with new technology in a country, their overall economy is benefited, since there is sufficient production, satisfied markets, and employment (Rostow, 1998).

Traditional processes such as raising swine with food waste, reproduction through natural mating, or use of cement floors, allow producers to fall into a business regression that cost time and money. These processes of production bring with them serious consequences, such as diseases not only for the animal, but also for man. Although some people tend to like the taste of artisanal grown swine, proper handling on safety issues cannot be guaranteed.

In Europe, swine breeding has become the animal industry with the most application of technology, resulting in fully technified farms of up to 500 sows. The use of systems of intensive production of pigs in Europe has attracted the attention of animal protection organizations, requiring the application of animal welfare standards and the application of modern and comfortable technologies for the animal (Animal Equality, 2016).

In the province of Azuay there are about 30 swine farms, of which twenty eight farms have systems of non-technified and semi-technified production, reaching between ten and a hundred swine each (Porcine Census, 2010).

An activity that has been developing in recent years in the province of Azuay is the creation of associations of swine producers, which have had good acceptance and success by small and medium producers. In the province of Azuay many families have benefited through community development projects by the Azuay Prefecture that have provided1 economic aid, advice and genetic improvement through the Agroazuay program (Azuay Prefecture, 2016).

In terms of the disponibility of technified products for the swine industry in the province of Azuay, it is observed that these are not exhibited, since they aren't products of massive consumption. These products are imported from other countries including: Spain, Mexico or Brazil but only if the company needs it; these machines have a high commercial price, but within a short time it is recovered.

Some of the equipment used for technified swine production are automatic hoppers, plastic floors (slats), heaters, water nipples drinkers, insemination equipment, ultrasounds, maternity cages, food mixers, silos, etc. Generally these products do not have import restrictions and can be imported with low tariffs, since the State fosters the production and the transference of technology (IPASA, 2016).

According to statistics from the Association of Porcine Producers of Ecuador (ASPE), swine production in Ecuador in 2013 was approximately 118 thousand MT, and there is a need for an import of 15,500 MT to satisfy the demand of 10 kg / person / year. This seems to indicate that despite the existence of swine consumers, the Ecuadorian supply is not covering its needs, which means it is necessary to restructure swine production systems and protect the domestic market (ASPE, 2016).

3

Through the application of technified systems of swine production in Ecuador, results can be maximized to obtain meat of excellent quality, satisfied markets, and social development. Swine breeding is an industry that has been modernized and prepared to face the challenges of this globalized world.

At the time of consuming pork meat it must be taken into consideration that it was raised under quality standards through technified production systems to ensure quality.

CHAPTER 1 ENVIORMENT

1.1 PEST ANALISIS

An important tool to analyze the feasibility of a project in a changing market is the PEST analysis (Political, Economic, Social, and Technological). This analysis helps us understand the environment in which the project is located, and consequently the position, potential and direction of a business. The term PEST was first used by Francisco Aguilar in his 1967 book, "Business Environment Analysis" (Aguilar, 1967).

The PEST analysis is the basis on which a project is based and the framework for the company's internal SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) (Chapman, 2012).

For the feasibility study of the importation and commercialization of infrastructures for swine farms, the PEST analysis is very necessary, since this implies a global environment where the business will be carried out.

1.1.1 Political Analysis

At the moment of starting a business project, the political analysis of a country is substantial since it gives us the pattern of how the current political trend in the country is handled. Political analysis explains the action or tendency of a government through the dispositions (Aguilar, 1967).

In recent years, different regulatory bodies have been created in Ecuador, for example The Organic Code of Production, Trade and Investment (COPCI), the Organic Law of Rural Lands and Ancestral Territories, or the Organic Law of Popular, Solidarity Economy and the Popular Financial Sector. These codes have as a primary objective to produce and maintaining food sovereignty. All these codes point to the fulfillment of the principles set for the 2008 Constitution; Where we talk about sustainable development, eradication of poverty and proper management of resources (National Assembly, 2008).

The change in the Productive Matrix promotes the creation of MSMEs (Micro, Small and Medium Enterprises) with the primary objective of creating employment, economic development and social security. The Ecuadorian state encourages the creation of new businesses through tax incentives such as exemption from income payments for 5 years, or progressive reduction of income tax. These incentives also apply to companies located in territories authorized as SEZ (Special Economic Zone). In the case of external financing operations, there is the exemption of the tax on cash outflow, which in other transactions is 5% (COPCI, 2016).

These policies are an opportunity for the project as it encourages the creation of new businesses through guarantees of protection for the entrepreneur and fiscal incentives. At the moment of starting a business the support from the state is necessary until the company gets a good market positioning, taking some time to reach this. With fiscal incentives, the company will keep its finances without losses despite not earning profits.

The Organic Law of Popular, Solidarity Economy and Popular Financial Sector, regulates the creation of Economic Organizations of production, commercialization, and financing, based on solidarity and cooperation, existing fiscal and financing benefits. This law regulates the correct creation of solidarity economy organizations, which have a board of directors and institutions of inspection and control. This law mentions the maximum rates of interest of loans by financing institutions. The state also guarantees the exchange of knowledge through free talks and programs of good production practices (MIES, 2014).

This law is beneficial to the project as it encourages the creation of Production Associations, in this case of swine. A very important market niche for swine products are Associations of Producers. These organizations are a rather attractive market opportunity because these economic projects use innovative methods of production as they are advised by professional technicians from the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) or from the Azuay Prefecture Institution which is Agroazuay.

To achieve a correct localization of agricultural production projects, the Ecuadorian state has created the Organic Law of Rural Lands and Ancestral Territories. This law regulates the correct location of farms located near villages, which, due to the type of operation, demand healthcare and waste control systems.

This policy could have both positive and negative consequences. It is a threat to the company that they are required to relocate the farms, as the owners would not be able to continue production because of the high costs for the initiation of a new project and not to buy swine equipment. On the other hand, this policy also has positive consequences due to the fact that new swine production projects will be initiated already in suitable purchase places. The owners of the farms would institute new projects, but with technified products. This would mean the necessity of suppliers for the new farms.

The Organic law of Agro-biodiversity, Seeds and Promotion of Sustainable Agriculture guarantees that agricultural production is encouraged under alternative practices of technological innovation and promotes the rural and community family economy to boost the sector and guarantee food sovereignty. In the same way, the development of sustainable agriculture entrepreneurship programs and projects with technical and financial assistance is promoted.

The Ecuadorian state guarantees free import and marketing of inputs, improved seeds, animals and plants, machinery, equipment and technology, except for goods classified as harmful. The government encourages agricultural development since no authorization is required as long as it complies with what is established in the Regulations to COPCI and the laws of Plant and Animal Health (MAGAP).

This law is favorable for companies, since products that will be imported will benefit agricultural production. This law refers to the fact that there are no prohibitions on imports of goods that encourage the transfer of technology, being the infrastructure for swine farms, fully technological products and innovative for swine production.

The Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) guarantees family farming with the aim of protecting food sovereignty. This Ministry guarantees a correct management of the quality and agricultural health through systems of control and inspection to agricultural farms. This management has resulted in products of better quality and safety. The institution associated with MAGAP is Agrocalidad. This entity is responsible for maintaining and improving the health status of the country's agricultural products with the aim of safeguarding the safety of primary production, contributing to achieving food sovereignty, improving trade managing and supporting the change of the productive matrix from the country (MAGAP, 2015).

Control of swine farms by MAGAP is a benefit to swine equipment companies, since it provides the business an opportunity to provide them with products where they have problems or are not complying with the provisions of MAGAP. For example on waste issues, a company could sell waste control systems.

Ecuador is a member of some of the most important regional blocs of political and economic cooperation, such as The Andean Community (CAN), The Union of South American Nations (UNASUR), The Organization of American States (OEA), and The Latin American Integration Association (ALADI). Being a signatory of these organizations has brought positive consequences in terms of foreign trade, financing, technology transfer and in society. A country by itself cannot sustain itself, hence the need to strategically ally with its neighbors.

That Ecuador is a member of some international cooperation organizations is a strength for companies since they would benefit from the release of taxes on products imported from states signatories to these agreements, by submitting documents of origin.

In recent years, the government of Ecuador has tried to equate trade balance, since it has been negative through policies of tariff barriers such as taxes and safeguards to 2,800 items and non-tariff barriers such as documents, certifications and import quotas. This resolution was issued by the Ministry of Foreign Trade with tariff surcharges ranging from 5% to 45% and was applied for products such as fruits, meats, dairy products, construction finishes, among others, making up to 32% of imported products. The national government justified the action with the purpose of counteracting the effects of the fall of Ecuadorian crude oil. This policy has brought unrest to importers as some products have risen in prices and sales have fallen. These resolutions have also been taken in order to encourage domestic production and prevent cash outflow ("Dos mil ochocientas partidas gravan sobretasas," 2015).

These policies are a threat to companies because from one moment to the other, if the economy of the country is affected, barriers to foreign trade apply.

Ecuadorian policy is based on the national plan of good living, which contemplates some fundamental principles like Democracy to build a fair and shared future; economic and political equality; optimization of resources; social and material inclusion and the strengthening of society (Buenvivir.gob.ec, 2015).

The primary objective of Ecuadorian policies is to create a sustainable industry that will safeguard the country's food sovereignty through the creation of new companies that produce high added value products with sustainable development and social protection.

1.1.2 Economic Analysis

For the last two years, the Ecuadorian economy has been in a very difficult crisis due to the fall in oil prices (\$ 26, lowest price) and excessive indebtedness (\$ 31.08 billion). Although there has been a slowdown in the development of the country, the trend of economic development has always been positive with foreign investment, monetary stability, and completion of state projects and national production (OPEC, 2016).

Figure 1

Lowest Oil Price



Source: Organization of the Petroleum Exporting Countries

According to data from the Economic Commission for Latin America and the Caribbean (ECLAC), Ecuador's Gross Domestic Product (GDP) in 2015 was \$ 100.87 billion. Having as the main sectors transportation, energy, construction, mining, trade, finance, manufacturing, and agriculture. The Agricultural sector, which includes livestock, hunting, forestry and fishing, contributed with 9.11% to the total GDP, reaching amounts of \$ 8.80 billion. These reflect the country's clearly raw material production profile (ECLAC, 2015).

Figure 2

GDP of Ecuador by sectors.



Source: ECLAC, 2015

In 2015, Ecuador exported \$ 18.36 billion to the world of which 41.9% represented oil exports and 58.1%, non-oil exports. Of 100% of non-oil exports, 53.8% represented traditional products and 46.2% represented non-traditional products (ECB, 2015).

Of the total exports, oil and its derivatives are the product of higher exports with 41.9%, followed by traditional products 31.25% and non-traditional 26.84%.

Table 1

Non-oil exports from Ecuador to the world

Product	Out of 100%
TRADITIONAL	53.8
Bananas and Plantain	24.1
Shrimp	19.5
Cocoa and processed	7
Tuna and fish	2
Coffee and processed	1.3
NON TRADITIONAL	46.2
Canned fish	8.2
Natural flowers	7
Mining products	6
Other metal articles	2.9
Extract and vegetable oils	2.4
Wood	2.3
Vehicles	1.5
Others	15.3

Source: Central Bank of Ecuador, 2016

Regarding imports, Ecuador imports from the world were \$ 27.51 billion. With consumer goods being 10.9%, intermediate finished goods 64%, capital goods 19.2% and vehicles 5.9% (ECLAC, 2015).

The import of products for the Ecuadorian agricultural sector has been very representative. In the case of subheading 8436 (Machinery for agriculture, horticulture, forestry and poultry) in 2015 it was \$ 29.8 million. In 2016 there is a decrease in imports of these machinery, due to safeguards, reaching \$ 20.6 million. The products are imported

mostly from China and the US, with amounts of \$ 5.1 and \$ 4.8 million respectively (Trade map, 2017).

According to these amounts it shows that there is an opportunity for the swine equipment import project, as these products are not produced in Ecuador due to lack of knowledge and technology and also because Agriculture production represents 9.11% of total GDP. It is also important to mention that the products that companies will sell are capital goods, considered as assets for the farms.

Due to employee protection policies, the unemployment rate in Ecuador has been decreasing considerably, reaching an unemployment rate of 5.1% in 2014. Employment policies in Ecuador are very strict and provide many benefits and rights to workers. This policy of protection for employees is positive since their rights are respected for the very fact of being part of the success of a company. On the other hand, if there is no compliance with the law for employees, companies may be involved in lawsuits involving large sums of money (Ecuador en Cifras, 2015).

The prices of Ecuadorian products have been maintained with inflation not so high at 3.53% in 2015. In 2016, inflation has decreased considerably (2.32%) due to the economic slowdown of the country and the lack of liquidity for the consumption of the products (Ecuador en Cifras, 2015).

Figure 3





Source: Ecuador en Cifras, 2015

In 2015, the basic Ecuadorian family basket cost US \$ 653.21, which can be covered with the US \$ 660.80 minimum wage that a regular family of 4 people receive. In January of 2015 the government decreed the increase of min wage to US \$ 354, which would cover the basic basket with 1.6 members of the regular Ecuadorian family. The basic food basket contains 73 products of massive consumption like food and beverages, housing, clothing and miscellaneous (Ecuador en Cifras, 2015).

Pork meat is considered in the basic basket of Ecuadorians; therefore this is an opportunity for producers of swine meat as it becomes accessible to people who receive basic salaries. As a consequence, it would also be an opportunity for swine equipment companies, since it would be necessary to restructure the production systems of swine farms.

Interest rates on loans for Micro, Small and Medium Enterprises (MSME's) in Ecuador have declined considerably, with a rate of 11.2% in 2012 and 10.64% in 2015. These rates are a strength for importer, since financing will be necessary to run the project (Central Bank of Ecuador, 2016).

About the swine industry, in which the project is focused, total swine production in Ecuador in 2013 was 117,708 MT. Despite the high amounts, this amount was not sufficient to satisfy the demand of the market, resulting necessary the importation of swine from the outside, in amounts of 15,500 TM. For the importing project, this is an interesting opportunity as there is a percentage of an unsatisfied market. Given that what is necessary in Ecuador, the importation of meat would no longer be necessary. There is even the possibility to become exporters in case there is more production than consumption (ASPE, 2014).

The Ecuadorian economy is based on oil prices, which is why in the current year (2016) there has been an economic slowdown. In order to overcome this, there is a need to create new companies that dynamize the economy, and produce high added value products with export quality. In the meantime, it will be necessary to import goods from abroad so that a correct transfer of technology and production can be reached.

1.1.3 Social Analysis

According to the National Institute of Statistics and Censuses (INEC) in Ecuador there are 5 groups of socioeconomic strata, A, B, C, D and E. For the measurement of the results points have been given to some important variables such as level of education and occupation of the head of home, and the predominant material of the construction of the house.

From the study carried out in the most important cities of the country, it was possible to conclude that 83.3% of the population are of medium socioeconomic stratum.

According to the Census of Population and Housing 2010, Ecuador has a population of about 14 million people, with a growth rate of 1.9% since 2001. Currently the population is estimated at 16,567,363 habitants. It is expected that by 2050 population will double, impacting the economy and social services, resulting in a relatively high population growth rate. As for the sex that predominates in Ecuador, the percentages of 49.6% of men and 50.4% of women are maintained (INEC, 2014).

Figure 4



Population pyramid of Ecuador

Source: Census, 2010

As seen in fig 4, in the population pyramid of Ecuador, according to the 2010 Census, a younger population (15 to 29 years old) predominate at 27%. The adult population represents 6.5% of the total population. The trend continues with the existence of a larger young population (31%) and an older adult population aged between 65 and over, at 7%. The active population in Ecuador is 62.2%.

Due to the existence of a high demographic population rate, there is an opportunity for the project to import swine equipment. More people mean more food, more production and more swine-producing farms will be needed, because pork meat is part of the dietary staple of Ecuadorian families.

Seven out of 10 people live in urban centers and three in rural localities. The data show that between 2001 and 2010 the urban percentage went from 66.3% to 70.5%. It is evident that rural areas continue to have enormous significance for the national economy, still holding almost 30% of the national population (INEC, 2014).

As for international migration, 1.3% of the population that resides in the national territory were born abroad. This amount is not as real as some prefer to identify as Ecuadorians for fear of deportation. In recent years the number of immigrants increased by 75%. The majority of immigrants are from Colombia, followed by the United States, Peru, Cuba and Venezuela (INEC, 2014).

Regarding the emigration of Ecuadorians, in the last 10 years there have been about 280,000 people (150,000 men and 130,000 women) that have emigrated to other countries. The preferred destination countries for the emigrant population were Spain (47.5%), the United States (30.1%) and Italy (8.3%). Six out of 10 migrants would have left the country for work, and about one-fifth for family reasons. The provinces where there is more migration are Cañar, Azuay and Chimborazo (INEC, 2014).

After a few years abroad, migrants return with projections of economic investment in the country with the agricultural sector being one of the most operated. Therefore, there is a business opportunity for swine equipment.

Migration in Ecuador has resulted in the continued use of international media and thus a globalization of its inhabitants, changing habits and lifestyles, especially in the province of Azuay, where migration has grown considerably. People tend to change their ways, even migrating from the countryside to the city. The population is more educated there are in constant knowledge of what happens with the economy and politics of the country and they are more demanding and know about their rights. When people buy a product, they demand that it be of good quality according to the money that it is paid. Ecuadorian society has also changed their eating habits, seeking a healthier, balanced diet and good quality products. The tendency to eat healthy has grown, due to the high rates of obesity and diseases. The government has promoted different labelling colors depending on their levels of sugar, salt and fat, this because they are the main factors causing diabetes and hypertension. These diseases are the number one cause of deaths in the Ecuadorian population (63,104 deaths in 2013).

Restaurants are already using frying oils with low percentages of trans fats. In the case of pork meat, the tendency of the producers is that it has a minimum percentage of fat, since the average consumer wants a totally lean product, and produced under safety standards (Ecuador en Cifras, 2015).

It is important to mention that pork meat is one of the main ingredients in the preparation of some typical gastronomic dishes of the area, such as hornado, sancocho, fritada, etc. These dishes surprise locals and foreigners as they are delighted on important occasions such as village celebrations and religious holidays, and are an important part of the province's culture. Ecuadorians also consume sausages in large quantities, with pork being the main ingredient for processing it, 10 kg / person / year (ASPE, 2014).

Ecuadorian society has changed, but has also maintained the sense of organization of economic and social groups of mutual benefit. Ecuadorians are more demanding, careful with their health, enjoy their holidays and enforce their rights.

1.1.4 Technological Analysis

Technology and innovation are at the vanguard of man's needs; unfortunately this does not happen in all countries, due to their condition as developing countries.

Ecuador is a very productive country, but has not been able to create technology or added value to its exports. This is due to the primary resources that they have and the lack of technology, investment and human talent. The policy of the government of changing the productive matrix encourages the national production of goods with high added value. Unfortunately for this policy to be consolidated, it will take decades and the application of innovation, development and research. Although there are some technological developments in the country, these are not competitive enough to be exported but consumed in the local market.

The transfer of technology allows all people to know about new production processes and techniques. In the province of Azuay, programs have been developed for the production of small and medium-sized species, in order to create associations of producers and promote economic and social activity. These programs are based on the Popular and Solidarity Economy promoted by the government. Through the Agroazuay program,

The Prefecture seeks to develop production and breeding programs in guinea pigs and swine. Producing sectors such as El Cabo in the Canton Paute have been the beneficiaries of this program. The program delivered 12 sows ready to be inseminated to the entrepreneurial families who wanted to benefit from this activity. Agroazuay also offers advice and technical production talks. This is a clear example of the technology transfer in terms of livestock production provided by the prefecture (Azuay Prefecture, 2015)

In El Valle, an area of Cuenca, the transfer of technology and knowledge in swine production by the Ministry of Agriculture, Livestock Aquaculture and Fisheries (MAGAP) and the Decentralized Autonomous Government of El Valle is also encouraged. The beneficiaries are the Association of Agro ecological Producers of San Pedro de El Valle. Financial support was provided for the construction of swine housing and for the sale of genetically improved animals with the aim of encouraging production and employment through the formation of a micro-enterprise that brings together organized families to offer a quality product. The beneficiaries of the project are 12 women, heads of home, who own the different sheds on their farms. The program will last 5 years with the support of the Decentralized Autonomous Government (DAG) of El Valle (MAGAP, 2015).

These partnership programs are a business opportunity for swine equipment importing companies as they are advised by public technicians who encourage production through modern, and innovative production systems. When talking about technology, the internet has been key to the transfer of knowledge, products and processes, resulting in a population with new ideas and knowledge of innovative and vanguard products. According to the Minister of Telecommunications, Augusto Espín, in the year 2015, 46% of the population had access to the internet (Ministry of Telecommunication, 2016).

The emergence of social networks have allowed the constant rapprochement of people, in real time, sharing family situations, social problems, politics, business, among others. The internet and social networks allow information to be disseminated abroad in seconds, having both positive and negative consequences. Currently, social networks are a tool widely used by all kind of businesses, these help launch, advertise and sell products.

The internet and social networks are a strength for companies of swine production equipment because through this they can segment groups or the target market. Through the internet, farm owners are aware of the new production and innovations in swine farms, they also allow to manage inventories in real time and a correct management of the value chain. These allow a correct integration between the members of a market. Social networks are an excellent tool, as they have marketing options to sell to potential customers.

An important factor in measuring the technological potential of a country is the number of inventions patented by its population. Unfortunately, there are few patents created by Ecuadorians (149 applications in the first 4 months of 2014).

The Intellectual Property Law of Ecuador protects the creators of inventions by securing economic rights for a period of 20 years. Currently, the Ingenuity Law is under discussion, which seeks to eliminate dependence on oil by the Ecuadorian economy and an incentive to create products with high added value (Ecuadorian Institute of Intellectual Property, 2014).

In the case of present project, in the future company would not only dedicate itself to importing swine products from abroad, but based on experience and necessity, new products would be invented and patented, creating new companies based of the change of the productive matrix. Technology and information are key to the development of society as they allow people to have information and knowledge from other countries and understand problems that the world faces. A society in communication is able to better face a social, political or economic problem, since there is an easier relationship and communication through the internet.

Technological innovation is key because based on a need we create technological inventions that help us to live in an easier and comfortable way.

1.2 Conclusion of Chapter 1

After the PEST analysis of the industry where the swine equipment importing company will be located, the project is expected to be favorable for business investment, due to some reasons. Ecuadorian policy supports the creation of new companies through fiscal incentives, there are laws that protect the producer, the employee and the consumer, all of these laws are based on the objectives proposed by the 2008 Constitution, sustainable development, eradication of poverty and proper management of resources.

The Ecuadorian economy has developed in a good way. This has allowed foreign investment, monetary stability, completion of state projects and national production.

According to the Ecuadorian government, the crisis in the country has been handled in the best way, with the fall in the price of oil being the main reason for the economic slowdown, which has resulted in budget deficit and lack of liquidity.

Ecuadorian society has modernized and changed its health and consumption habits, which are protected by legal bases that encourage the care of food and healthy lifestyles. There is a demand with greater knowledge, level of connectivity and higher level of expectations. Communication technologies allow the transfer of knowledge, innovative products and new production processes. Social networks allow Ecuadorians to be communicated in real time and react to any type of event.

All these reasons allow the feasibility of an import company of swine equipment products, there are incentives through policies, and a market that must be covered.

CHAPTER 2 MARKET RESEARCH

Introduction

For a business to be profitable, the first step to follow is to conduct a market research. This brings many benefits because with it is known the unmet needs of a common sector and the marketing strategies that should be established for a product or service.

With the market research, the feasibility of a business project can be understand, since field studies are based on the different opinions of people who are knowledgeable about an industry. With the market research we perceive the needs and requirements of the products, we learn the buying trends and the products and services already existing.

2.1 MARKET RESEARCH

Before carrying out a business project, the first thing that must be done is a market research. This gives a truthful information about a sector. With the market research we will learn our market segment, our potential customers, and what is the demand and the competition of the project.

2.1.1 What is the Market?

For Philip Kotler and Gary Armstrong, a market is "A group of real and potential buyers of a product. These buyers share a particular need or desire that can be satisfied through a relation of exchange" (Kotler, 2008, p. 86).

2.1.2 Objectives of the market research

The main objectives planned for the market research are as follows:

• Learn the demand for infrastructures and technified equipment for swine farms.

- Lear the purchase intentions of the swine equipment.
- Establish a correct distribution plan for swine products.
- Establish strategies for the sale of products.

To achieve the marketing objectives, primary research will be necessary by analyzing information documents related to the swine industry such as the Porcine Census 2010, documents of the Association of Porcine Farmers of Ecuador, MAGAP, Agrocalidad, among others. In the same way, secondary research will be used through field interviews to producers, distributors and industry experts, with the use of interviews, surveys and segmentation of the target market.

2.1.3 Market Segmentation

The Marketing Cultural Dictionary SA defines a market segment as "a group of individuals or companies that have homogeneous and distinct characteristics, which clearly differentiate from the other groups, and which can also respond to a program of Marketing activities specifically designed for them, and with profitability for the company that applies it" (Dictionary of Marketing 2015, p. 326).

Market segmentation is very necessary, since the market for products and services is extremely large. Segmenting a market is to divide it into groups with the same characteristics. In segmentation, the market is subdivided into groups containing the same variables, which is why a company is interested in them. The market segment is the target of the marketing mix. The segmentation of the market is constantly changing; this is not static, it is dynamic. The profile of the consumer presents constant changes, for which the business must adapt.

The market segment of the swine equipment importing company will be the province of Azuay, where according to Agrocalidad there are in general 30 swine farms, with populations of more than 10 sows. Of this total, 15 are officially registered in the Agrocalidad system, since they are farms that handle a large number of swine and have intensive production systems, which is why Agrocalidad controls and advises the production process under quality standards. These are profitable businesses looking for investment and to increase production through technification. Of the total of the farms only 2 are technified and the rest are semi-technified. Although semi-technified farms produce fairly acceptable swine in terms of meat quality, they do not compare to a fully-tech farms. The latter produce highquality meat, feeding processes are automated, disease is easily controlled, there is less work to do, and most important, there is money savings for the producer.

Table 2

Canton	# of farms	Canton	# of farms
Santa Isabel	11	Paute	2
Ponce Enríquez	6	Guachapala	1
Cuenca	6	Oña	1
Gualaceo	2	Pucará	1
EL Pan	0	Sig Sig	0
Girón	0	San Fernando	0
Nabón	0	Sevilla de Oro	0

Population of swine farms per canton

The areas where the most productive farms are concentrated are Santa Isabel and Ponce Enríquez. This is due to the climatic conditions of the sector.

An interesting segment are Associations of producers of small species, because they produce under technical standards and professional advice. At present there is no cadaster of theme, but this activity has been developed with great determination. Some Associations of production of swine are: the "Red de mujeres de Paute", the Association of Agroecological Producers of San Pedro de El Valle, the Association of Producers of el Cabo, and the Swine Producing Association of Sevilla del Oro. These are just some of the many that existent in the province.

The company also has the objective of fostering the creation of new associations of swine producers, since, according to the analysis, there is an unmet demand and swine meat can even be exported.

Source: Agrocalidad, 2016. Prepared by: Diego Vásquez

In the same way the company has as target market, the Agricultural warehouses, which can be part of the distribution of small equipment such as feeders for piglets, insemination catheters, automatic nipple drinkers and accessories. In the province of Azuay, according to the Cadaster of Agriculture Warehouses of 2012, there are 259 agricultural warehouses.

Table 3

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Agricultural	warehouses	ner cantor	1 in the	Province	ot A	1711/11
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Canton	Warehouses	Canton	Warehouses	Canton	Warehouses
Cuenca	157	Santa Isabel	12	Paute	19
Nabón	4	San Fernando	6	Gualaceo	18
Oña	4	Girón	7	Chordeleg	5
Ponce Enríquez	6	Sevilla de Oro	2	Sigsig	14
Pucara	3	Guachapala	2	TOTAL	259

Source: Cadaster of Agricultural Warehouses, 2012. Prepared by: Diego Vásquez

On the other hand, a promising segment are the small companies, producers of unbranded crafted sausages, which usually buy live swine, but do not have their own farms. The creation of a farm brings economic benefits to the company, as it reduces production costs and intermediaries.

2.1.4 Methodology

In order to obtain the population data and characteristics of the farms' infrastructures, primary and secondary exploratory research methods will be used. For the primary method, field research will be necessary, through interviews, surveys and observation of production systems. The data of the primary research will be corroborated with the data of the registered
farms that will be provided by Agrocalidad. The analysis of the swine population is based on the 2010 Porcine Census, taking into account the 1.7% annual growth of the population.

2.1.5 Description of the swine sector in the province of Azuay

According to Agrocalidad officials, in the province of Azuay there are about 30 farms considered as large because they have populations of over 10 sows. Of these, 15 have register in Agrocalidad.

In the province of Azuay, the total population of swine, according to the 2010 Porcine Census carried out by MAGAP, was 4,156 swine, where the technified and semi-technified production represented 54%, equivalent to 2,647 swine, and backyard production was 36% which equates to about 1,508 swine.

Due to the difficulty of a current population census, for the current year the percentage of net growth of the swine population from 2000 to 2010, which is 1.7% per year will be used. Based on the 1.7% growth of the annual population of swine, by the year 2016 it is estimated that there is a population of 2,929 swine, breeded in semi-technified and technified systems.

Table 4

Swine population in technified and semi-technified systems

2010	2011	2012	2013	2014	2015	2016
2,647	2,692	2,738	2,785	2,832	2,880	2,929

Source: Porcine Census, 2010. Prepared by: Diego Vásquez

2.1.5.1 Population of swine in backyard systems

In the same way, based on the 1.7% growth of the annual population of swine, by 2016 we have 1,669 swine, breeded in backyard systems.

Table 5

Swine population breeded backyard systems

2010	2011	2012	2013	2014	2015	2016
1,508	1,534	1,560	1,587	1,614	1,641	1,669

Source: Porcine Census, 2010. Prepared by: Diego Vásquez

2.1.5.2 Population of swine according to the stage in technified and semi-technified production

The current population of swine in the Azuay Province is approximately 4,598 swine, with 2,929 swine produced in a technified and semi-technified systems; And 1,669 swine produced in a traditional way.

Table 6

Population of swine according to the stage in technified and semi-technified production.

Sows	Males	Replacements	Piglets	Growing	Fattering	TOTAL
217	31	102	317	1,043	1,219	2,929

Source: Porcine Census, 2010. Prepared by: Diego Vásquez

2.1.5.3 Population of swine according to the stage in Semi-technified production, in 2016

For the calculation of this population, 7% has been subtracted in each stage since this percentage represents the farms that already have technified systems; in other words this will be the population to which the company will provide with products.

Table 7.

Population of swine according to the stage in semi-technified production

Sows	Males	Replacements	Piglets	Growing	Fattering
202	29	95	295	970	1,133

Source: Porcine Census, 2010. Prepared by: Diego Vásquez.

2.1.6 Interview with Producers

To learn the opinion of the producers about the technification of their farms, interviews will be necessary, due to the difficulty of conducting a survey, for reasons of time and accessibility to all the farms.

Interviews are a very useful tools to obtain information since if they are done with the indicated people, they provide pertinent information of the industry. With an interview it is possible to learn the experiences and the opinion about a common topic. For example, if it is done with a president of a chamber of producers, this will answer the general information of the sector and give good results.

The objective of the interviews is to know about the characteristics of the infrastructure and systems of production of the farms and the swine equipment purchase intention.

2.1.6.1 Methodology

Four people were interviewed who are influential and knowledgeable about the industry. Within this group, the following people considered: a producer; a leader of a producers' association; an official of the MAGAP and a distributor of an agricultural warehouse.

In the same way, 15 people were interviewed are swine farm owners in Cuenca, Gualaceo and Paute. There was also an application of a survey to these 15 people, in order to learn the conditions of their farms and the tendency to the technification.

2.1.6.2 Interview with a swine producer about technification in swine farms

An interview was conducted with Mr. Carlos Yanza, owner of the farm "Yanza", located in the sector of San Gerardo of the Guacaleo canton. This farm has a population of 120 swine in the fattening stage. The gestation stage is not performed due to the difficulty and risk that this demands. The swine are slaughtered and sold by themselves to avoid intermediation. Mr. Carlos Yanza shares his experience of almost 15 years in the market. And he recommends fulfilling the 4 fundamental pillars in the swine production: genetics, management, infrastructure and feeding. Mr. Carlos believes that investment in infrastructure, despite the costs, is very important as it saves time and improves production. In spite of having a semi-technified farm, he believes that it would be very necessary to invest in automatic feeders in each cell, since there is a 5% waste of food due to the fact that they have long cement feeders and the pigs trample the food. With the automatic hoppers there is no waste because the swine is the one who makes the food fall and then they eat it. The interviewee also shares the need of a food mixing machine, because he mixes the food for 120 swine by hand, using just a shovel requiring lots of physical activity and time. He believes that in the future, it would be necessary the investment of a food mixer, since they are wasting a lot of time, effort and the food is not being well mixed. Mr. Carlos also says that 2 years ago he was also producing piglets and had about 30 saws. He left this activity because he had problems at the time the saws were giving birth, because their facilities were inadequate, did not have cages with plastic floors and their piglets died from problems of crushing or stomach flu. Yanza says that with a good technification of his facilities he would not have had the same problems and recommends that at least in the stages of gestation and maternity technification should be applied (Yanza, 2016).

2.1.6.3 Interview with the "Red de Mujeres de Paute"

In order to learn the opinion of the people who have an association of producing small animals and about the technification of their farms, an interview was conducted with Mrs. María Barrera, Coordinator of the 'Red De Mujeres de Paute'. This association owns a guinea pig and a pig farm located in the sector of "La Playa" of the Paute canton. The population of the farm is 70 swine, of which 10 are sows and the rest are fattening pigs. The commercialization of their swine is carried out in the market owned by them called "Mercado del Centavo". Each week they sell 8 swine, weighing approximately 100 kg. Mrs. Barrera comments on the facilities of the farm, which is semi-technified. She also says that sometimes it is necessary to buy part of the swine since its production does not supply in times of high demand such as Christmas and Carnival. Mrs. Barrera says that at the beginning of the farm, they used empiric production, through rests and food waste, but unfortunately they could not be efficient in production because healthy piglets were not born and the meat was not lean. After a while they changed the feeding for which it was necessary to acquire a grinder and a food mixer. As a result, they were more efficient in their work and now they are thinking on the acquisition of a total technified room for the maternity stage. Mrs. Barrera believes that technification in the production of small animals is very necessary since they are produced in high quantities and demand work and effort. With the technification producers can be more efficient (Barrera M, 2016).

2.1.6.4 Interview with a MAGAP official

Veterinarian Luis Barrera, official of MAGAP, believes that technification is the application of technical procedures to an economic activity. In the case of swine it is the beginning to a massive production with a better efficiency in the process. According to him the benefits of the technification of a swine farm are several such as a better working environment, availability of time to engage in other activities, and better income for producers. Vet. Luis Barrera comments that in the area of Cuenca few are the farms that have reached levels of total technification. This is due to lack of knowledge and investment by producers; He also comments that he knows fully-equipped farms with populations of up to 500 sows located in Santo Domingo and that they demand totally technified systems in infrastructure, health and genetics. The Veterinarian says that according to the records of the farms, the areas with the highest production of swine in the province of Azuay are Ponce Enriquez and Santa Isabel, due to the climatic conditions of the area. He also recommends that if a farm has more than 5 sows, technification should be applied, and always take into account the fundamental pillars in the production of swine: genetics, food, infrastructure and management (Barrera L, 2016).

2.1.6.5 Interview with the manager of "La Finca" Agricultural Warehouse

Dr. Froilan Pérez, Manager of the Agricultural Warehouse "La Finca" believes that swine production along with poultry are the sectors where technology has been applied the most, but unfortunately in our environment has not been well applied as it really should be. Dr. Pérez also owns a swine farm of 30 sows with semi-technified infrastructure. The farm has cages with plastic floors. The doctor tells his experience before the technification of his farm and says that, before he only had cells in which the sows gave birth but that mortality rate was high due to crushing. The piglets had stomach flu problems due to the cement floors. Currently the live piglet rate is 12. Two years ago the doctor purchased a food mixer because they used to spend a lot of money on employees who had to mix the food by hand. Regarding the distribution of imported products by the importing company, he mentioned that products such as infrastructure for pigs are expensive products that should be sold directly to the farms since they are investments that are made at the start of the business. What they were willing to sell are small products such as nipple drinkers, insemination catheters and other small accessories, these products have a good inventory rotation (Perez, 2016).

2.1.6.6 Survey with pork farm producers

As previously mentioned, due to the geographical location so widespread in the field, the level of knowledge and the availability of the owners to respond to a survey, we opted for the application of an interview and a survey to a group of 15 producers.

2.1.6.7 Results of the interviews and surveys

Of the 15 farms interviewed in the Azuay Province, 100% own production systems with mixed infrastructures of concrete and wood.

Thirty three percent (33%) of the farms are dedicated to a short period production of only piglets, selling them to other farms to be fattened. 66% of the farms have a complete cycle of production from gestation to fattening.

Forty percent (40%) of the farms use homemade feeding formulas and 60% use commercial feeding (Pronaca, Granjero, Wayne, Bioalimentar). 30% of the farms have food mixers.

Twenty percent (20%) of the farms sell their swine already slaughtered in a butcher shop and 80% of the farms sell their swine at local fairs or to intermediaries.

A hundred percent (100%) of the interviewees are aware of technification and know about the new developments in swine production.

Ninety five percent (95%) of respondents agree that investment in modern infrastructure and equipment is necessary to improve production for the automation of processes and to avoid diseases.

The stages of production where more technification is needed are maternity and gestation. Forty percent (40%) of farms use artificial insemination and 60% use natural mating.

Of the 15 producers, the following, will incorporate the following equipment to their farms:

Table 8

Number of farms that will incorporate the next products

Automatic hoppers	11	Heaters	15	Silos	2
Plastic Floors	15	Ultrasound	3	Semen extraction stand	8
Metal cages	15	Insemination catheter	15	Automatic feedings system	1
Nipple drinker	15	Food mixer	8	Waste depuration system	8

Source: Interview with producers, 2010. Prepared by: Diego Vásquez

2.2 Marketing Mix

"Marketing mix is a set of variables or controllable tools that combine to achieve a certain result in the target market, such as positively influencing in the demand, generate sales, among others" (Reyes, 2015, p. 182).

In order for the objectives to be achieved, a marketing strategy based on the 4Ps (Product, Price, Place, Promotion) will be necessary. The term 4Ps refers to the necessary factors on which marketing strategy planning is based. The term of the 4Ps was first used by E. Jerome McCarthy in1960, in his book Basic Marketing. Modern marketing is based on the concept of the market mix, which is relevant to the creation of the business strategy.

"The marketing mix is carried out when a product is produced and meets the needs and desires of the consumer, carefully examined and offered at a certain price; it is made available in particular places or distribution chains and a promotional or communication plan is carried out, that generates interest and facilitates the processes of exchange and development of relationships. These four factors are the elements of the marketing mix known as the "four Ps" (Reyes, 2015, p. 122).

2.2.1 Product

According to Jerome McCarthy and William Perrault, authors of the book "Marketing Strategic Planning from Theory to Practice," the product "is the supply with which a company meets a need" (p. 245).

To define a good product it takes into account some variables such as variety, quality, design, characteristics, branding, packaging, services, and guarantees.

2.2.1.1 Demand of swine products

Based on the current population of swine, the opinion of 100% of the respondents that technification is positive for their farms and the tendency to technification of 95% of the respondents, the demand for the products is for 2,724 swine as indicated on Table 9

Table 9

Number of Swine requiring technified systems

Sows	Males	Replacements	Piglets	Growing	Fattering
202	29	95	295	970	1,133

Source: Porcine Census, 2010. Prepared by: Diego Vásquez

Table 9 shows the population of swine that will be covered with technified production systems. This population is the database used in sales for the future years, also taking into account the growth rate of 1.7% for each year.

2.2.1.1.1 Demand for products in the Maternity and Gestation stage (202 sows)

a. Plastic Floors

Figure 5

Maternity cage with plastic floor for sows



Source: AP Equipos Integrados, 2016

The objective is to provide plastic floors for the maternity stage to 202 sows. For this we must take into account that there is rotation of two groups. While one group is in the stage

of maternity, the other group is in the gestation stage. In this case it would be necessary to provide plastic floors to half the population.

One hundred one sows would occupy 101 maternity cages. Each maternity cage measures 2.50m x 1.20m, which is equivalent to 3 m². 101 cages per 3 m², equals **303 m² of plastic floor.**

The other half of the 101 sows would be in the gestation stage, where the surface covered by the plastic floor no longer covers the entire gestation cage, but only half of it. The dimension of plastic floor per sow in the gestation stage is 0.80 m x 0.60 m, which gives us an area of 0.50 m^2 . To cover 101 cages we need 50.5 m².

Figure 6

Gestation cages with plastic floor for sows



Source: Armem Industry, 2016

b. Nipple drinker

In the gestation stage it is necessary to have 1 drinker per sow, which is a total of 101 drinkers.

In the stage of maternity, it is necessary as well 1 drinker for each sow, for a total of **101 drinkers.**

In the maternity stage a piglet drinker is also needed for newborn swine. Therefore **101 piglet drinkers** are also required.

In conclusion, to cover 101 gestation cages and 101 maternity cages, we need 202 sow nipple drinkers and 101 piglet nipple drinkers.

Figure 7

Automatic nipple drinker for swine



Source: Lubing, 2016

c. Food dispensers

101 food dispensers are required for gestation sows and 101 dispensers for sows in maternity.

Figure 8

Food dispenser for sows in gestation and maternity



Source: Eurogan, 2016

D. Piglet feeder

For each maternity cage, 1 feeder is required, for a total of 101 feeders for piglets.

Figure 9

Piglet feeders



Source: Eurogan, 2016

e. Heaters

For each maternity cage, 1 heater is needed. Total: 101 heaters.

Figure 10

Maternity cage heaters



Source: Eurogan, 2016

Table 10

Infrastructure required for 202 sows in stages of maternity and gestation, based on the already mention study

Product	Quantity	Product	Quantity	
Maternity plastic floor	303 m²	Maternity food	101	
	000 m	dispenser	101	
Gestation plastic floor	50.5 m^2	Gestation food	101	
Gestation plastic floor	J0.J III-	dispenser	101	
Sow nipple drinker	202	Piglet feeder	101	
Piglet nipple drinker	101	Heater	101	

Source: IPASA, 2016. Prepared by: Diego Vásquez.

2.2.1.1.2 Demand of products for male swine (29 swine)

a. Automatic nipple drinking

This stage does not need technification. Cells and cement feeders are usually used. Automatic nipple drinkers are used in this stage each pig needs 1 drinker. **Total: 29 nipple drinkers.**

2.2.1.1.3 Demand of products for replacement sows (95)

a. Automatic nipple drinking

Replacement sows are placed in confinement in groups of 10. Are necessary 2 drinkers per 10 sows. In total, 19 drinkers are needed for the 95 sows

b. Automatic hoppers

In the same way, since they are located in confinement, the density for the automatic hoppers is of 10 sows per hopper. Ten hoppers are needed for the 95 replacement sows.

Table 11

Infrastructure required for29 male and 95 replacement swine, based on the already mentioned study

Product	Quantity
Adult nipple drinker	48
Adult automatic hopper	10

Source: IPASA, 2016. Prepared by: Diego Vásquez.

2.2.1.1.3 Demand of products for piglets (295)

Piglets are raised in confinement of 20 pigs per group.

a. Automatic hoppers

For 295 piglets are necessary 15 automatic hoppers

Figure 11

Automatic feeding Hopper for piglets



Source: Eurogan, 2016

b. Plastic floor for piglets

According to the College of Agricultural Engineers of Pichincha, the density for the facilities of piglets is 0.40 m². That way, 20 piglets would occupy 8m². For 295 piglets **120** m² of plastic floor is required (CIAP, 2016).

Figure 12

Plastic floor for Piglets



Source: aacporcinos, 2016

c. Automatic nipple drinkers

The density of drinkers for piglets is 1 per 10 piglets. For 15 groups of 20 piglets, **30 nipple drinkers** are required.

Table 12

Infrastructure required for 295 piglets

Product	Quantity
Piglet automatic hopper	15
Piglet plastic floor	120m ²
Piglet nipple drinker	30

Source: IPASA, 2016. Prepared by: Diego Vásquez.

2.2.1.1.4 Demand of products for the stages of growth (970) and fattening (1,133)

The stages of growth and fattening have the same production system; then the two groups will be gathered. Total swine between growing and fattening is 2,103 swine.

a. Automatic hoppers

In these stages they are in confinement groups of 30 swine for each cell. To feed 1,133 swine **38 automatic hoppers** are is required.

b. Automatic nipple drinkers

The density of automatic drinkers in the stage of growth and fattening is 1 per 10 pigs. Then for 1,133 pigs we will need **114 drinkers.**

Table 13

Products required for the stages of growth and fattening (1,133 swine)

Product	Quantity
Automatic Hopper	38
Nipple drinker	114

Source: IPASA, 2016. Prepared by: Diego Vásquez.

Table 14

Demand of other equipment and accessories

Product	Quantity
Ultrasound	5
Insemination Catheter	400
Food mixer	10
Silos	3
Semen extraction stand	18

Source: IPASA, 2016. Prepared by: Diego Vásquez

2.2.1.1.5 Total demand of products for all stages of production

Table 15 summarizes all the needs analyzed above, in a consolidated manner.

Table 15

Total requirement for the technification of 28 farms with a population of 2,724 swine

STAGE	Description	Quantity
	Maternity plastic floor	303 m ²
	Gestation plastic floor	50.5 m ²
Gestation & maternity	Sow nipple drinker	202
202 Sows	Piglet nipple drinker	101
	Maternity food dispenser	101
	Gestation food dispenser	101
	Piglet feeder	101
	Piglet heater	101
29 Male swine	Fattening nipple drinker	48
95 Replacement sows	Automatic hopper	10
	Piglet automatic hopper	15
295 Piglets	Piglet plastic floor	120m ²
	Piglet nipple drinker	30
Growing and Fattening	Fattening automatic hopper	38
Swine 1 133	Fattening nipple drinker	114
	Ultrasound	5
Equipment for 33 farms	Insemination catheter	400
	Food Mixer	10
	Silos	3
	Semen extraction stand	18

Source: IPASA, 2016. Porcine Census, 2010. Prepared by: Diego Vásquez.

2.2.1.2 Product Portfolio and Sales Projection

For a correct management of the supply chain and to have an idea of the future sales in the coming years, it is necessary to make a projection. This helps us to coordinate times of imports and to have availability of products.

According to Enrique B. Franklin. The Supply Chain is: "The movement of the right goods in the right amount to the right place at the right time" (Franklin, 2004, p. 74).

The projection of the demand in the project horizon is based on 1.7% of the annual growth of the swine population in the Province of Azuay (Porcine Census 2010). In the same way, it has taken into account the years of guarantee and useful life of each Product based on each of its technical documents. There is also taken into account the misuse and lack of maintenance of the products, which makes the demand have a cycle of every 2 years, while in the intermediate periods, single sales grow in the proportion of market growth.

For example, in the case of Maternity Plastic Floor, in 2016 the demand was 303 m². In 2017 and 2018 the demand is only 6 m². This is due to the fact that it will cover the percentage of increase of the population, which is 1.7%, meaning 2 more sows per year. Taking into account that the useful life of the plastic floor is 3 years, for 2019 the demand will again be 303 m², plus 6 m² of population increase which is 1.7% per year. Depending on the type of product each one is different in terms of their demand and inventory rotation.

Although some products are not sold in large quantities in certain years, there are other products that equate sales so there is always a flow of sales.

Table 16 shows the sales projections for the next 10 years of the project.

Table 16

Product portfolio and sales projection (10 years)

STAGE	Portfolio of Products	UL years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	Maternity plastic floor	3	303 m²	6	6	309	12	12	315	18	18	321
	Gestation plastic floor	3	50.5m ²	1	1	51.5	2	2	52.5	3	3	53.5
Gestation and	Sow nipple drinker	1	202	206	210	214	218	222	226	230	234	238
Maternity	Piglet nipple drinker	1	101	103	105	107	109	111	103	115	117	119
202 Sows	Maternity food dispenser	2	101	2	103	4	105	6	107	8	109	10
	Gestation food dispenser	2	101	2	103	4	105	6	107	8	109	10
	Piglet feeder	2	101	2	103	4	105	6	107	8	109	10
	Piglet heater	3	101	2	2	103	4	4	105	6	6	107
29 Male swine	Fattening nipple drinker	1	48	49	50	51	52	53	54	55	56	57
95 Replacement sows	Automatic hopper for replacement sows	3	10	1	1	11	2	2	12	3	3	13
	Piglet automatic hopper	3	15	1	1	16	2	2	17	3	3	18
295 Piglets	Piglet plastic floor	3	120m²	2	2	122	4	4	124	6	6	126
	Piglet nipple drinker	1	30	31	32	33	34	35	36	37	38	39
Growing and Fattening	Fattening automatic hopper	3	38	1	1	39	2	2	40	3	3	41
1133 swine	Fattening nipple drinker	1	114	116	118	120	122	124	126	128	130	132

	Ultrasound	5	5	1	1	1	1	6	1	1	1	1
	Food Mixer	5	10	1	1	1	1	11	2	2	2	2
Equipment 28 farms	Silos 3000 kg	5	3		1		1	4		2		2
	Bore semen extraction stand	2	18	2	20	4	22	6	24	8	26	10
	House fan	2	25	1	26	2	26	3	27	4	28	5
	High pressure washing machine	3	10	2	2	12	4	4	14	6	6	16
	Insemination catheter	0	3,000	3,060	3,120	3,180	3,240	3,300	3,360	3,420	3,480	3,520
	Sorting panel	1	28	29	30	31	32	33	34	35	36	37
Accessories	Scales	2	50	2	52	4	54	6	56	8	58	10
28 farms	Stainless steel pig tooth cutter	1	50	52	54	56	58	60	62	64	66	68
	Swine stainless holder	2	50	52	54	56	58	60	62	64	66	68
	Metal ear tag pliers	2	50	52	54	56	58	60	62	64	66	68

Source: IPASA, 2016. Prepared by: Diego Vásquez

2.2.2 Price

For Laura Fisher and Jorge Espejo, authors of the book "Marketing," the price of a product is "only an offer to test the pulse of the market. If customers accept the offer, the price assigned is correct; if rejected, it must be changed rapidly. On the other hand, if products are sold at a low price there will not be any profit and, ultimately, the product will fail. But if the price is too high, sales will be difficult and also in this case the product and the company will fail" (p. 259).

The price can determine the positioning of a company with a thorough analysis of costs and profits; it could lower prices compared to the competition. The consumer generally associates price with quality and believes that the more expensive the product, the more quality it has. A price strategy to consider is the use of the digit 9, and the consumer tends to round these amount (Fisher, 2009).

In order to be able to compete in the swine products market, it will be necessary to take into account the current prices with which the competition is maintained and to make strategic sales decisions which will not affect the costs of both the product and operations. The next product prices are based on the information obtained from websites of some suppliers of swine equipment; estimated prices of people who sell these products and the Engormix webpage, which is a forum for information on swine production.

Table 17

Estimated p	orices of	swine	equipment	in the	Ecuad	orian	market
-------------	-----------	-------	-----------	--------	-------	-------	--------

Portfolio of Products	Market Price USD
Maternity plastic floor m ²	120.00
Gestation plastic floor m ²	110.00
Sow nipple drinker	5.00
Piglet nipple drinker	4.00
Maternity food dispenser	30.00
Gestation food dispenser	26.00
Piglet feeder	35.00
Piglet heater	90.00
Fattening nipple drinker	5.00
Automatic hopper for replacement sows	450.00
Piglet automatic hopper	400.00
Piglet plastic floor m ²	120.00
Piglet nipple drinker	4.00
Fattening automatic hopper	485.00
Fattening nipple drinker	5.00
Ultrasound	6,400.00
Food Mixer	4,300.00
Silos 3000 kg	4,550.00
Bore semen extraction stand	200.00
House fan	370.00
High pressure washing machine	620.00
Insemination catheter	2.00
Sorting panel	80.00
Scales	315.00
Stainless steel pig tooth cutter	20.00
Swine stainless holder	60.00
Metal ear tag pliers	20.00

Source: Engormix, 2016. Prepared by: Diego Vásquez.

2.2.3 Place

The term Place, of the marketing mix, refers to the place where the products are to be sold. The place or distribution is the selection of the strategic location where it will be marketed, and the way in which the products will be transferred or distributed (Fisher, 2009).

In order to select the strategic location of the swine company, the following important factors must be taken into account:

- The proximity of the market and customers.
- A convenient distance to the areas of influence
- Provision of services.

2.2.3.1 Strategic Location

The strategic location is very important as it is a factor that determines the positioning of the company. When a company is located in a high impact location, the products are visible and attract the consumer.

The swine equipment importing company will be located in the city of Cuenca, as it is the financial and commercial center of the Province of Azuay. The strategic location of the showroom will be in the sector of "La Feria Libre", due to the high traffic of vehicles and people considered as target market (65,000 vehicles a day) ("Diez mil carros entran cada año al parque automotor de Cuenca," 2015).

This sector is where highways that come from the province of Guayas and El Oro are connected. In this sector there are other companies similar to the importing company, as the case of AGROTA, where the importing company can obtain the benefit of the positioning of this company and take out sales quotas. A factor to take into account is also the accessibility to the company where a parking lot for customers will be necessary. This factor is important since the comfort of the client is crucial to visit the showroom. In the same way a storage warehouse will be necessary away from traffic because logistics will require the movement of containers and trucks.

2.2.3.2 Distribution of products

Figure 13

Distribution of products



Prepared by: Diego Vásquez

As shown in the Table, the distribution of the products will be of two forms:

- Company Farm: this distribution system will be necessary at the time of the technification of the farms, without the use of an intermediary due to the types of products which are bought by previous negotiation and in high amounts. In the same way a previous study of the farm and a pre-sale and after-sale advice service will be necessary.
- Company Agricultural Warehouses Farm: This distribution system will be necessary for the sale of products with high inventory rotation, such as accessories for insemination, feeders for piglets, nipple drinkers, etc.

2.2.3.2.1 Application of surveys to Agricultural Warehouses in the Province of Azuay

As indicated above, according to the cadaster 2012, in the Azuay Province there are 259 Agricultural warehouses, which are a good option for the distribution of high rotation products.

Table 18

Agricultural warehouses per canton in the Province of Azuay

Canton	Warehouses	%	Canton	Warehouses	%	Canton	Warehouses	%
Cuenca	157	60.6	Santa Isabel	12	4.6	Paute	19	7.3
Nabón	4	1.5	San Fernando	6	2.3	Gualaceo	18	6.9
Oña	4	1.5	Girón	7	2.7	Chordeleg	5	1.9
Ponce Enríquez	6	2.3	Sevilla de Oro	2	0.8	Sigsig	14	5.4
Pucara	3	1.2	Guachapala	2	0.8	TOTAL	259	100

Source: Cadaster of Agricultural Warehouses 2012. Prepared by: Diego Vásquez

For the surveys a field investigation was necessary and in the case of the distant cantons, the method of telephone surveys was necessary, since the cadaster register provided with information and telephone numbers of the warehouses.

The objective of the survey was to measure the trend of distribution of swine products by agricultural warehouses.

The methodology used for the selection of the sample to be surveyed, is by the sample size formula, which is as follows:

Figure 14

Sample size formula

$$n = \frac{N \times Z_a^2 \times p \times q}{d^2 \times (N-1) + Z_a^2 \times p \times q}$$



Where, N = population size Z = confidence level, P = probability of success, or expected proportion Q = probability of failure D = precision (maximum permissible error in terms of proportion).

Application of the formula in the project:

n =
$$\frac{259 \times 1.65^2 \times 0.5 \times 0.5}{5^2 \times (259-1) + 1.65^2 \times 0.5 \times 0.5} = 133$$

To obtain a result with 5% error, and 90% confidence, according to the calculations, of the sample size for the 259 agricultural warehouses, it is needed 133 surveys.

To obtain a better result it has been calculated that the 259 stores are 100%, of which the 133 stores are 51%. Surveys have been made to 51% of agricultural stores per canton, for example in Cuenca there are 157 stores, of which 51% will be surveyed, equivalent to 88 stores.

Table 19

Canton	Warehouses	Canton	Warehouses	Canton	Warehouses
Cuenca	80	Santa Isabel	8	Paute	11
Nabón	2	San Fernando	3	Gualaceo	9
Oña	2	Girón	3	Chordeleg	2
Ponce Enríquez	3	Sevilla de Oro	1	Sigsig	7
Pucara	1	Guachapala	1	TOTAL	133

Number of surveys applied by canton

Prepared by: Diego Vásquez

2.2.3.2.2 Survey results

A survey was carried out on 133 Agricultural Warehouses. Of the 100% of warehouses surveyed, 72% equivalent to 96 warehouses are interested in the distribution of swine products because they believe that the swine sector has developed correctly and that many people are applying artificial insemination and technology. The remaining 28% equivalent to 37 stores are not interested in the distribution of swine equipment, due to the location by canton of the warehouse since they are not areas of swine production or are small cantons and also due to the type of warehouse which sell only grain and veterinary drugs.

Table 20 shows the products in which the 96 agricultural stores are interested on distribution, with automatic drinkers being the most accepted, followed by insemination catheters and tweezers.

Table 20

Number of warehouses interested on the next products.

Insemination catheter	83	Metal ear tag pliers	67
Nipple drinkers	93	Swine stainless holder	35
Pig tooth cutter	71	Piglet feeder	47

Source: Warehouse Survey, 2016. Prepared by: Diego Vásquez.

The following Table shows the payment methods of the 96 agricultural warehouses, being there more convenient for the distributors to make the payments within 1 month term (52 warehouses), followed by those who prefer to make payments within 2 months (18 warehouses) And then the warehouses with payments at the moment (17 warehouses).

Table 21

Number of warehouses paying to suppliers in the next period

At the moment17Future payment	1 month	52	2 month	18	3 month	9
-------------------------------------	------------	----	---------	----	------------	---

Source: Warehouses survey, 2016. Prepared by: Diego Vásquez.

As seen in the results of the survey, 72% (96 stores) of the stores are interested in distributing swine products this means that there is a strength for the importing company because there is an interested public as a channel of distribution. With this channel of distribution what is achieved is to reach difficult potential customers and low operating costs.

2.2.4 Concept of Promotion

According to Rafael Muñez, the promotion is a series of techniques integrated in the marketing plan, whose purpose is to achieve a series of specific objectives through different stimuli and actions limited in time and directed to a specific target (Muñez, 2013, p. 98).

The objective of an offer is to give the consumer an incentive to purchase a product or a service in a short term, which translates into an increase in sales.

The stage of promotion of products, should be of relevant consideration in the market strategy. This allows the company to know their products through advertising and positioning. The goal of product promotion is to obtain greater sales, attract new customers, and gain recognition of products and brand positioning (Muñez, 2013).

2.2.4.1 Promotional Strategies

The company will have a showroom located in the sector of "La feria Libre," where the internal design of the premises will be taken into consideration. The showroom will be equipped with all the products available in store. Screens will be used where videos of existing systems of swine production and products will be shown, that way the customers will be encouraged to purchase.

It is important to hold an open house event where people interested in the industry will be invited and the company will show the different products and services that they provide.

It will also be necessary to implement a discount for a different product each month, so that in the case of products with low inventory rotation, sales can be increased.

In the same way, it will be necessary to have tents for the exhibition of the products in agricultural fairs in such a way that new developments in swine production are spreaded and promoted. These fairs are an advantage as there is a public that is really interested in livestock products, being a good way for promotion and sale.

There will also be magazines and fliers describing each of the products with their characteristics and technical data, so that the customer can analyze each of the products and buy them according to their needs.

The importing company will also have a web page describing each of the products. The products will be accompanied by videos and technical characteristics. The page will have options for quotation of the products in such a way that there is an integration between companies, diversify the products and sell them to the whole country.

In the same way, the products will be promoted through social networks, being an economic method and with high impact. Social networks have options for targeting potential customers, to reach only people interested in the industry.

The company will have a sales agent specialized in the subject that offers advice on farms, having pre-sale and after-sale services.

To ensure customer loyalty, technical visits will be made to check that the products are in good conditions and socialize the uses of the products with the farm workers.

Talks on product innovations in the swine industry will be given, with key people from associations of producers and people interested in the sector. For this it will be necessary to contact the MAGAP and the cantonal and provincial Decentralized Autonomous Government (DAG), so that the socialization programs and the talks are official set. These types of events are a very important tool since it obtains a high impact and at low costs, benefiting the budget destined to the publicity of the company.

2.2.5 Main Competitors

The main competitors of the importer of swine equipment are the industrial workshops that build substitute metallic products but in an empirical way. Some producers, reduce costs, implement products made in a traditional way, which have no guarantee of functionality and don't meet the needs of the animal. These products have not been tested for functionality or quality, but are built based on fotographies and catalogs. The products that are most built in the workshops are food mixers and metal cages, these have no guarantee and just shortly rust and break, and can hurt the animal.

On the other hand, in Ecuador there are companies that sell agricultural equipment such as Agrosad, Henaselec and Agrota. These companies sell veterinary products but do not focus just in swine production.

Agrosad specializes in the sale of agricultural products such as seeds and fertilizers, veterinary products and surgical equipment such as syringes, probes and needles.

The Agrota Company specializes in the import and commercialization of solutions for the productive chain of the Ecuadorian agricultural industry. Unlike Agrosad, this company does import machinery for the production of animal feedings such as mixers and choppers. This company could represent a threat of competitiveness for the company The main competitor of the swine equipment importer company is Henaselec S.A. This company specializes in electrical-mechanical systems in agroindustrial projects both Swine and poultry. They have extensive knowledge of the sector and alliances with international suppliers.

Below is a table of the estimated prices of swine equipment in the Ecuadorian market. The prices are based on information obtained from websites of some suppliers of swine equipment, quotations of people selling these products and the Engormix webpage, which is a forum for information on swine production.

Table 22

	Estimated	prices	of	swine	equ	ipment	in	the	Ecuad	lorian	market
--	-----------	--------	----	-------	-----	--------	----	-----	-------	--------	--------

Portfolio of products	Price in the market USD
Maternity plastic floor m ²	120.00
Gestation plastic floor m ²	110.00
Sow nipple drinker	5.00
Piglet nipple drinker	4.00
Maternity food dispenser	30.00
Gestation food dispenser	26.00
Piglet feeder	35.00
Piglet heater	90.00
Fattening nipple drinker	5.00
Automatic hopper for replacement sows	450.00
Piglet automatic hopper	400.00
Piglet plastic floor m ²	120.00
Piglet nipple drinker	4.00
Fattening automatic hopper	485.00
Fattening nipple drinker	5.00
Ultrasound	6,400.00
Food Mixer	4,300.00
Silos 3000 kg	4,550.00
Bore semen extraction stand	200.00
House fan	370.00
High pressure washing machine	620.00
Insemination catheter	2.00
Sorting panel	80.00
Scales	315.00
Stainless steel pig tooth cutter	20.00
Swine stainless holder	60.00
Metal ear tag pliers	20.00

Source: Engormix, 2016. Prepared by: Diego Vásquez.

2.3 Conclusion of Chapter 2

For a business to be profitable, the first step to follow is a Market Research. This brings many benefits such as learning the unmet needs of a common sector and therefore to establishes the marketing strategies of a product or service.

With the Market Research the viability of a business project can be learned, since the field studies are based on the different opinions of people who are knowledgeable about an industry. With the Market Research can also be learned the needs and requirements of the products, the buying trends and the products and services already existing in the market.

The Market Research was very necessary for the importer of swine equipment since, through this, it is now known how dissatisfied swine producers are in matters of technification of their farms.

Based on this study, a business model of swine equipment has been created, having as its main market 28 swine farms different organizations of swine producers and sausageproducing small companies.

In the same way, the market research showed information about the tendency for the distribution of products with high inventory rotation, by the agricultural warehouses in the Province of Azuay, where 72% of these (96 stores) were interested in the Distribution of products. The market study establishes the strategies for the Market Mix.

CHAPTER 3 SELECTION OF SUPPLIERS

Introduction

A supplier can be a person or a company that supplies other companies in stock (items), which will be transformed to be sold later or directly after the negotiation. The products acquired through the suppliers are directed towards the economic activity of the company. As an example if a paint company needs to import the pigments from abroad, this because it is not produced in the domestic market the supplier is the one that supplies raw material to be able to dynamize the business (Machado, 2001).

The selection of suppliers is based on the principle of quality; this would positively impact the competitiveness of the business.

The first step in the selection of suppliers is to establish a list of possible options and consider qualities, prices, and negotiation characteristics that each supplier provides. It is very important to have many suppliers of the same products this is due to indirect conditions that could affect the company such as shortages, delivery times or operations difficulties (Machado, 2001).

In order to select possible providers, there should be an investigation of the supplier company. There may be used the company website, catalogs, international fairs, recommendations of other related companies, among others.

In negotiation management and purchases from international suppliers, important factors such as product quality, security, trust, financing, financial situation, incoterms, guarantee, payment methods, distance, etc. should be analyzed.

In the same way, it is important to select suppliers located in member countries of bilateral trade organizations, to benefit from the tax exemption to foreign trade.

3.1 Factors to consider at the time of the negotiation process

3.1.1 Factors related to quality

The elements related to the quality of the product are detailed below.

- Quality of the product: it is a factor of great relevance since it determines the expectations of the customer. To know the quality of the product, an analysis of the technical characteristics, tests, etc. is carried out. In case all products are of a good quality, it would be best to choose the lowest value product. Not only the price of the product determines a good purchase, but also quality factors such as after-sales service, warranty period, figure that the product and supplier have in the market, existence of customer service, prestige, location, facilities, technical strength, financial capacity and organizational and administrative level (Machado, 2001).
- Another factor of quality is that the product or company has recognized international certifications, for example, a product that has ISO certification is better because they have more extensive guarantees that are certified by documents that guarantee the quality in the products and manufacturing processes.
- Technical characteristics: with the technical characteristics of the product, the final consumer will have the option to buy a product that fits their needs without having to spend on unnecessary purchases. Many companies offer products with different types of quality, for example, there are premium quality products, medium, or some other lower level of quality, but still the same product
- Warranty: Ensure that the product warranty is as extensive as possible. Depending on the type of product the guarantees range from 1 year, up to 5 years.
- Within the guarantees, the costs of reverse logistics must be analyzed since if it is necessary to return them, this will require costs which must be within budgets.
- Inventory management: It is necessary that the supplier have high inventories that way they are able to handle the orders of a certain company. There must be immediate availability.
- After-sales service and technical assistance: This service is important as it depends on the warranty, and maintenance or repair of the products. Training should be considered to exist for the use and repair of products. Even companies that provide products with technical manuals for the repair should be taken into account (Machado, 2001).

3.1.2 Economic Conditions

The economic elements related to the negotiation of the product between the distributor and the supplier are detailed below:

- Price per unit: price should be considered to give competitiveness to the importing company, considering that it is fair according to the quality of the product. In the negotiation there can be discount requests depending on the amount and value of the purchase. The best provider will be selected taking care that they provide discounts, and occasional payments.
- Payment form: It can be with credit or transfer, according to the company's payment policy. Payments are made by bank transfer whose operation has a lower cost, or by letter of credit, which is safer but is a more expensive operation. In the same way, payments can be in advance or at the time of delivery.

• Currency type: The currency type can have positive and negative effects since it can lead to an appreciation or depreciation of the price that is being negotiated against the dollar. As a result, short-term changes in product prices can be made.

3.1.3 Logistical Conditions

the following are the logistic elements that must be taken into account at the time of the negotiation of the product.

- Incoterms: they are international rules for the interpretation of trade terms established by the International Chamber of Commerce (ICC). They facilitate the process of global negotiations, define obligations and rights of the buyer and seller, and describe the tasks, costs and risks involved in the delivery of merchandise from the selling company to the buyer, established in the contract of sale provided by Incoterm 2010 (Proecuador, 2016). The most used Incoterms are: EXW, FOB, CFR, CIF, they will be further explained in Chapter 4.
- Country of origin: this factor is important since some countries are part of economic blocs that can release tariffs depending on the country of origin of the product and the existence of free trade agreements.
- Distance from the country where the supplier company is located: this factor is crucial since it sometimes has an influence on the transport operating costs. Long distance does not always mean a higher cost of transportation.
- Delivery times: according to the manufacturing times of the product, punctuality with the agreed time, which is adapted to the requirements of the company.
- Insurance contracting: The purpose of the insurance is to protect the transported goods against the risks that may affect them during the travel from one place to another and during periods in which the goods must remain at rest due to the circumstances of the trip / Download, stays, etc.

3.1.4 Other conditions

- Import documents: In the case of the need for documents such as the Ecuadorian Standardization Service (INEN) certification, the supplier must be willing to collaborate with the importing company.
- Period of validity of the offer and promotions.
- Terms of termination of the contract.
- Circumstances that may make a revision in prices.
- Cost of return of the merchandise.
- Time of the company in the industry: Proven experience of having worked with similar companies.
- Recommendations from other companies.
- Infrastructure of the company (plant): which has sufficient capacity to produce large quantities of good quality products and at a prudent time.
- Legally established: that meets country requirements.
- Time in advance for the production of the goods (Machado, 2001).

The following figure describes the process for the selection of suppliers, where according to some parameters and conditions, they are selected from a large market of suppliers. After the first orders, they are monitored and in the case of improvements or changes, the necessary report is sent to them, so that they can be corrected. Orders will be evaluated continuously, and if the supplier complies with the negotiated, they will be within the supplier's panel.

Figure 15

Supplier Management System



Source: Portal Quality, 2016

3.2 Analysis of Potential Suppliers

Information was searched on the Web about potential providers of swine equipment. For this purpose, communication via email with the companies was needed. Valuable information was obtained about the supplier business profiles, product, prices, and negotiation methods.

For the selection of potential suppliers, the quali-quantitative method will be used, where numerical values will be given to the most important factors of negotiation. Depending on the supplier companies these will add points in their favor, if they meet the following conditions:

Table 23

Factors to be taken into consideration at the time of the importation

	FACTOR
Product	Price
	Certifications
	Quality
	Guarantees
Supplier	Disponibility
	Pre y Post- sales services
Negotiation	Payment form
	Currency
	Delivery time
	Discounts
	Insurance
	Incoterms
Geographic Location	Country of Origen
	Distance

Source: Ballou, 2004. Prepared by: Diego Vásquez.

3.2.1 Description of Suppliers

Table 24 describes each of the five swine equipment suppliers and their country of origin.

Table 24

Swine equipment product Suppliers

Suppliers	Country of Origen
Deba brother Machinery Co., LTd	China
Eurogan	Spain
Agricultural Porcine Implements (IPASA), S.A.	México
Termoplast	Argentina
Big Dutchman	USA

Source: Supplier's webpages, 2016. Prepared by: Diego Vásquez.

3.2.1.1 Deba Brother Machinery Co., LTd

Figure 16

Deba Brother Logo



Source: Deba brother.com

DB Brother is a Chinese company specialized in the production and international trade of swine equipment. They have extensive knowledge and experience of the industry, since they have been in the market for more than 10 years. The company is strategically located in the coastal province of Shandong, having logistic advantages for trade as it is close to the ports of Brusbane, Bailianjing, and Piraeus (Deba brother Machinery Co., LTd, 2016).

The most important markets that DB brother covers are Eastern Europe 32%, South America 20% East Asia 15%. Currently the company has about 50 employees. The productive capacity of the company is 200 Ton / month. Of the total production, 92% is exported. The company has its own exporter license (3752961450). Employees handle negotiation correctly in 3 languages: English, Russian, and Spanish.

The negotiation of the products is handled under the terms FOB and CFR, and payments are made in USD. The company handles direct transfers and letters of credit. The payment method is: Payment <= USD 1,000.00, 100% in advance; Payment> = USD 1,000.00, 30% T / T in advance, and the rest before shipment (Deba brother Machinery Co., LTd, 2016).

Figure 17

Sale transactions made by DB Brother in 2015



Source: Deba brother, 2016

3.2.1.2 Eurogan

Figure 18.

Eurogan logo



Source: Eurogan.com

Eurogan is a Spanish company founded in 1964. It is strategically located in Zaragoza and specializes in the production and trade of livestock facilities in more than 30 countries. Their experience of more than 50 years in the market makes Eurogan an excellent international supplier. Constant research, development and innovation has allowed Eurogan to obtain prestigious export awards. Currently, 70% of sales are exported abroad. The company has 20 workers and invoices 3.14 million euros (Eurogan, 2016).

The company has a very rigorous system of quality management, with certifications of quality CERT ISO 9001 (ID 105041974). Its main mission is to reach the maximum efficiency, reaching the leadership in design and development of livestock materials. The success of Eurogan is based on the principles of continuous improvement, and customer service management.

The policy of the company is based on an integration between suppliers and customers to offer benefits and guarantees. The excellent management of the company has allowed Eurogan to win prestigious awards such as the "Export Award", delivered by the Chamber of Commerce and Industry of Zaragoza.

Figure 19

Cert 9001, Eurogan Certificate



Source: Eurogan.com

The products that Eurogan offers are Farm accessories including feeders, hoppers, drinkers, high pressure nebulizers, food dispensers, automatic feeding distributors, spiral or chain feeding systems, electronic equipment for opening and closing windows, automatic management and control systems for the environmental regulation of the installations, low flow fans, heating equipment, galvanized bins, etc.

As for the trading conditions of the company, they use the condition EXWORKS or EX FABRICA (EXW) Alfajarín-Zaragoza (Spain) according to the condition of Incoterms 2010, excluding VAT as well as any other tax or application fee. Payments are made through direct transaction or letter of Credit. The currency used for transactions is the EURO.

The payment term of the goods is in advance, with the possibility to negotiate if the customer requires it. In the case of delays in payments, the company charges 8.25% interest and other financial or collection expenses generated.

The deliveries of the goods will be under the condition EXW- ExWorks Alfajarín, Zaragoza – Spain - (Incoterms® 2010), existing options of negotiation with the client. The delivery time is counted from the moment of the SWIFT or from the opening of the Letter of Credit. Transport is also given under the EXW Ex-Works modality (Incoterms © 2010), being able to agree another type of incoterm.

The guarantee of the products is given according to their type and returns are accepted under the rules of guarantee. The products do not have transport insurance, so the contracting of an insurance company is necessary (Eurogan, 2016).

3.2.1.3 Swine Agricultural Implements S.A (IPASA),

Figure 20

Ipasa logo



Source: Ipasa.com

IPASA is a Mexican company located in Michoacán and is a producer and trader of agricultural implements for different species. Its products are made of the highest quality materials. The company manufactures animal feeding plants, and a wide variety of products. IPASA has highly qualified employees in the planning, design and development of swine farm projects, as well as employees with great experience in the sales area (IPASA, 2016).

The company has been in the market for more than 15 years and has contributed to large projects of swine farms in Mexico; therefore is a pioneer in technology and swine production in Latin America. Forty percent of the company's production is sold by countries in South America.

Managing the quality of their products, has made it possible for the company to be awarded international quality certifications and innovation awards.

The negotiation terms that the company handles are EXW and FOB, using the Mexican Peso for transactions and offering payment options of 50% at the time of the negotiation and the total upon arrival at the port of shipment.

3.2.1.4 Termoplast

Figure 21

Termoplast logo



Source: Termoplast.com

Termoplast is an Argentine company founded in 1997. It provides advice, products and installation services to optimize the intensive breeding of swine. The company is located

in Santa Fe, Argentina, where there are benefits in times of transport and logistics to Ecuador (Termoplast, 2016).

The company's mission is to support different farm needs, offering the support, strength and experience that characterize them. The company offers the most convenient alternatives to improve profitability, to facilitate the work of the operator and reduce the breeding time of the animal.

Termoplast offers a wide range of products with all the spare parts and they also have a qualified team to carry out the installation and the assembly of the products in the farms. The company is constantly searching for new technologies to offer the best solutions and benefits to its customers.

The main market of Termoplast is Latin America. 60% of the products is destined to the Argentine market. The company has ISO 9000 certifications which ensures the quality of its products.

At the time of the negotiation the company handles with EXW terms, also offering advice in logistics and transport, the currency used for transactions is the Argentine Peso, being necessary advance payments through transaction or Letter of Credit.

3.2.1.5 Big Dutchman

Figure 22

Big Dutchman logo



Source: Big Dutchman.com

Big Dutchman offers a complete line of products for the poultry and swine industry. With offices in the United States, Germany and Brazil, Big Dutchman is one of the leading companies in the design and production of products oriented to current and future needs (Big Dutchman, 2016).

The company offers infrastructures and feeding systems for swine, as well as waste management systems, bulk feeding management, environmental control equipment and control management. The company's products meet ISO 9000 international quality standards.

Big Dutchman is the world's largest supplier of modern swine production equipment. Founded in Holland, Michigan in 1938, Big Dutchman has developed automated systems for swine and poultry for over 75 years. Today, the great team of engineers of Big Dutchman in Germany and the USA provide a wide range of products for feeding, housing, ventilation and control.

Like other companies, Big Dutchman offers some advantages when negotiating the goods. Payments are made with transactions or letters of credit. The company does not require advance payments of the total merchandise, but 50% in the negotiation and the rest, thirty days after the products have been shipped. In the case of late payments, the company charges an interest of 2% per month. Payments are made in USD currency. The company handles the EXW and FOB terms. A positive advantage is the location of the company, since the distance between the US and Ecuador is short compared to China and Europe.

Table 25 lists FOB prices for each of the products that suppliers offer. The table is based on real quotations from the companies which were requested in their web pages by mail. The prices are quoted in the local currency of the supplier country, dated 9/29/2016, and converted to the USD currency. Blanks are products that companies do not have.

Table 25

Product Portfolio	DEBA BROTHER	EUROGAN		IPASA		TERMOPLAST		BIG DUTCH MAN
Currency	USD	€	USD	MXN\$	USD	\$a	USD	USD
Maternity plastic floor m ²	25.00	51.90	58.20	895.30	45.80	720.30	47.30	66.10
Gestation plastic floor m ²	21.00	51.90	58.20	895.30	45.80	720.30	47.30	66.10
Sow nipple drinker	1.00	1.90	2.10	26.80	1.40	23.20	1.50	2.40
Piglet nipple drinker	0.80	1.80	2.00	26.80	1.40	21.00	1.40	2.20
Maternity food dispenser	8.00	16.20	18.20	313.10	16.00	262.20	17.20	19.10
Gestation food dispenser	6.00	15.34	17.20	274.00	14.00	247.30	16.20	18.20
Piglet feeder	5.00	13.40	15.00	262.20	13.40	182.90	12.00	16.00
Piglet heater	28.00	28.50	32.00	445.70	22.50	307.00	20.10	33.30
Fattening nipple drinker	1.00	1.90	2.10	26.80	1.40	23.20	1.50	2.40
Automatic hopper for replacement sows	160.00	334.50	375.00	6,373.46	325.70	4,762.00	312.40	379.20
Piglet automatic hopper	150.00	287.40	322.30	5,720.40	292.30	4,205.80	275.90	329.20
Piglet plastic floor m ²	28.00	51.90	58.20	895.30	45.80	720.30	47.30	66.10
Piglet nipple drinker	0.80	1.78	2.00	26.80	1.40	21.00	1.40	2.20
Fattening automatic hopper	160.00	343.40	385.00	6,373.46	325.70	4,762.00	312.40	379.20
Fattering nipple drinker	1.00	1.90	2.10	26.80	1.40	23.20	1.50	2.40
Ultrasound	2,100.00	3,354.3	3,760.5					3,850.90
Food Mixer	1,200.00	2,703.2	3,030.5	36,989.20	1,890.15	32,320.9	2,120.3	3,130.90
Silos 3000 kg	1,320.00	2,925.8	3,280.0	39,632.10	2,025.20	34,832.3	2,285.0	3,322.50
Bore semen extraction stand	69.00	75.80	85.00	1,438.40	73.50	1,192.60	78.50	92.50
House fan	75.00	100.20	112.30	1,859.10	95.00	1,554.90	102.00	116.20
High pressure washing machine	210.00	278.43	312.20					322.10
Insemination catheter	0.20	0.20	0.30	4.90	0.30	3.40	0.20	0.30
Sorting panel	12.00	34.80	39.00	706.80	36.10	396.30	26.00	40.20
Scales	110.00	117.70	132.00	2,379.60	121.60	1,679.10	110.20	139.20
Stainless steel pig tooth cutter	1.50	10.90	12.20	400.60	10.50	114.80	9.50	11.30
Stainless holder	12.00	24.10	27.00	458.30	23.40	337.70	22.20	28.30
Metal ear tag pliers	1.80	11.80	13.30	228.00	11.70	122.00	8.00	14.36

Product Portfolio Quotation by Supplier (FOB)

Source: Suppliers webpages, www.farmerboyag.com 2016. Prepared by: Diego Vásquez

Table 26

Factors and Characteristics of Suppliers Negotiation

	FACTOR	Deba BROTHER	EUROGAN	IPASA	TERMOPLAST	BIG DUTCHMAN
Product	Certifications	Mandatory China Certification (CCC)	CERT ISO 9001	ISO 9001	ISO 9000	ISO 9000
	Quality	Good	Excellent	Good	Good	Excellent
	Guarantee	2 years	3 years	2 years	2 years	3 years
Supplier	Disponibility	Excellent	Excellent	Excellent	Excellent	Excellent
	Pre & Post-sales- service	Yes, even model products	Yes, advice	Yes, advice	Yes, advice	Yes, advice
	Payment form	Letter of credit, TT, in advance	Letter of credit, TT, in advance	CC, TT, 50 % in advance	CC, TT, 50 % in advance	CC, TT, 50 % in advance
	Currency	USD	Euro	Mexican Peso	Argentine Peso	USD
Negotiation	Delivery time	30 days	30 days	30 days	30 days	30 days
	Discounts	If applicable, up to 10%	No	Yes, only if it applies	No	No
	Insurance	Independent	Independent	Independent	Independent	Independent
	Incoterms	FOB y CFR	EXW, FOB	EXW, FOB	EXW, FOB	EXW y FOB
Geofigureic	Country of origin	China	Spain	México	Argentina	USA
Location	Logistic time	30 days, by sea	22 days, by sea	15 days, by sea	15 days, by sea	15 days, by sea
	Distance	16,222.36 km aprox.	10,400 km aprox.	5,120 km aprox.	1,120 km aprox.	5,530 km aprox

Source: Supplier webpages, Quotation 2016. Prepared by: Diego Vásquez

Table 26 shows the most important factors to be taken into consideration for the importation of swine equipment. Each factor is clearly detailed and it is necessary to analyze the description of each company, as explained above.

3.3 Results of the Analysis of Suppliers

After selecting the possible suppliers, the next step is to choose the suppliers by applying a certain method. The method to be used must be based on criteria that the company has selected as important for its suppliers. According to De Boer Weger and Telgen, two types of factors are taken into account: the data factor of the company and the qualities of the company. For the selection of a supplier, there is to be choose between: Categorical Methods, Diffuse Methods and Data Involving Analysis (Weger, 2014).

For the case of the swine products importing company, the method of analysis will be the quali-quantitative method where numerical values will be given to each factor of the supplier, depending on the level of relevance.

At the end of the analysis, the company that obtains more points will be most suitable to be a supplier, while the other suppliers will be deemed option. See Table 27.

Table 27

Quali – quantitative analysis of the suppliers.

	FACTOR	Relevance /10		Supplier								
			DF Brot	} her	Euro	gan	IPAS	A	Termop	last	Duc	Big chman
Product	Price	10	10	100	7	70	9	90	8	80	5	50
	Quality	8	5	40	8	64	6	48	6	48	8	64
	Guarantee	5	4	20	5	25	3	15	4	20	5	25
Supplier	Disponibility	8	8	64	7	56	5	40	7	56	8	64
	Pre & Pos service	6	4	24	5	30	4	24	4	24	5	30
	Payment form	7	7	49	5	35	5	35	5	35	6	42
	Currency	8	7	56	7	56	3	24	4	32	8	64
Negotiation	Delivery time	8	6	48	7	56	6	48	6	48	7	56
	Discounts	5	4	20	2	10	4	20	4	20	2	10
	Incoterms	8	8	64	7	56	7	56	7	56	8	64
Geofigureic location	Country of origin	9	7	63	6	54	8	72	8	72	9	81
	Distance	6	4	24	5	30	6	36	6	36	5	30
	Score			572		542		508		527		580

Source: Supplier webpages, 2016. Prepared by: Diego Vásquez

The company that scored the most in the quali-quantitative analysis is Big Duchman because of the fine quality of its products, and the country of origin where it is located. In second place is the Chinese company DB Brother, which is distinguished from the others by the low prices of the products. In third place is Eurogan, which has products of high quality but the times in logistics are high. Termoplast and IPASA have products of a fairly acceptable quality and the benefit is the distance to trade since they are located in Latin America.

3.4 Conclusion of Chapter 3

For a correct selection of suppliers, it is necessary to analyze in detail each of the factors that implies the import of a product. This enables decision-making in an efficient way, thus optimizing logistics, negotiation, prices and quality.

When analyzing the suppliers, this is based on the needs of the final customers and the importing company, since depending on the budget of the market in which the products are to be sold, the products, prices and their quality are analyzed.

In the case of the swine equipment importer company, it has five important companies within its Panel of Suppliers. This is due to the market, where there are people who prefer products of excellent quality, but that have high prices and on the other hand there are people who prefer products of a good quality, but with lower prices. In the same way, there are two suppliers located in Latin America, that offer benefits benefiting, in case of there is the need of products at the last minute. The two companies that were selected as best suppliers, due to their different characteristics of prices, quality and negotiation, were the American Big Dutchman and the Chinese Deba Brother. In spite of this, it is concluded that the importation of the products of the supplier Big Dutchman is not feasible for the sale in Ecuador. This is because the final cost of products exceeds the prices of similar products sold in Ecuador by almost 200%, making customers not interested in buying for its high prices, despite excellent quality. Finally the company chosen as supplier for the managing of the total import of the goods was the Chinese Deba Brother, this due to the low prices of the products and to a quite acceptable quality and acceptation by the public. The next chapter will describe the total import of the products from China and provided by Deba Brother.

CHAPTER 4 THE IMPORTATION

Introduction

International trade activities have developed since the Middle Ages, beginning with the trade of surpluses of agriculture production, where people specialized in the production of various goods such as: cereals, dyes, silk, etc (EL Mundo, 2015).

International trade allows countries to specialize in what they are best producers and get benefited from products and services that other countries produce. Adam Smith about the Absolute Advantage, "When a foreign country can offer us a commodity, cheaper than it costs to us, it will be better to buy it, than produce it, giving it part of the product of our own economic activity accomplished in these sectors where we take advantage abroad" (Smith, 1776, p. 354).

Importing, is the entry of foreign goods into Ecuador that comply with the appropriate customs formalities and obligations, depending on the Import Regime to which it has been declared (SENAE, 2016).

Ecuador's foreign trade is based on the export of commodities such as oil, bananas and cacao, which is why it has maintained a negative trade balance (US \$ 287 million in 2015), Ecuador imports more finished products with added value, than those that are exported. In recent years, there have been a reduction in imports due to government protection policies, such as safeguards and various import documents (INEN, MIPRO), etc. this has allowed some sectors to develop, based on the change of the productive matrix policy (Central Bank of Ecuador, 2015).

In Ecuador, anyone can import, as a private entity or company, they can be Ecuadorians or foreigners who reside in the country. In order to do so they have to be registered as importers in the ECUAPASS system and approved by the National Secretariat of Customs of Ecuador (SENAE, 2016).

4.1. Terms used in the import process

The terms for the importation of goods have been obtain from the National Customs Service of Ecuador (SENAE) website.

- 4.1.1. Importer Registration. To register as an importer they will need to follow some steps:
 Obtain the Unique Taxpayer Registration Number (RUC) from the Internal Revenue Service (SRI).
 - Acquire the Digital Certificate for the electronic signature, issued by the Central Bank of Ecuador or on the Security Data page.
 - Register to the ECUAPASS system.

4.1.2. ECUAPASS: is the customs system, which allows all Foreign Trade Operators (OCE's), to carry out customs procedures for import and export.

4.1.3. Restrictions and Prohibitions: Before importing, restrictions and prohibitions on imports of certain products must be considered, for which it is necessary to review the website of the Foreign Trade Ministry of Ecuador. With the tariff subheading of the product, in the ECUAPASS system and in the Organic Code for Production, Trade and Investment (COPCI).

4.1.4. Import Licenses or Technique Barriers: These are physical or electronic requirements that the products must meet for their subsequent entry into Ecuadorian territory. The license of the import is a resolution of the customs tax administration (COMEX), through which the certificate allows the importation of the merchandise, which can be through the allocation of quotas, validities or other criteria.

Depending on the nature of the product, import licenses must be managed at the following institutions:

- The National Agency of Regulation, Control and Sanitary Surveillance ARCSA
- Ministry of Agriculture Livestock and Fisheries MAGAP
- Ecuadorian Agency for Quality Assurance AGROCALIDAD
- Undersecretary of Fisheries
- National Fisheries Institute
- Undersecretary of Aquaculture
- Ministry of Industry and Productivity MIPRO
- Ministry of Electricity and Renewable Energy
- Undersecretary of investigation and Nuclear Research SCIAN
- Ministry of Foreign Affairs
- Ministry of the Interior
- National Anti-narcotics Directorate
- General Directorate of Civil Aviation
- Ministry of Defense
- Ecuadorian Institute of Normalization INEN
- Ecuadorian Accreditation Agency- OAE
- National Council on Narcotic Drugs CONSEP
- Ministry of the Environment
- Ministry of Tourism
- National Institute of Cultural Heritage.

4.1.5. Nationalization of goods: is the introduction of good of foreign origin into the national customs territory in order to remain in it indefinitely or temporary. For this process, the advice of a Customs Broker is necessary, who will take care of the procedures, and relevant documentation. In the page of the SENAE there is the registry of authorized Custom Brokers, from which the importer will assign its advice.

4.1.6. The Customs Declaration (DAI): is a form that records general information relating to the merchandise being imported. This must be declared within a period of no more than fifteen calendar days prior to the arrival of the transport, and up to thirty calendar days after the date of its arrival. If not fulfilled within that period, the goods will be immersed in one of the causes of tacit abandonment, as stipulated in Article 142 (a) of the Organic Code of Production, Trade and Investment (COPCI).

According to the type of merchandise to be imported, the following documents must be attached to the DAI:

4.1.7. Accompanying documents

The accompanying documents are also called prior control documents and must be processed and approved before the shipment of the importation (Article 72 of the Regulations to Book V of COPCI). Some accompanying documents are the following: certificates of origin, INEN certificates, MIPRO, sanitary documents, among others.

4.1.8. Support documents

They constitute the basis of the information of the DAI to any regime. These original documents, either physical or electronic, shall remain in the file of the declarant or its Customs Broker at the time of the presentation or transmission of the Customs Declaration, and shall be under its responsibility as determined in the Law (Article 73 of the Regulation to Book V of the COPCI).

- Transport Document.
- Commercial invoice or document proving the commercial transaction.
- Certificate of Origin (when applicable).
- Documents deemed necessary by SENAE or the Foreign Trade Regulatory Ministry.

4.1.8. Custom Appraisal

It is the act of tax determination by the Customs Administration and is carried out by electronic, physical or documentary verification of the origin, nature, quantity, value, weight, measurement and tariff subheading of the merchandise (Article 140 of Book V of the COPCI).

The activity is to recognize the merchandise, verify its nature and value, establish its weight, account or measure, classify in the tariff nomenclature and determine the applicable assessments.

Once the DAI is transmitted, the computer system of the National Customs Service of Ecuador will grant a validation number (Refrendo) and the corresponding type of custom appraisal.

After the payment of the taxes to foreign trade, the computer system Ecuapass assigns to the DAI the corresponding custom appraisal.

The custom appraisal can be:

- Automatic: through the validation and electronic analysis of the customs declaration.
- No Intrusive.
- Documentary: through the verification of the customs declaration and the accompanying and supporting documents.
- Intrusive Physical appraisal: is the physical verification of quantities of merchandise, It will be made in a public act, on the date fixed and in the presence of the declarant and the customs broker or customs auxiliary (Art. 80 - 83 of the Regulation to Book V of the COPCI).
- Non-intrusive physical appraisal: Through gamma ray portals.

Once the assigned custom appraisal has been done and there are no issues in the revision, the National Customs Service of Ecuador will arrange the customs clearance of the goods.

4.1.2. Payment of Taxes: In order to determine the value to be paid of taxes on foreign trade, it is necessary to know the tariff subheading classification of the imported product.

The taxes on foreign trade are as follows:

AD-VALOREM (Tariff Charged to Merchandise) these are those established by the competent authority, they are percentages according to the type of the merchandise and are applied on the sum of FOB, Insurance and Freight (taxable base of the importation, or the Incoterm CIF) (Article 110 of Book V of the COPCI).

FODINFA (Child Development Fund) 0.5% on the taxable amount of the import, incoterm CIF).

ICE (Tax on Special Consumption). ICE is a tax that applies to goods and services in order to restrict the consumption of goods with high social costs and to tax consumption and luxury goods. It is a variable percentage according to the goods and services that are imported (Art.82 Law of Internal Tax Regime).

VAT (Value Added Tax). It taxes the value of the transfer of the domain to the importation of movable goods of corporeal nature, in all the stages of commercialization, as well as the copyright, of industrial property and related rights and value of the provided services. In the case of imports, the VAT will be settled on the import declaration and payment of the goods charged by the custom office (Art. 70 Internal Tax Regime Law). The VAT is calculated with 14% on Taxable base + ADVALOREM + FODINFA + ICE.

4.1.2. Import Regimes. It is the legal framework that regulates the international traffic of the goods that are under the control of the customs.

In Ecuador there are the following Import Regimes:

- Import for Consumption (Art. 147 COPCI).
- Temporary admission for re-export in the same state (Art. 148 COPCI).
- Temporary Admission for Active Improvement (Art. 149 COPCI).
- Replacement of Goods with Tariff Franchise (Art. 150 COPCI).
- Transformation under Customs control (Art. 151 COPCI).
- Customs Deposit (Art. 152 COPCI).
- Re-importation in the same state (Article 153 COPCI).

4.2 Terms of trade (Incoterms)

Incoterms are an internationally recognized standard and used worldwide in international contracts and in the sale of goods. These trade rules have been developed by trade experts led by the International Chamber of Commerce (ICC). The 2010 Incoterms have been effective since January 2011. These rules help merchants avoid costly misunderstandings by specifying the tasks, costs, and risks involved in delivering goods from sellers to buyers (International Chamber of Commerce, 2016).

Figure 23

				CHAI	RT OF I	RESPON	ISTBILL	ΓY				
	Any Trans	port Mode	Sei	a/Inland Wate	erway Trans	port		Any	Transport M	ode	de	
	EXW	FCA	FAS	FOB	CFR	CIF	CPT	CIP	DAU	DAP	DDP	
Charges/Fees	Ex Works	Free Carrier	Free Alongside Ship	Free On Board	Cost & Freight	Cost Insurance & Freight	Carriage Paid To	Carriage Insurance Paid To	Delivered at Terminal	Delivered at Place	Delivere Duty Pai	
Packaging	Buyer or Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	
Loading Charges	Buyer	Seller*	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	
Delivery to Port/ Place	Buyer	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	
Export Duty & Taxes	Buyer	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	
Origin Terminal Charges	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	
Loading on Carriage	Buyer	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Seller	
Carriage Charges	Buyer	Buyer	Buyer	Buyer	Seller	Seller	Seller	Seller	Seller	Seller	Seller	
Insurance						Seller		Seller				
Destination Terminal Charges	Buyer	Buyer	Buyer	Buyer	Bayer	Buyer	Seller	Seller	Seller	Seller	Seller	
Belivery to Destination	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Seller	Seller	
Import Duty & Taxes	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Seller	

Incoterms 2010.

Source: International Chamber of Commerce, 2017

4.3 Payment forms

Payments are money transactions between a buyer and a seller. The different types of payments are as follows (Proecuador, 2016).

4.3.1 Advance Payment: payment is made before shipment of the merchandise. The exporter first receives the payment and then performs the export. There is a lot of risk for the buyer since it is not known if the seller is going to make the export. The payment lies in the buyer's confidence in the exporter.

4.3.2 Through collections: the seller has confidence in the buyer and the payment will be made after shipment. In this type of payment the seller is the one who takes the risk.

These collections can be:

1. Direct, between importer and exporter.

2. Through a representative of the exporter, all documentation will be managed by the exporter's representative in the importer's city or country.

3. Through a bank with an irrevocable and confirmed Letter of Credit.

4.3.3 Irrevocable and confirmed letter of credit: This is when payment must be made through the importer's commitment through its bank (issuer) and a bank in the country of the exporter (correspondent bank).

Figure 24

Letter of Credit Negotiation



Source: www.e-comex-plus.com

4.3.4 A Consignment: When the terms of payment of the international negotiation are stipulated based on the quantities actually sold in the country of destination.

4.4 International transportation

The international transport of goods is the transfer of goods from point A, located in a certain country, to another point B, located in a different country, made in such a way that the goods reach their destination under the conditions of contract (Molins A., 2011).

International transport is classified into 5 groups:

- Land (by road or rail)
- Maritime.
- Aerial.
- Multimodal
- Intermodal

Table 28 shows the most important characteristics by type of transport.

Table 28.

	Speed	Capacity	Security	Cost	Type of Merchandise
Land	High	Low	Medium	Low	All
Rail	Medium	High	High	Medium	Mainly bulk and solid products
					Preferably bulk products and
Maritime	Low	Very high	High	Low	containers
	Very		Very		
Aerial	high	Low	High	High	High value perishable goods
Multimodal	High	Medium	Medium	Medium	All

Source: www.equilibriointernacional.com, 2016

4.4.1 Maritime transport: The main advantage of this transport is the possibility of moving large volumes of goods, either finished or in bulk. One of the advantages of this transport is the ease of moving high volume goods. The main disadvantage is the limitation in the ports of arrival, since some ports do not have a deep draft. In terms of costs, these are low as ships

carry a large number of containers at a time, lowering costs for the shipping company (Proecuador, 2016).

4.4.2 Containers: they are a transport equipment in the form of a drawer, cistern, movable tank or other similar element. It is a container of cargo for the air, sea, fluvial, terrestrial transport and multimodal transport. When using maritime transport, the use of containers is demanded, of which the most used are detailed in figure 11 (Proecuador, 2016).

Figure 25

Types of Containers and Capacity



Source: www.equilibriointernacional.com, 2016

The capacity of cargo per container type in figure 11.

Table 29

Load capacity per container type

	C. 20 foot	C. 40 foot	C. 40 foot HC
Máximum load	30,130 kg	28,470 kg	28,490 kg
Capacity	33.2 m ³	67.7 m ³	76.3 m ³

Source: www.proecuador.com, 2016. Prepared by: Diego Vásquez

For a correct selection of the type of container to be used in the transport, the nature of the goods is analyzed, for example, in the case of the swine equipment, these are products that demand volume but are not very heavy compared to dry grains. Therefore it would be advisable to use a container of more volume such as the 40-foot HC. In the same way we analyze the transport costs by type of container, there is little difference between a container of 20 foot and the container of 40 foot, although the double is obtained in terms of volume factor.

Table 30

Cost of transport per country (USD)

Country	20 foot	40 foot	40 foot HC
China	1,505.00	1,585.00	1,585.00
Spain	2,562.00	2,622.00	2,652.00
USA	3,776.00	4,011.00	4,011.00
México	2,801.00	2,801.00	2,800.00
Argentina	1,513.00	1,563.00	1,563.00

Source: searates.com, 2016. Prepared by: Diego Vásquez.

4.4.3 Maritime transport documents

4.4.3.1 Bill of lading

The document used in maritime transport, is known as Bill of lading (B/L). The BL is a document signed by the carrier or a representative, which delivers the document to the shipper as proof that the merchandise has been shipped. The BL is a document that allows the consignee the right of his merchandise in the place of destination, allowing to take possession of the goods with the delivery of the document. With the BL the owner disposes of the goods even though they are in custody of the shipper. The BL is the basic document for overseas trade and determines rights and obligations of both carriers and shippers. The bill of lading is issued by the company that provides the international cargo service (Proecuador, 2016).

4.4.3.2 Insurance policy

The function of the insurance policy is to restore the contractor after a loss has occurred, leaving him in a personal or property situation as close to before the damage, or giving him an economic compensation that mitigates the effects of the damage (Proecuador, 2016).

There are two types of insurance applicable:

- a. Franchise: this is a limitation established in favor of the insurer, either with respect to the amount of the compensation, or with respect to the entity of the damage suffered.
- b. Over a Prime: an additional prime that is paid to cover risks that are excluded from coverage.

There is also a classification of insurance by type of protection:

- a. Simple or isolated policy: only covers one shipment.
- b. Open or floating policy: covers successive shipments. It allows better primes and more rational management of risk.
- c. Combined policy: covers shipments in different ways of transport.

4.4.3.3 The commercial invoice

It is a document that the seller of the merchandise delivers to the consignee, reflecting the free will of the parties in each of its conditions. The commercial invoice conforms to international norms and customs since it is one of the basic documents to comply with the procedures of export and import.

The commercial invoice for export or import shows the transaction value that is the basis for calculating customs duties in the importing country; it is also the main document in the transmission of the Customs Declaration as it functions as a supporting document (Todo Comercio Exterior, 2016).

4.5 Tariff headings and subheadings

Tariff headings are each of the codes that define in the customs tariff a specific good in which a category of related goods are grouped together. It consists of four digits: the first two refer to the chapter and the others identify the place it occupies within the chapter.

The tariff subheadings are subgroups in which the goods of a tariff are divided, are identified by 6 digits in the Nomenclature of the Harmonized System for Designation and Codification of Merchandise (Aladi.org, 2016).

Figure 26

Subheading Coding



Source: http://www.wcoomd.org

Figure 26 shows the coding for pineapple tariff subheading 08.04.30.10.00 which explains to which valuation system it belongs, the last of the codes belong to the country and may change depending on the nature of the products.

4.6 Safeguards

Safeguards, together with anti-dumping and compensatory actions, constitute a means of protecting a country's international trade. Safeguards are "emergency" policies when there are increased imports of certain products, where such imports have threatened to cause serious injury to the domestic industry of the importing country. This action is accepted by the World Trade Organization (WTO), and is legal only if there are threats to a country's foreign trade (WTO, 2016).

Table 31

Safeguards applied in Ecuador

Safeguards	Products
5%	Capital goods and non-essential raw materials
15%	Goods of average sensitivity
25%	Tires, ceramics, TV CKD, Motorcycles CKD
45%	Final consumer goods, TV, Motorcycles

Source: Ministry of Foreign Trade, 2016

Table 31 shows the safeguards applied in Ecuador in 2015, having final consumer goods, the most safeguards.

The date for the dismantling of safeguards applied by the Foreign Trade Committee (Comex) was June 2016, but Resolution No. 006 provides a three-phase timetable for dismantling safeguards between April, May and June 2017 (Comex, 2017).

4.7 Import Process of Swine Equipment from China to Ecuador

In chapter 3, each of the suppliers were analyzed and according to the qualiquantitative analysis, points were given to the companies. The American company Big Dutchman was ranked in the first place, due to the quality of its products despite having high prices. The Chinese company Deba Brother is in second place, due to the low prices, and a considerable quality of its products. For the process of the importation of the swine equipment an analysis of the importation will be done having as supplier the Chinese company Deba Brother. The products of the company Big Dutchman have very good quality, but the final price for the sale is very high when compared to the products of the local market. Concluding that there would be no feasibility for import from the US. The next analysis will be the first import, from the first year, based on the sales projection mentioned in Chapter 2.

4.7.1 Negotiation

The trading factors of Deba Brother are described in table 32.

Table 32

Deba brother	negotiation	factors
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	FACTOR	Deba BROTHER	
Product	Certifications	China Mandatory Certification (CCC)	
	Quality	Good	
	Guarantee	2 years	
Company	Disponibility	Excellent	
	Before and After- sales service	yes, even model product	
	Payment form	Letter of credit, Transfer	
	Type of currency	USD	
Negotiation	Delivery Time	30 days	
	Discounts	No	
	Insurance	Independent	
	Incoterms	FOB, CFR	

Source: Deba Brother, 2016. Prepared by: Diego Vásquez.

As detailed in Table 32, Deba Brother has very acceptable products in quality as they have a China Mandatory Certification (CCC) and minimum guarantees of 2 years.

For the importation of swine equipment, the negotiation will be considered in incoterm FOB, this due to the conditions for both the seller and the buyer. However this does not prevent that, taking into account the price of the freights, there may be a negotiation in incoterm CFR. Incoterm FOB will require the contracting of a shipping company and an independent insurance.

4.7.2 FOB Prices

Table 33 describes total FOB prices, in USD, of the import from China.

Table 33

FOB prices of the products USD.

Quantity	Product Portfolio	FOB Price	Total
303 m ²	Maternity plastic floor m ²	25.00	7,575.00
50,5m ²	Gestation plastic floor m ²	21.00	1,060.50
202	Sow nipple drinker	1.00	202.00
101	Piglet nipple drinker	0.80	80.80
101	Maternity food dispenser	8.00	808.00
101	Gestation food dispenser	6.00	606.00
101	Piglet feeder	5.00	505.00
101	Piglet heater	28.00	2,828.00
48	Fattening nipple drinker	1.00	48.00
10	Automatic hopper for replacement sows	160.00	1,600.00
15	Piglet automatic hopper	150.00	2,250.00
120m ²	Piglet plastic floor m ²	28.00	3,360.00
30	Piglet nipple drinker	0.80	24.00
------	----------------------------------	----------	-----------
38	Fattening automatic hopper	160.00	6,080.00
114	Fattening nipple drinker	1.00	114.00
5	Ultrasound	2,100.00	10,500.00
10	Food Mixer	1,200.00	12,000.00
3	Silos 3000 kg	1,320.00	3,960.00
18	Bore semen extraction stand	69.00	1,242.00
25	House fan	75.00	1,875.00
10	High pressure washing machine	210.00	2,100.00
3000	Insemination catheter	0.20	600.00
28	Sorting panel	12.00	336.00
50	Scales	110.00	5,500.00
50	Stainless steel pig tooth cutter	1.50	75.00
50	Swine stainless holder	12.00	600.00
50	Metal ear tag pliers	1.80	90.00
		TOTAL	66,019.30

Source: Deba Brother, 2016. Prepared by: Diego Vásquez.

4.7.3 Payment Negotiation

The payment to suppliers will be made through a bank transfer (0.5% Pichincha Bank), which provides more confidence to suppliers than to the buyer. The best would be the management of a letter of credit, but unfortunately the costs of this service are very high (4% Pichincha Bank), there is also a fee on Cash outflow (5%). The payment of 50% will be made at the time of the negotiation and 50% at the time of shipment of the merchandise. Before the purchase it will be necessary to manage the financing for the products. In Ecuador there are banks that provide financing services to importers, with rates of up to 11% per year, as long as they qualify in the risk center. Payments will be made in the US Dollar currency.

4.7.4 Containerization

Due to the volume and costs of transport, the most feasible would be the use of maritime transport, for which it will be necessary to carry out the calculation of containerization of the merchandise.

Table 34

Measurements and Weight of the Goods.

Product	Quantity	Total Dimension m ³	Total Weight Kg
Plastic floor	473.5 m²	142.05	4,536.13
Maternity food dispenser	101	3.60	121.20
Gestation food dispenser	101	2.53	101
Piglet feeder	101	1.57	50.50
Fattening automatic hopper	48	27.08	1440
Piglet automatic hopper	15	10.54	277.50
Bore semen extraction stand	18	3.40	464.41
House fan	25	31.50	480
High pressure washing machine	10	7.29	1150
Scales	50	23.40	940
Food Mixer	10	45.20	3525
Silos	3	16.89	1,148.41
Fattening nipple drinker	364	0.01	32.76
Piglet nipple drinker	131	0.001	10.61
Insemination catheter	3,000	0.09	45
Sorting panel	28	0.20	50.96
Stainless steel pig tooth cutter	50	0.002	20
Swine stainless holder	50	0.06	54

Metal ear tag pliers	50	0.002	22.52
Heater	101	1.70	191.93
Ultrasound	5	0.16	13
	TOTAL	317.35	14,674.86

Sources: Deba Brother, 2016. Prepared by: Diego Vásquez.

As shown in Table 34, the nature of the merchandise is voluminous (317.35 m³) in comparison with its weight (14,674.86 kg). Because the merchandise has more volume than weight, it would be efficient to use 40-foot HC containers, which carry more volume and its transport price is almost similar to regular containers of 40 and 20 foot, as detailed in the following table.

Table 35.

Cost of transporting a container

Country	20 Feet	40 Feet	40 Feet HC		
China	USD.	USD.	USD.		
Ciinia	1,505.00	1,585.00	1,585.00		

Source: www.searates.com, 2016. Prepared by: Diego Vásquez.

Table 36 details the load capacity by type of container, having as data of the merchandise the following:

The base of the stowage factor is exceeded, which means that in maritime transport the relation is:

 $1 \text{ m}^3 = 1 \text{ TM}$ (Searates, 2016)

Volume = 317.35 m^3

Weight = 14,674.8 kg

Table 36

Load capacity per container type

	20 foot	# of contai	40 foot	# of contai	40 foot HC	# of contai
Maximum load	30,130 kg	0.48	28,470 kg	0.52	28,490 kg	0.52
Capacity	33.2 m3	9.6	67.7 m3	4.7	76.3 m3	4.16

Source: www.searates.com, 2016. Prepared by: Diego Vásquez

As shown in Table 36, using the 40-foot HC containers, 4.16 containers will be needed. The import will use 4 containers of 40 feet HC and the 0.16 remaining will be accommodated in products that are hollow and bulky as is the case of hoppers, food mixers and silos where there will be accommodated the small products such as: tweezers, catheters, and drinkers. This saves the hiring of a 20-foot container and import costs.

4.7.5 Shipment

Due to the negotiation of the products with the supplier in the FOB Incoterm, they will be delivered at the port of shipment of the country of origin of the goods.

Port of Departure of Goods

Country	Port
China	Shidao, Shandong

Source: www.searates.com, 2016. Prepared by: Diego Vásquez

4.7.6 Logistics: The transport used for the import will be the maritime for which the following Table shows the route to be followed.

Figure 27

Sea route from China.



Source: www.searates.com, 2016

The sea transportation route between China and Ecuador takes about 30 days

4.7.7 Shipping agencies in Ecuador. The following table lists some of the companies that provide international shipping services in Ecuador.

Shipping Agencies in Ecuador

Andinave S.A	Maersk of Ecuador C.A.	APL of Ecuador S.A.
Mediterranean Shipping	BBC Ecuador	Navesur S.A.
Co.		
Broom Ecuador S.A.	Navisur	Citikold S.A.
Representaciones	CMA-CGM Ecuador S.A.	Transoceánica CIA LTDA.
Maritimas del Ecuador		
REMAR S.A.		

Source: Proecuador, 2016

4.7.8 Disembarkation and Nationalization of the goods

Before the arrival of the merchandise to the port of destination (Guayaquil), the different steps for the nationalization of the merchandise should be managed.

1. Register as an importer, obtain the Single Taxpayer Registration (RUC), and the electronic signature (Token).

2. Obtain import licenses.

3. Hiring an Authorized Customs Broker, who is responsible for completing the Customs Import Declaration (DAI) and managing the different support and accompanying documents.

4. Electronic filling of the DAI using the ECUAPASS system. This can be done in a period not exceeding fifteen calendar days before the arrival of the transport, and up to thirty calendar days after the arrival date. If not fulfilled within that period, the goods will be immersed in one of the causes of tacit abandonment. In the DAI, there is explained each of the imported products, their weights, volumes, nature, technical characteristics, and the tariff subheading to which the product belongs.

5. Upload to the ECUAPASS system all documents of previous control, support and accompaniment (commercial invoice, Bill of Lading, Insurance Policy, INEN).

After completing the DAI, the ECUAPASS system will automatically calculate the amount of taxes to be paid.

1. The system approves to which custom appraisal the import should be designed.

2. If there is no issues in the custom appraisal, it is processed to the payment of the taxes and then the lifting of the merchandise.

4.7.9 Tariff Subheadings and pre-import control documents: Table 39 shows the tariff subheadings to which the products belong. In the same way as the licenses of import and control certificates.

Table 39.

Product	Tariff Subheadings	License	Certification
Plastic floor	3926.90.00.00	MIPRO	INEN
Maternity food dispenser	3926.90.00.00	MIPRO	INEN
Gestation food dispenser	3926.90.00.00	MIPRO	INEN
Piglet feeder	8436.29.10.00	MIPRO	INEN
Fattening automatic hopper	8436.29.10.00	MIPRO	INEN
Piglet automatic hopper	8436.29.10.00	MIPRO	INEN
Semen extraction stand	8436.80.90.00	MIPRO	INEN
House fan	8414.59.00.00	MIPRO	INEN
High pressure washing machine	8413.19.00.00	MIPRO	INEN
Scales	8423.30.00.00	MIPRO	INEN

Tariff Subheadings and pre-import control documents

Food Mixer	8436.10.00.00	MIPRO	INEN
Silos	8438.40.00.00	MIPRO	INEN
Fattening nipple drinker	8436.29.10.00	MIPRO	INEN
Piglet nipple drinker	8436.29.10.00	MIPRO	INEN
Insemination catheter	9018.31.20.00	MIPRO	MAGAP
Sorting panel	3926.90.00.00	MIPRO	INEN
Stainless steel pig tooth cutter	8203.20.00.00	MIPRO	INEN
Swine stainless holder	8436.80.90.00	MIPRO	INEN
Metal ear tag pliers	8203.20.00.00	MIPRO	INEN
Heater	9018.20.00.00	MIPRO	INEN
Ultrasound	9018.80.10.00	MIPRO	INEN

Source: produccion.gob.ec, 2016. Prepared by: Diego Vásquez

4.7.10 Calculation of taxes: For the calculation of taxes on foreign trade, first it is calculated the taxable base on which taxes will be applied. The taxable amount is = Product price + Shipping cost + Insurance. The freight is calculated according to the volume of the products. And insurance as 1% of the FOB value (Art 76 Regulation to the COPCI).

Quantity	Products	Vol. m ³	FOB Price	Shipping	hipping Insurance		
1,212	Maternity plastic floor	90.90	7,575.00	1,816.02	75.75	9,836.21	
202	Gestation plastic floor	15.15	1,060.50	302.67	10.61	1,373.77	
480	Piglet plastic floor	36	3,360.00	719.22	33.60	4,112.81	
101	Maternity food dispenser	3.60	808.00	72.10	8.08	888.18	
101	Gestation food dispenser	2.53	606.00	50.71	6.06	662.77	
101	Piglet feeder	1.57	505.00	31.52	5.05	541.57	
48	Fattening automatic hopper	27.08	7,680.00	541.04	76.80	8,297.84	
15	Piglet automatic hopper	10.54	2,250.00	210.70	22.50	2,483.20	
18	Semen extraction stand	xtraction stand 3.40 1,242.00 67.97		67.97	12.42	1,322.39	
25	House fans	31.52	1,875.00	629.31	18.75	2,523.06	
10	High pressure water machine	7.29	2,100.00	145.76	21.00	2,266.76	
50	Scales	23.41	5,500.00	467.49	55.00	6,022.49	
10	Food mixer	45.21	12,000.00	903.01	120.00	13,023.01	
3	Silos	16.89	39 3,960.00 337.43		39.60	4,337.03	
364	Adult nipple drinker	0.01	364.00	0.26	3.64	367.9	
131	Piglet nipple drinker	0.002	104.80	0.04	1.05	105.88	
3,000	Insemination catheter	0.09	600.00	1.92	6.00	607.92	
28	Sorting panel	0.20	336.00	4.08	3.36	343.44	
50	Stainless steel pig tooth cutter	0.002	75.00	0.04	0.75	75.79	
50	Swine stainless holder	0.06	600.00	1.36	6.00	607.36	
50	Metal ear tag pliers	0.002	90.00	0.04	0.90	90.94	
101	Heaters	1.70	2,828.00	34.04	28.28	2,890.32	
5	Ultrasound	0.16	10,500.00	3.28	105.00	10,608.28	
	TOTAL	317.34	66,019.30	6,340.00	660.19	73,388.94	

Calculation of taxable base Source: Produccion.gob.ec, 2016. Prepared by: Diego Vásquez

Calculation of taxes on foreign trade

	Products	Taxable Base	Tariff Subheadings		Ad- Valorem		FODINFA		Safegur.		VAT	TOTAL
1,212	Maternity plastic floor m ²	9,836.21	3926.90.00.00	20	1,967.24	0.5	49.18	0	0.00	14	1,659.37	3,675.79
202	Gestation plastic floor m ²	1,373.77	3926.90.00.00	20	274.75	0.5	6.87	0	0.00	14	231.75	513.38
480	Piglet plastic floor	4,112.81	3926.90.00.00	20	822.56	0.5	20.56	0	0.00	14	693.83	1,536.96
101	Maternity food dispenser	888.18	3926.90.00.00	20	177.64	0.5	4.44	0	0.00	14	149.84	331.91
101	Gestation food dispenser	662.77	3926.90.00.00	20	132.55	0.5	3.31	0	0.00	14	111.81	247.68
101	Piglet feeder	541.57	8436.29.10.00	0	0.00	0.5	2.71	0	0.00	14	76.20	78.91
48	Fattening automatic hopper	8,297.84	8436.29.10.00	0	0.00	0.5	41.49	0	0.00	14	1,167.51	1,209.00
15	Piglet automatic hopper	2,483.20	8436.29.10.00	0	0.00	0.5	12.42	0	0.00	14	349.39	361.80
18	semen extraction stand	1,322.39	8436.80.90.00	0	0.00	0.5	6.61	0	0.00	14	186.06	192.67
25	House fan	2,523.06	8414.59.00.00	20	504.61	0.5	12.62	15	378.46	14	478.62	1,374.31

10	Washing Machine	2,266.76	8413.19.00.00	0	0.00	0.5	11.33	0	0.00	14	318.93	330.27
50	Scales	6,022.49	8423.30.00.00	0	0.00	0.5	30.11	0	0.00	14	847.36	877.48
10	Food mixer	13,023.00	8436.10.00.00	0	0.00	0.5	65.12	0	0.00	14	1,832.34	1,897.45
3	Silos	4,337.03	8479.89.90.00	15	650.55	0.5	21.69	5	216.85	14	731.66	1,620.75
364	Adult drinker	367.90	8436.29.10.00	0	0.00	0.5	1.84	0	0.00	14	51.76	53.60
131	Piglet drinker	105.88	8436.29.10.00	0	0.00	0.5	0.53	0	0.00	14	14.90	15.43
3000	Insemination catheter	607.92	9018.31.20.00	0	0.00	0.5	3.04	0	0.00	14	85.53	88.57
28	Sorting panel	343.44	3926.90.00.00	20	68.69	0.5	1.72	0	0.00	14	57.94	128.34
50	Steel pig tooth cutter	75.79	8203.20.00.00	0	0.00	0.5	0.38	15	11.37	14	12.26	24.00
50	stainless holder	607.36	8436.80.90.00	0	0.00	0.5	3.04	0	0.00	14	85.46	88.49
50	Metal ear tag pliers	90.94	8203.20.00.00	0	0.00	0.5	0.45	15	13.64	14	14.7	28.80
101	Heater	2,890.32	9018.20.00.00	0	0.00	0.5	14.45	0	0.00	14	406.67	421.12
5	Ultrasound	10,608.30	901812.00.00.	0	0.00	0.5	53.04	0	0.00	14	1,492.58	1,545.63
	TOTAL	73,388.90			4,598.60		366.94		620.32		11,056.47	16,642.34

Source: Produccion.gob.ec, 2016

As can be seen in Table 41, 35% of imported products tax between 15% and 20%. On the other hand, 65% of the products have 0% of ad valorem; this is due to the nature of the products that are capital goods that encourage the production and national industry. Obtaining the reduction in prices for the final buyer.

None of the products taxed the Special Consumption Tax (ICE) because they are not luxury goods, but capital goods.

As can be seen in Table 41, the FODINFA tax is for all imported products and its value is 0.5%.

Table 41 shows that only 19% of imported products tax 5% to 15% of Safeguards, which are products classified as motor machines and surgical veterinary equipment.

At last the Value added tax (VAT) is calculated, which is 14% calculated under the taxable base which is the sum of all taxes + the value of the products in Customs.

4.7.11 Import Costs, and Customs Clearance costs

The import costs are items that have to be paid at the time of the customs clearance of the goods, because there are movements of containers and issuance of documents, these expenses occur when the merchandise is in the country of destination. In the same way, the financial expenses for transactions and negotiation with suppliers have been taken into account, so that all these items are prorated to the variable cost per unit of each product.

Import and custom clearance costs

Item	Amount
Financial and import costs	
Bank charges, over USD 66,019.3	360.00
5% currency outflow, on USD 66019.3	3,300.97
Licensing	300.00
Negotiation trip	3,407.84
Customs Clearance Costs of 4 containers	
Issue of BL	150.00
Customs broker	250.00
Handling	800.00
Warehouse, 1 week	400.00
Internal transport Guayaquil-Cuenca	1,200.00
TOTAL	10,168.81

Source: Proecuador.com, 2016. Prepared by: Diego Vásquez

4.7.12 Summary of taxes payable

Table 43

Summary of taxes payable.

Ad-Valorem	FODINFA	Safeguards	VAT	TOTAL
4,598.60	366.94	620.32	11,056.47	16,642.34

CIF	Taxes	Import costs	TOTAL		
73,388.94	16,642.34	10,168.81	100,200.29		

Source: Produccion.gob.ec, 2016. Prepared by: Diego Vásquez

As it can be seen in Tables 42 and 43, the CIF value of the products is USD 73,388.94, with USD 16,642.34 remaining to be paid for the different taxes on foreign trade and obtaining a value of USD 10,168.81 for the concept of import and customs clearance costs. The total variable cost of products is USD 100,200.29.

4.8 Conclusion of Chapter 4

The importation of goods was done based on a previously analyzed market research, where there is a need for products which are not offered in the domestic market. Based on the previous market study, we have seen the business opportunity for the sale of swine equipment, which will be imported from China, supplied by Deba Brother. The import and sale of the products of the American company Big Dutchman are not feasible since the final prices are much higher than the local market prices, even doubling them. Big Dutchman is available in the supplier's panel for customers who want exclusive products only upon request.

On the other hand, the different stages of the importation must be taken into account since their poor management could result to a delay in the logistics and nationalization of the merchandise. Being there an increase of costs which punish the product, making it expensive because of an inefficient management.

In the same way, it is necessary to have companies that provide the transport and insurance service in a serious and reliable way, in such a way that there are no losses or bad handling of the goods.

For the Nationalization of the merchandise, it is important to manage the different documents: customs declaration and accompanying and support documents. In the customs declaration, the subheading tariff classification must be correctly carried out in order to avoid delays in the processes. It is important to note that the CIF value and the classification of goods are the basis for the payment of taxes. A correct classification will even favor the reduction of the amounts to be paid.

Prior to the importation, it is necessary to manage the licensing procedures in accredited institutions according to the nature of the products. In such a way that there are import quotas, and the merchandise is not retained in Customs.

By calculating taxes it was possible to conclude that capital goods do not have high taxes due to the nature of the products, which are used in the production and industrialization of the processes. This is positive for the implementation of the project.

CHAPTER 5 FINANCIAL EVALUATION

Introduction

The main objective of a financial (economic) analysis is the evaluation of the performance of a company; therefore, it is a method that allows analyzing the financial consequences of business decisions. For this, it is necessary to apply techniques that allow to collect the relevant information, carry out different stages and draw conclusions. Decision-making, based on financial analysis, aims at the profitability and growth of the business.

According to Gabriel Baca Urbina, the economic study of a project orders and systematizes the monetary information provided by the previous stages and elaborates the analytical data that serve as the basis for the economic evaluation (Baca, 2009).

The economic study describes the methods of financial assessment that projects the value of money over time.

The economic analysis is important, since it is the one that ultimately allows to decide the implementation of the project. The success of this analysis lies in the methods and concepts applied in order to be clear and convincing to the investor (Baca, 2009).

5.1 Methods of economic evaluation

Some economic evaluation methods for the feasibility analysis of investment projects are as follows:

- 1. Net cash flow
- 2. Net Present Value (NPV)
- 3. Internal Rate of Return (IRR)
- 4. Weighted Average Cost of Capital (WACC)
- 5. Return on Investment (ROI)
- 6. Payback.
- 7. Cost-benefit.
- 8. Breakeven point.

After detailing the prices of products, future sales, and cash flow, we will proceed to describe each of the financial indicators, applying to the swine equipment investment project, this way we will measure the economic status and its feasibility.

5.2 Unit Sale Price of the products

In order to do the financial calculations, it is necessary to have a target price of the products that will be sold in the local market. This will result in future sales and revenues.

The unit selling price of the products is detailed in Table 44.

Sale Prices of Deba brother products

Deba Brother Products	Ex- customs value	Adminis. Costs	Total Cost	Sale Price	Market Price
Maternity plastic floor	13.04	1.42	14.46	27.11	30.00
Gestation plastic floor	11.05	1.21	12.26	23.43	27.50
Piglet plastic floor	13.93	1.52	15.45	27.74	30.00
Maternity food dispenser	14.29	1.56	15.85	29.42	30.00
Gestation food dispenser	10.67	1.17	11.84	23.72	26.00
Piglet feeder	7.32	0.80	8.12	17.54	35.00
Fattening automatic hopper	235.93	25.76	261.69	483.26	485.00
Piglet automatic hopper	225.92	24.67	250.59	436.78	440.00
Semen extraction stand	100.26	10.95	111.21	195.41	200.00
House fan	183.65	20.05	203.70	362.58	370.00
High pressure washing machine	309.35	33.78	343.13	612.05	620.00
Scales	164.38	17.95	182.33	314.98	315.00
Food Mixer	1,777.29	194.08	1,971.37	4,286.56	4,300.00
Silos	2,348.77	256.49	2,605.26	4,543.33	4,550.00
Fattening nipple drinker	1.37	0.15	1.52	3.55	5.00
Piglet nipple drinker	1.11	0.12	1.23	3.03	4.00
Insemination catheter	0.28	0.03	0.31	0.62	2.00
Sorting panel	19.92	2.18	22.10	41.86	80.00
Stainless steel pig tooth cutter	2.37	0.26	2.63	7.38	20.00
Swine stainless holder	16.58	1.81	18.39	36.65	60.00
Metal ear tag pliers	2.83	0.31	3.14	8.25	20.00
Heater	39.05	4.26	43.31	79.22	90.00
Ultrasound	2,895.50	316.19	3,211.69	6,354.33	6,400.00

Source: Deba brother, 2016. Prepared by: Diego Vásquez

As it can be seen in Table 44, in the Ex-customs Value column, the cost of the product is detailed as it is nationalized. The following column shows the administrative and selling costs of the products. In the Selling Price column, there is shown the price of the products in the amount that they will be distributed in the Azuay market. For the sale price, the prices of similar products sold by other companies in the local market have been taken into account, which were mentioned in Chapter II. Prices were also calculated based on the percentage of profit of the business, which is approximately 50%.

5.3 Sales and revenue projection

"A sales projection is the amount of revenue a company expects to earn sometime in the future. It is a prediction that is synonymous with an estimation of sales. Both help determine the health of a company and whether sales trends are rising or falling" (Baca, 2009, p. 259).

The estimated revenue from total sales per year is detailed in Table 45.

Estimated revenue from total sales per year.

DEBA Brother Products	U.L. Year	Price	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Maternity plastic floor	3	25.87	1,212	24	24	1,236	48	48	1,260	72	72	1,284
Gestation plastic floor	3	22.38	202	4	4	206	8	8	210	12	12	214
Piglet plastic floor	3	26.42	480	8	8	484	16	16	196	24	24	504
Maternity food dispenser	2	28.06	101	2	103	4	105	6	107	8	109	10
Gestation food dispenser	2	22.70	101	2	103	4	105	6	107	8	109	10
Piglet feeder	2	16.84	101	2	103	4	105	6	107	8	109	10
Fattening automatic hopper	3	460.85	48	2	2	50	4	4	52	6	6	54
Piglet automatic hopper	3	415.32	15	1	1	16	2	2	17	3	3	18
Semen extraction stand	2	185.88	18	2	20	4	22	6	24	8	26	10
House fan	2	345.14	25	1	26	2	26	3	27	4	28	5
High pressure washing machine	3	582.66	10	2	2	12	4	4	14	6	6	16
Scales	2	299.36	50	2	52	4	54	6	56	8	58	10
Food Mixer	5	4,117.70	10	1	1	1	1	11	2	2	2	2

Silos	5	4,320.20	3	0	1	0	1	4	0	2	0	2
Fattening nipple	1	3.42	364	371	378	385	392	399	406	413	420	427
drinker	1	5.42	504	571	570	505	572	577	400	415	420	727
Piglet nipple drinker	1	2.93	131	134	137	140	143	146	149	152	155	158
Insemination catheter	0	0.59	3,000	3,060	3,120	3,180	3,240	3,300	3,360	3,420	3,480	3,520
Sorting panel	1	39.96	28	29	30	31	32	33	34	35	36	37
steel pig tooth cutter	2	7.15	50	52	54	56	58	60	62	64	66	68
Swine stainless holder	2	35.08	50	52	54	56	58	60	62	64	66	68
Metal ear tag pliers	2	7.98	50	52	54	56	58	60	62	64	66	68
Heater	3	75.51	101	2	2	103	4	4	105	6	6	107
Ultrasound	5	6,079.20	5	1	1	1	1	6	1	1	1	1
Total Revenue + inflation 3%			225,831.02	24,162.93	65,598.98	123,681.02	71,108.27	127,658.68	161,903.79	51,720.99	78,744.70	151,340.69
Variable Cost			100,200.29	10,413.78	30,701.65	57,588.38	33,330.60	55,648.88	73,627.98	23,460.49	36,561.78	70,665.48

Source: Market Study, 2016. Prepared by: Diego Vásquez

As shown in table 45, in year 1 the product is introduced for the first time in the entire swine market in the Azuay Province this is the highest year of sales for the entire project. On the other hand, in year 2 it is seen that the sales fall and are recovering in the future years. Sales are based on the market to be covered (28 swine farms); the years of useful life and the guarantees of the products. As detailed in Table 45, from the third year, sales are estimated to rise. For example in the case of plastic floor, sales will not rise until three-year periods, this because the useful life of the plastic floor is three years. In the same way, the growth of the swine population (1.7% per year, taken from the Census of swine population, detailed in Chapter 2) has been taken into account, as explained in the case of the plastic floor, by year 2, the demand is 24 pieces.

5.4 Initial investment

The investment is the application of economic resources with the objective of obtaining profits in a certain project, based on the fact that there is no economic risk.

"The investment consists in the application of financial resources to the creation, renovation, expansion or improvement of the operational capacity of the company" (Sabate, 1978. p. 285).

According to Urbina, working capital is the ability of a company to carry out its activities with normality in the short term. This can be calculated as the excess assets in relation to short-term liabilities.

To achieve the project, the following initial investment will be necessary.

Initial Investment of the project

FIXED ASSETS	Quantity	Total value
Furniture	2	500.00
Computer equipment	2	950.00
Vehicle	1	8,000.00
Premises	1	1,000.00
TOTAL FIXED ASSETS		10,450.00
DEFERRED ASSETS		
Legalizing costs		800.00
TOTAL DEFERRED ASSETS		800.00
WORKING CAPITAL		
Variable costs		100,200.29
Fixed costs		17,190.40
TOTAL WORKING CAPITAL		116,263.11
TOTAL INVESMENTS		127,513.21

Source: Market Study, 2016. Prepared by: Diego Vásquez

The investments are based of the fixed assets as is the case of office equipment and furniture. The investment also includes the purchase of a small vehicle, used for transportation of the selling agent and the products. For the different amounts, there have been obtained quotes from warehouses of office equipment, and in the case of the vehicle prices have been obtained through web pages. In the same way, a relevant amount of USD 1,000 has been considered for the concept of the premises, which is own, but must be also considered for the investment.

Working capital describes variable costs, which are based on imported products, and their nationalization. Fixed costs and expenses include basic services, payment to employees and operating costs. Working capital is contemplated for one year of economic activity.

5.5 Payrolls and provisions to employees

It is a document describing wages or salaries and social benefits that an employer must pay employees because of their services (Ministry of Labor, 2017).

5.5.1. Salary: The base salary for 2017 is USD 357.00, to which the personal contribution of 9.35% to the Ecuadorian Social Security Institute (IESS) is added.

For the calculation of the salaries, it has been estimated the hiring of a Manager and a Sales Agent. Wages are based on the type of activity performed by employees, such as the sales agent who generates a basic salary and commissions in order to promote the sale of products. It also takes into account the monthly salary of the services of a certified public accountant, without dependency relation.

Table 47

Position	Salary	Commission	Income	IESS 9,35 %	Net Payable.
Manager	466.10	0.00	466.10	43.58	422.52
Sales Agent	365.00	190.00	555.00	51.89	503.11
Accountant	39.58		39.58		39.58
Monthly total			1,060.68		

Payrolls of employees

Source: Work Code, Ecuador, 2016. Prepared by: Diego Vásquez

5.5.2. Provisions: is a liability over which there is uncertainty about its amount or expiration (International Accounting Standards, 2017).

It is a value in which a provision is recorded for each employee, for social benefits. In this way it is avoided that in the corresponding months of payment, the expenditure rises too much. There are different provisions:

- Thirteenth provision: It is a social benefit paid to the employee in the month of December, maximum until the 24th, it is known as a Christmas bonus. It is equal to one more salary; in other words, to the average of all wages. Article 111 (Labor Code, 2017).
- Fourteenth provision: It is a social benefit that is paid to the employee until August 15th in the Sierra region and until March 15th on the coast, also known as school bonus. It is equal to a current unified minimum wage. Art. 113 (Labor Code, 2017).
- Reserve Fund: It is paid in the month of March only if the employee works more than one year in the company. It is equal to the thirteenth provision salary. Art. 196 (Labor Code, 2017).
- Vacation: paid from the second year of work. Employees have the right of 15 off days, reaching an additional day after the sixth year of work. It is equal to the 24th part of the remuneration received by the employee during a full year of work. Art 76 (Labor Code, 2017).

Table 48

Roll of Provisions

Position	Thirteenth Provision	Fourteenth Provision	Reserve Fund	Vacations	Total Provisions
Manager	466.10	375.00	466.10	233.05	1,540.25
Selling Agent	555.00	375.00	555.00	277.50	1,762.50
				Total	3,302.75

Source: Work Code, 2016. Prepared by: Diego Vásquez

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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Salaries	12,728.20	13,110.04	13,503.34	13,908.44	14,325.70	14,755.47	15,198.13	15,654.08	16,123.70	16,607.41
Provisions	3,302.76	3,401.84	3,503.90	3,609.02	3,717.29	3,828.80	3,943.67	4,061.98	4,183.84	4,309.35
TOTAL	16,030.96	16,511.88	17,007.24	17,517.46	18,042.98	18,584.27	19,141.80	19,716.05	20,307.54	20,916.76

Source: Work Code, 2016. Prepared by: Diego Vásquez

For the calculation of salaries, were taken into account monthly payments that are USD 1,060.68 and multiplied by 12 for each year. A percentage of inflation growth has also been taken into account, which according to the Central Bank is projected at 3% per year for both salaries and provisions.

5.6 Financing

"Financing is the set of financial monetary resources with which a project is going to be carried out. They are own economic resources that are found through loans from financial institutions" (Baca, 2009, p. 325).

In order to carry out the importation and commercialization of the swine equipment, it has been necessary to use own resources and financial resources by the prVATte banking. The project will be financed with a loan, which will cover 50% of the investment. The rest will be financed with own resources. The type of loan will be included within the loans for the purchase and marketing of national or foreign end products, which are designated for MSMEs. The loan will have an interest rate of 10.2% and will be amortized over 10 years, as indicated at Pichincha Bank.

Year	Capital	Interest	Capital Payment	Interest and Capital
1	63,756.61	6,503.17	0.00	6,503.17
2	63.756.61	6,503.17	0.00	6,503.17
3	63,756.61	6,503.17	0.00	6,503.17
4	63,756.61	6,503.17	0.00	6,503.17
5	53,130.51	6,503.17	10,626.10	17,129.27
6	42,504.41	6,503.17	10,626.10	17,129.27
7	31,878.31	4,335.45	10,626.10	14,961.55
8	21,252.21	3,251.59	10,626.10	13,877.69
9	10,626.11	2,167.72	10,626.10	12,793.82
10	0.00	1,083.86	10,626.10	11,709.96

Amortization of the financing.

Source: Pichincha Bank, 2016. Prepared by: Diego Vásquez

As shown in Table 50, 50% of the investment (USD 63,756.61) will be financed to 10 years, with 4 years grace period on capital. In year 5, payments will be made for both capital and interest. The USD. 63,756.61 generate USD 48,773.80 of interest, which together with the capital, reach to USD. 112,530.41, in the 10 years.

5.7 Statement of Profit and Loss

It is an accounting document in which all the results of a company are summarized over a period of time, by which the overall result of the management is determined. It is the one that shows the products, returns, revenues, incomes, profits, costs, expenses and corresponding losses (Alvarez, 2008).

5.8 Cash Flow

"It is the statement of account that reflects how effective the company retains after expenses, interest and payment to capital. It provides information regarding the movements that have been made in a certain period of money or any of their equivalent" (Alvarez, 2008, p. 312).

The profit and loss statement and the cash flow of the sales project for the swine equipment are described in Table 51.

Table 51.

Statement of Profit and loss, Cash Flow.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Investments	127,513.21										
Total Revenue		225,831.02	24,162.93	65,598.98	123,681.02	71,108.27	127,658.68	161,903.79	51,720.99	78,744.70	151,340.69
Cost of goods		100,200.29	10,413.78	30,701.65	57,588.38	33,330.60	55,648.88	73,627.98	80.00	36,561.78	70,665.48
GROSS PROFIT		125,630.73	13,749.15	34,897.33	66,092.64	37,777.67	72,009.80	88,275.81	51,640.99	42,182.92	80,675.21
Salaries		16,030.95	16,511.88	17,007.23	17,517.45	18,042.97	18,584.27	19,141.79	19,716.05	20,307.53	20,916.76
Annual Depreciation		1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00
Deferred Charges		80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
Basic Services		720.00	741.60	763.85	786.76	810.37	834.68	859.72	885.51	912.07	939.44
Supplies		620.00	110.00	180.00	380.00	310.00	522.00	515.00	270.00	260.00	495.00
OPERATING PROFIT		107,134.78	-4,739.33	15,821.25	46,283.43	17,489.33	50,943.85	66,634.30	29,644.43	19,578.32	57,199.02
Financial Expenses		6,503.17	6,503.17	6,503.17	6,503.17	6,503.17	5,419.31	4,335.45	3,251.59	2,167.72	1,083.86
PROFIT BEFORE TAXES		100,631.61	-11,242.50	9,318.08	39,780.26	10,986.16	45,524.54	62,298.85	26,392.84	17,410.60	56,115.16
15% Employee Participation		15,094.74	-1,686.38	1,397.71	5,967.04	1,647.92	6,828.68	9,344.83	3,958.93	2,611.59	8,417.27
TAXABLE BASE		85,536.87	-9,556.13	7,920.37	33,813.22	9,338.24	38,695.86	52,954.03	22,433.92	14,799.01	47,697.88
22% Income Tax		18,818.11	-2,102.35	1,742.48	7,438.91	2,054.41	8,513.09	11,649.89	4,935.46	3,255.78	10,493.53
NET PROFIT		66,718.76	-7,453.78	6,177.89	26,374.31	7,283.83	30,182.77	41,304.14	17,498.45	11,543.23	37,204.35
Depreciation		1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00	1,045.00
Differed Charges		80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
Loan Payment		0.00	0.00	0.00	0.00	10,626.10	10,626.10	10,626.10	10,626.10	10,626.10	10,626.10
TOTAL CASH FLOW	- 127,513.21	67,843.76	-6,328.78	7,302.89	27,499.31	-2,217.27	20,681.67	31,803.04	7,997.35	2,042.13	27,703.25
Liquidity	0.00	67,843.76	61,514.98	68,817.87	96,317.18	94,099.91	114,781.58	146,584.62	154,581.97	156,624.10	184,327.35

Source: (Baca, 2009) Prepared by: Diego Vásquez

As detailed in Table 51, the revenue factor is based on the sales projections mentioned in cap. II, taking into account an estimated inflation of 3% average for prices. In the same way the Cost of goods are in function of the imports of each year, based on the projection of sales of the future 10 years, In year 2 it is observed that the income is only USD 24,162.93, the main reason Is that in year 1 the entire market has already been covered, obtaining USD 225,831.02 in sales, this being the highest year in sales because the product is first introduced to the market.

To recover the losses in sales in Year 2, it is necessary to search for new markets in such a way that the company can expand towards the Provinces of El Oro and Santo Domingo de los Tsachilas where the Swine industry is abundant due to warm climate.

In the salary factor, there is described the estimated costs of a manager, a selling agent, and an accountant, with all legal payments.

Depreciation is given for the annual 10% of the investment of fixed assets.

Amortization of deferred charges is given by the depreciation of USD. 800.00, for expenses of incorporation of the company.

For the basic services factor, the annual cost of electricity, water and the internet has been calculated, with its respective price inflation.

Office supplies are based on the percentage of sales. And they are expenses that are generated at the time of sales.

In the financial expenses, there is the interest payment of the loan with Pichincha Bank.

As provided by law, 15% of profits for employees and 22% for income tax must be granted.

After the profits there have been rested the principal payment of the loan, which has 4 years of grace.

5.9 Application of economic assessment methods

5.9.1 Weighted average cost of capital (WACC)

"The weighted average cost of capital is the average rate of return required on the different types of investment and financing" (James C Van Horne, 2010, p. 189).

It is the rate of return that the company must obtain so that its value in the market is inalterable. It is the single rate that expresses the income for both the bank and the investment depending on the percentage of its contribution. The WACC is the benchmark rate against which the IRR of the project is compared and the determination of the rate that the project is paying is profitable or not.

The formula for calculating the WACC is as follows:

Figure 28

Weighted average cost of capital Formula

$$WACC = \frac{E}{V} x R_e + \frac{D}{V} x R_d x (1 - T_c)$$

Source: James C Van Horne, 2010

Where:

Re: Opportunity cost rate of shareholders, minimum rate that investors wish to obtain, which according to the investor's opinion is acceptable at 13%, being higher than fixed income (Supercias, 2017).

E: Capital contributed by shareholders

D: Financial debt contracted

Rd: Cost of financial debt

Tc: Tax Shield

V: total investment

Applying the project data, the calculation is as follows:

$$WACC = (50/100)*13\% + (50/100)*10.2\% * (1-22\%) = 10\%$$

5.9.2 Financial evaluation (NPV) and (TIR)

According to Gitman, "Net Present Value," is a tool that allows to calculate the present value of a certain number of future cash flows, originated in an investment. The method used is to discount the current time. That is to say to update with a rate all the future flows of a project ". This value is subtracted from the initial investment, resulting in the net present value of the investment (Gitman, 2014, p. 112).

Figure 29

Formula of Net Present Value

$$VAN = \sum_{i=1}^{n} \frac{FC_i}{(1+r)^i} - I_0$$



FCi. Represents the cash flows of each period.

IO. The value of the initial outlay of the investment.

N. The number of periods considered.

R. The interest rate. It is taken as reference the fixed income, in such a way that with the NPV we calculate if it is more profitable that the money is invested in the project or in a financial institution in fixed income.

When the NPV takes a value equal to 0, r is renamed Internal Rate of Return (IRR), demonstrating the profitability provided by the project (Baca, 2009).

For the calculation of the NPV and the IRR with financing, the amount financed from the initial investment is subtracted and only the value invested by the shareholders is taken into account in the cash flows. (Baca, 2009) In the case of the project only 50% of the investment (USD 63,756.61) has been taken into account, since the amount financed has been paid before the total cash flow result. For the interest rate, the previously calculated WACC, which is 10%, will be used. It is also important to take into account the Salvage Value at the end of the last year of the project, which is an amount calculated based on the fixed assets of the company considering the depreciation value. In the case of the project it has been added USD 3,500.00 to the last cash flow by concept of Salvage Value (Baca, 2009).

With the application of the cash flows of the project, the NPV is as follows:

NDV = -6	DV = 62.756.61		<u>-6,328.78</u>	7,302.89	27,499.31	-2,217.27
NPV = -05,750.01		(1+0.10)	$(1+0.10)^2$	$(1+0.10)^3$	$(1+0.10)^4$	$(1+0.10)^5$
20,681.67	31,803.04	7,997.35	2,042.13	27,703.25+3,	500.00 <u> </u>	101 613 21
$(1+0.10)^6$ T	$(1+0.10)^7$	$(1+0.10)^8$	$(1+0.10)^9$	(1+0.10)	$10 - \varphi$	101.013,21

After obtaining a positive NPV (\$ 101,613.21), we proceed to calculate the Internal Rate of Return. We obtain the IRR when the NPV is equal to zero through the use of several interest rates, in this case the IRR of the project is 38%.

The NPV and IRR of the 10-year investment project are described below.

Initial Investment	127,513.21
Shareholders 50%	63,756.61
Financing 50%	63,756.61
Type of interest (WACC)	10%
Net Present Value	101,613.21
Internal Rate of Return	38%

NPV and IRR of the 10-year investment project

Source: www.finanzascontabilidad.com, 2016. Prepared by: Diego Vásquez

With an initial investment of USD. 63,756.61, which is 50% of the total investment (the remaining 50% financed by private bank), over a period of ten years, a Net Present Value of USD. 101,613.21 is obtained. This amount is much higher than 0, this being the difference between investing the capital in a fixed-term investment, from which profits are obtained of only 6%, or 10% as specified in the calculation of the weighted average cost of capital (WACC).

5.9.3 Return on Investment. (ROI)

It is defined as the economic return on the total investment made without considering the form of its financing (Coss, 2005).

Its formula is = (Total Profit Flows - Investment) / Investment

The project is positive, since the ROI is 86%, recovering the initial investment and obtaining almost double the investment.

5.9.4 Payback or "recovery period"

It is a static valuation of investments that allows to select a particular project based on how long it will take to recover the initial investment through cash flows (Baca, 2009).

The payback formula = Initial Investment / Average Net Cash Flows

63,756.61 / 18,432.73 = **3.46 years**

The investment will be recovered in a prudent period of 3.46 years, which is short compared to the time that has been proposed for the project, which is 10 years.

5.9.5 Cost - Benefit

It directly compares benefits and costs. It is the result of dividing the updated value of project benefits (income) between the updated value of costs (expenditures) (Coss, 2005).

1,081,751.08 / 664,511.69 = 1.63

For each dollar invested in the project, the dollar invested, plus USD 0.63, will be recovered.

5.9.6 Project Profitability

Profitability refers to the money obtained by an invested capital. This is expressed in percentages based on capital (Baca, 2009).

Table 53 shows financial indicators of the investment project for the importation and sale of swine equipment.
Table 53

Project	Profite	ability	indicators
1.0,000			

Initial Invesment	127,513.21
Shareholders 50%	63,756.61
Financing 50%	63,756.61
Type of interest (WACC)	10%
Net Present Value	101,613.21
Internal Rate of Return	38%
Return on Investment	86%
Payback	3.46 years
Cost – Benefit	1.63

Source: Baca, 2009. Coss, 2005. Prepared by: Diego Vásquez

5.9.7 Break-even point

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"The break-even point is the level of goods production in which total revenues and total costs are equal, where the income from operations equals zero" (Horngren, 2012, p. 322).

The break-even point of a project on the production of goods or services is given by the volume of sales for which total revenues are equal to total costs. In other words there is no loss or gain. It is not a technique to evaluate the profitability of the investment but an important reference for the sales objectives of the company.

The calculation of the sales break-even point can be:

- Mono product
- Multi product

Usually companies have some products in their sales portfolio, each of which demands different variable costs and prices that is why it is necessary to calculate the breakeven point in such a way as to encompass all products (Baca, 2009).

The formula for the multi-product breakeven point is as follows:

BP = Fixed Costs / Marginal Contribution Percentage

The Marginal Contribution Percentage is obtained by dividing the Fixed Costs and the Variable Costs for each product in such a way that the percentage that each product contributes to fixed costs and variable costs is known.

Percentage of Marginal Contribution of Investment Project = 0.51

BP = 17,370.95 / 0.51 = \$ **33,691.45**

Table 54

Break-even Point of the Project

Products	Price	% item in Sales	BP in Sales \$	Sales BP x item
Maternity plastic floor	27.11	14.55	4,901.11	180.82
Gestation plastic floor	23.43	2.10	706.17	30.14
Piglet plastic floor	27.74	5.90	1,986.65	71.61
Maternity food dispenser	29.42	1.32	443.26	15.07
Gestation food dispenser	23.72	1.06	357.38	15.07
Piglet feeder	17.54	0.78	264.23	15.07
Fattening automatic hopper	483.26	10.27	3,460.66	7.16
Piglet automatic hopper	436.78	2.9	977.45	2.24
Semen extraction stand	195.41	1.56	524.74	2.69
House fan	362.58	4.01	1,352.33	3.73
High pressure washing machine	612.05	2.71	913.11	1.49
Scales	314.98	6.97	2,349.55	7.46
Food Mixer	4,286.56	18.98	6,395.07	1.49
Silos	4,543.33	6.04	2,033.44	0.45
Fattening nipple drinker	3.55	0.57	192.81	54.30
Piglet nipple drinker	3.03	0.18	59.3	19.54
Insemination catheter	0.62	0.82	275.75	447.57
Sorting panel	41.86	0.52	174.85	4.18
Stainless steel pig tooth cutter	7.38	0.16	55.02	7.46
Swine stainless holder	36.65	0.81	273.42	7.46
Metal ear tag pliers	8.25	0.18	61.54	7.46
Heater	79.22	3.54	1,193.63	15.07
Ultrasound	6,354.33	14.07	4,739.97	0.75
Total Break-even Point			33,691.45	

Source: Horngren, 2012. Prepared by: Diego Vásquez

Table 54 describes the percentage that each product contributes to total variable and fixed costs. The following column describes the break-even point in monetary values, which total is USD 33,691.45. The last column describes the units for each type of product that must be sold to have neither lost nor gain.

5.10 Conclusion of Chapter 5

As seen in Table 54, the project of import and commercialization of swine infrastructure and equipment is feasible and profitable over time. This can be corroborated with the financial study, in which the indicators show positive values. With an initial investment of USD. 63,756.61, which is 50% of the total investment (the remaining 50% financed by private banks), over a period of ten years, a Net Present Value of USD 101,613.21 is obtained. This amount is much higher than 0, this being the difference between investing the capital in a fixed-term investment, from which profits are obtained of only 6%, or 10% as specified in the calculation of the Weighted average cost of capital (WACC).

The Internal Rate of Return or profitability of the project is 38%, demonstrating that this is higher than the discount rate which has been considered acceptable in 10%.

The Return on Investment (ROI) is 86%, in other words with an investment of USD. 127,513.21, in ten years, USD 109,661.36 is obtained. In the ROI, income is considered, against investment without discounting it over time.

The recovery of investment or Pay back (USD 63,756.61) is contemplated within 3 years and 5 months. Being quite acceptable for a 10 year project.

For each dollar invested in the project, the dollar invested, plus USD 0.63, will be recovered.

To cover the fixed and variable costs of the project, it is necessary to sell USD. 33,691.45. This is the break-even point of global sales of all products.

CONCLUTIONS

In the province of Azuay, the swine industry has developed in a good way, but not under technified standards of production. This has brought negative consequences such as reduced production, disease, and poor quality of meat, affecting not only the farm but also the final consumer.

The different swine producers are aware of the advantages of technology for swine farms, since the relation between swine production and the growth of the food industry goes hand in hand. Unfortunately there are no distributors of the different infrastructures and equipment. There hence the implementation of a company dedicated to the import and commercialization of these products is necessary.

Despite the economic slowdown that Ecuador is experiencing, statistics show that there are economic development, foreign investment and domestic production all of which provide economic and legal policies that benefit both the employer and the employee.

The emigration in the Province of Azuay has been a factor that has contributed to the globalization of its population, existing people with new ideas, knowledge of their rights and willing to collaborate to arise the economy and the society.

Nowadays, the tendency to cooperativism through the associations of producers has allowed the social development and transfer of technology by governmental organizations, allowing a positive and technified change in animal production systems.

At the moment of carrying out a business project, the first thing that must be done is a market study, with this we will have defined our target market and sales strategy. The market research predicts the viability of a business, because it allows to understand buying trend and unmet needs of a market and it also allows to plan in a project horizon.

Based on the market study, a business model of a swine equipment company has been created, with 28 swine farms as its main market, different swine organizations of producers;

sausage small producers, and to the possible agricultural warehouses that will distribute the products.

For a correct selection of international suppliers, it is important to carry out a qualicuantitative analysis. With this analysis we gave values to important factors of negotiation, which will be key at the time of importation. The factors price, quality and logistics must be taken into account as these depend on the final price and acceptance by the final consumer.

After the quali-cuantitative analysis, it was concluded that the Chinese company Deba Brother and American Big Dutchman are the ones that offer the most benefits at the time of the negotiation of the products. Unfortunately, the prices of the products of the second company are very high to compete in the Azuay market (130% more), which is why it is not feasible to import from them. In the same way, the panel of suppliers has a secondary option or emergency suppliers, which are the Mexican company IPASA and the Argentine, Thermoplast.

For the importation of the swine equipment, maritime transport will be used, since it is economic although the logistics time is longer. For the import of all swine products, it will be necessary to use 4 containers of 40 feet HC. This is due to the voluminous nature of the products.

At the time of calculating taxes on foreign trade, a correct classification of the subheadings is important and if there is any doubt, Ecuador's National Customs Office (SENAE) is always willing to help. The correct classification of the items, influences directly to the payment of taxes and the final value of the product.

In the payment of taxes on swine products, 65% of these have an ad valorem rate of 0%, due to the fact that the nature of the products are classified as capital goods that benefit production and the national industry. On the other hand, in spite of the existing safeguards, in the case of the project, only 19% of imported products tax Safeguards of 5 to 15%, which are products classified as motor machines and surgical veterinary equipment.

Before the arrival of the goods, it is very important to manage all the documentation both support and accompanying, and if necessary, the documents and licenses that allow the entry of goods. The good management of these documents will favor in the times of custom clearance of the goods.

After the analysis of the financial study of the investment, it is concluded that the project of importation and commercialization of equipment, infrastructures and accessories for swine farms in the province of Azuay is feasible. With an initial investment of USD 63,756.61, which is 50% of the total investment (the remaining 50% financed by private banks), over a period of ten years, a Net Present Value of USD 101,613.21 can be obtained. This amount is much higher than 0, this being the difference between investing the capital in a fixed-term investment, from which profits are obtained of only 6%, or 10% as specified in the calculation of the Weighted average cost of capital (WACC). In the same way, the project yields an internal rate of return of 38%, showing that this is higher than the discount rate, which has been considered acceptable at 10%. The investment is projected to be recovered over a period of 3 years and 5 months. Finally for every dollar that has been invested, we obtain USD 0.63, of profit.

Investing in the importation and commercialization of swine equipment products is economically feasible and positive for the society. With the sale of swine equipment, there are many benefits: economic profit for the investor, easier production for the farmer, through the transfer of technology and processes. Finally, the consumer is the most benefited as he has safe high quality pork meat.

RECOMMENDATIONS

When the quali-cuantitative analysis of the different suppliers is carried out, they should be scored depending on the target market in which the product is to be sold. This because there are companies that offer products of the highest quality, but the market is not willing to pay a high price for the product since they prefer something more economic but that is functional and guaranteed.

When negotiating with suppliers, it is advisable to do it in a personal way. In this way, we can corroborate the activity of the company, feel the quality of the products, and negotiate better prices. If it is not possible to travel to the country of the supplier, it is recommended to request samples of the products, which are free but the costs of transportation and nationalization are paid by the buyer. In the same way, it is necessary to obtain references from third parties who have already had experience with the supplier company.

A correct classification of the subheadings of each of the products must be carried out for a good nationalization. When the items are well classified there is no issues at the time of the customs declaration. It must be classified efficiently according to the nature, the material and the dimensions of the products; this way, it is even possible to lower the payments of the respective taxes.

It is important to encourage swine production under quality standards through the application of technology. It is necessary to raise awareness of the benefits of the technification of the farms through the participation in fairs and to support the development of the industry with talks of good production practices.

It is also important to manage the loyalty of customers through a correct pre and postsale service and, a proper technical advice to their farms and the sale of guaranteed products.

After positioning the company in the market, it is important to note that the project can diversify not only swine industry of the province of Azuay, but in all the Ecuador. The Coast and Amazon regions could be an excellent market, since the majority of the farms are located in these areas due to the climatic conditions. When covering swine industry of Ecuador as a market, it would be advisable to manage a web page showing the economic activity of the company, its products, uses and its benefits. This facilitates contact with customers and generates more sales.

In the same way, the company could diversify its target market and expand to the different agricultural industries that need technification for their production, for example, poultry, rabbit and livestock industry.

It is important to make a financial evaluation of the project against market rates, inflation and risk award, in this way it will be corroborated that the project generates a utility higher than the Minimum Acceptable Rate of Return, being feasible the investment.

Take into consideration the project budget to stick to the planned and the sensitivity of the international commerce, logistics, costs and competition in the market.

APPENDICES

Appendix A. Infrastructure Survey on Swine Equipment.

The survey to measure the characteristics of the farms and the tendency to technification by the 15 farm owners is as follows:



Infrastructure Survey and Pork Equipment.

Farm Information

Name:	Localization	Stages	
Owner:	Туре		

1. Population

Sows	Males	Piglets	Fattening

2. Type of Feeding

Commercial Formula	
Artisanal Formula	
Forage	
Food waste	

Others		Brand	

3. Commercialization

Fair	Intermediaries	Butcher shop

¿ Have you heard of the latest developments in innovative technology for infrastructures and products for swine production?



Would you be willing to invest in innovative technified infrastructures and products for swine production? Yes; not;

Why?.....

What products would you incorporate into your swine farm?

Automatic hoppers	Heaters	Silos	
Plastic floors	Ultrasounds	Temperature control systems	
Metal cages	Insemination catheters	Automatic feed systems	
Nipple drinkers	Food mixer	Waste cleaning systems	

Others.....

Equipment

Machinery

Artificial insemination

Insemination laboratory

Ultrasound

Sell semen dose

Mixers	
Pelletizer	
Silo	
Forage Crusher	

Thanks for your cooperation

Appendix B. Survey on Distribution of Swine Products

The survey to measure the trend in the distribution of sine products is as follows:



Survey on the Distribution of Swine Products

This survey is to measure the trend of distribution by the Agricultural Warehouses of swine products in the Province of Azuay.

Warehouse Name	Location

1. Would you be interested in the distribution of products for swine production?



¿Why?.....

2. Which of these products would you implement to sale in your warehouse?

Insemination Catheter	Stainless ear cutter	
Nipple drinker	Stainless swine holder	
Stainless tooth cutter	Piglet feeder	

3. How do you make payments to suppliers?

At the moment			
Late payment	1	2	3
	month	moths	months

Appendix C. Incoterms 2010. Source: international Chamber of Commerce.

Each of the Incoterms will be described below:

Rules for any mode or modes of transport

• EXW Ex Works

"Ex Works" means that the seller delivers when it places the goods at the disposal of the buyer at the seller's premises or at another named place (i.e.,works, factory, warehouse, etc.). The seller does not need to load the goods on any collecting vehicle, nor does it need to clear the goods for export, where such clearance is applicable.

• FCA Free Carrier

"Free Carrier" means that the seller delivers the goods to the carrier or another person nominated by the buyer at the seller's premises or another named place. The parties are well advised to specify as clearly as possible the point within the named place of delivery, as the risk passes to the buyer at that point.

• CPT Carriage Paid To

"Carriage Paid To" means that the seller delivers the goods to the carrier or another person nominated by the seller at an agreed place (if any such place is agreed between parties) and that the seller must contract for and pay the costs of carriage necessary to bring the goods to the named place of destination.

• CIP Carriage And Insurance Paid To

"Carriage and Insurance Paid to" means that the seller delivers the goods to the carrier or another person nominated by the seller at an agreed place (if any such place is agreed between parties) and that the seller must contract for and pay the costs of carriage necessary to bring the goods to the named place of destination.

'The seller also contracts for insurance cover against the buyer's risk of loss of or damage to the goods during the carriage. The buyer should note that under CIP the seller is required to obtain insurance only on minimum cover. Should the buyer wish to have more insurance protection, it will need either to agree as much expressly with the seller or to make its own extra insurance arrangements."

• DAT Delivered At Terminal

"Delivered at Terminal" means that the seller delivers when the goods, once unloaded from the arriving means of transport, are placed at the disposal of the buyer at a named terminal at the named port or place of destination. "Terminal" includes a place, whether covered or not, such as a quay, warehouse, container yard or road, rail or air cargo terminal. The seller bears all risks involved in bringing the goods to and unloading them at the terminal at the named port or place of destination.

• DAP Delivered At Place

"Delivered at Place" means that the seller delivers when the goods are placed at the disposal of the buyer on the arriving means of transport ready for unloading at the named place of destination. The seller bears all risks involved in bringing the goods to the named place.

• DDP Delivered Duty Paid

"Delivered Duty Paid" means that the seller delivers the goods when the goods are placed at the disposal of the buyer, cleared for import on the arriving means of transport ready for unloading at the named place of destination. The seller bears all the costs and risks involved in bringing the goods to the place of destination and has an obligation to clear the goods not only for export but also for import, to pay any duty for both export and import and to carry out all customs formalities.

Rules for sea and inland waterway transport

• FAS Free Alongside Ship

"Free Alongside Ship" means that the seller delivers when the goods are placed alongside the vessel (e.g., on a quay or a barge) nominated by the buyer at the named port of shipment. The risk of loss of or damage to the goods passes when the goods are alongside the ship, and the buyer bears all costs from that moment onwards.

• FOB Free On Board

"Free On Board" means that the seller delivers the goods on board the vessel nominated by the buyer at the named port of shipment or procures the goods already so delivered. The risk of loss of or damage to the goods passes when the goods are on board the vessel, and the buyer bears all costs from that moment onwards.

• CFR Cost and Freight

"Cost and Freight" means that the seller delivers the goods on board the vessel or procures the goods already so delivered. The risk of loss of or damage to the goods passes when the goods are on board the vessel, the seller must contract for and pay the costs and freight necessary to bring the goods to the named port of destination.

• CIF Cost, Insurance and Freight

"Cost, Insurance and Freight" means that the seller delivers the goods on board the vessel or procures the goods already so delivered. The risk of loss of or damage to the goods passes when the goods are on board the vessel. The seller must contract for and pay the costs an freight necessary to bring the goods to the named port of destination. 'The seller also contracts for insurance cover against the buyer's risk of loss of or damage to the goods during the carriage. The buyer should note that under CIF the seller is required to obtain insurance only on minimum cover. Should the buyer wish to have more insurance protection, it will need either to agree as much expressly with the seller or to make its own extra insurance arrangements."

Appendix D. Deba Brother Products. Source: Deba brother.com

• Maternity Cage



• Plastic Floor



• Food

dispenser



• Automatic hoppers



• Piglet feeders



• Insemination catheter



• Maternity and Gestation Cages



• Power Washer



• Ultrasound



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